Editorial

Let’s get emotional. This issue features some of the burgeoning current research into the history of the emotions. To begin, Thomas Dixon traces tear tracks through literature and science in our early modern feature. Katy Price introduces an extraordinary and moving astronomical poem by William Empson. And Chris Millard tells how he came to be involved in recreating past emotional states with the help of the Lost Emotions Machine.

We hear from the Great Exhibitions competition winners: David Rooney discusses heroes, hormones and heartbreak at the Science Museum’s Turing display; and Emma Shepley puts nerves on show at the Royal College of Physicians. Sean Johnston gets nostalgic whilst book-reviewing, and Wahida Amin experiences the facts and feelings of Romantic Chemistry.

There are also reports from BSHS-sponsored conferences around the country, and a sneak preview of this summer’s International Congress, which promises to be an unforgettable, and probably emotional, experience. See you there!

Contributions to the next issue should be sent to viewpoint@bshs.org.uk by 15th August 2013.

Melanie Keene, Editor

When the crying stops

Thomas Dixon on the science of weeping in the Shakespearean age.

I have been researching the history of crying for several years. This interest started back in 2009 when I was invited to an event on Darwin and the emotions and began thinking again about The Expression of the Emotions in Man and Animals (1872). This is a surprising and striking book in many ways, including its emphasis on the purposelessness of emotional expressions, and its pioneering use of research questionnaires and photographs. But what caught my attention was the chapter on ‘Special Expressions in Man: Suffering and...
Weeping, including the assertion that ‘Englishmen rarely cry, except under the pressure of the acutest grief; whereas in some parts of the Continent the men shed tears much more readily and freely.’

My attempt to position those three simple words of Darwin’s – ‘Englishmen rarely cry’ – in the longer histories of science, emotion, and national identity, has now led me back to Shakespeare, and to a play currently being revived by the RSC. *The Lamentable Roman Tragedy of Titus Andronicus*, to give it its full title, was first performed in 1594 and it serves as a microcosm of early modern weeping, understood as a kind of performance, a work of nature, and an outward token of inner states.

The play is a revenge tragedy of astonishing violence: bowels, limbs, heads, hands and tongues are lopped and hewn. Virtually all the protagonists end up dead – many of them in a final blood-soaked show-down in which Titus kills his only daughter, the defiled Lavinia, who has been raped and mutilated by Queen Tamora’s sons, whom Titus now serves in a pie to their mother, before being promptly killed by the emperor, who is in turn killed by Titus’s remaining son Lucius. There is much sorrow and plenty of weeping – although not during the final scenes of tearless and pitiless revenge. The play is a very useful one for my purposes, as its writing, performance and reception can be used to explore medical ideas about the body and mind, as well as the histories of tragedy, Stoicism, religion, and morality.

As performed on the London stage in 1594, Lavinia would have been portrayed by a boy-actor and not a woman. We do not know whether he produced tears himself, but it is likely that some of the audience would have been moved to tears by this spectacle. And this reinforces the strangeness of weeping as something simultaneously the acme of emotional sincerity and the height of theatrical fakery. Tears of sorrow shed by the audience in sympathy with a young boy in good health pretending to be a mutilated woman in the midst of a horrific family revenge in ancient Rome might be interpreted as evidence of admirable powers sympathy or of a pathological susceptibility to dangerous, false and unreal passions, as anti-theatrical polemists claimed.

Weeping was indeed an act, and yet at the same time a work of nature – something elemental, which came easily to children and women because they were more under the sway of the passionate parts of nature, and more naturally moist. Weeping, for early moderns, was like urinating, sweating, or vomiting. It was an ‘expression’ in the literal sense of a squeezing out or excretion. We can trace our own ideas about weeping as a kind of emotional incontinence back to this humoral view of the body, according to which tears were a kind of ‘excrement’ – a liquid distilled from the blood, spirits, humourous or vapours, produced by the heart or brain, and pressed out through the eyes.

For the English clergyman and physician, Timothy Bright, writing his *Treatise on Melancholy* in 1586, tears were ‘the brain’s thinnest and most liquide excrement’. Robert Burton, in his *Anatomy of Melancholy*, in 1621, described sweat and tears within a similar humoral system, in which the principle humours, or fluid parts of the body were blood, phlegm, cholera and melancholy. ‘To these humours’, he noted, ‘you may add serum, which is the matter of urine, and those excrementitious humours of the third concoction, sweat and tears.’ René Descartes, in his 1649 treatise on *The Passions of the Soul*, treated tears and sweat together too: as the products of vapours issuing from the body. For Descartes, weeping was a kind of sweating from the eyes. Only after the 1660s did anatomists, following Nicholas Steno, teach that tears were produced by the lacrimal glands.

The scenes in *Titus Andronicus* in which tears flow volubly like forces of nature, connect with this sense of bodily overflow. Shakespeare identifies human tears with all the seasons and all the waterworks of nature – streams, rivers, and oceans; showers, storms and life-giving rain. Lavinia and Titus at different points refer to their ‘tributary tears’ of mourning – alluding simultaneously to tributes to the dead and to natural rivulets. Lavinia is described as a pure spring, muddied by her rape, and Titus’s grandson is described both as a ‘tender sapling’ and a ‘tender spring’ – tender in the sense both of youthful and moist. Titus tells the boy, ‘thou art made of tears’.

Titus’s depicts his own tears as forces of nature, describing himself as the sea and the earth; Lavinia as the sky (or ‘welkin’) and wind. When heaven doth weep, doth not the earth o’erflow? If the winds rage, doth not the sea wax mad, Threatening the welkin with his big-swollen face? And wilt thou have a reason for this coil?
I am the sea; hark, how her sighs do blow! She is the weeping welkin, I the earth: Then must my sea be moved with her sighs; Then must my earth with her continual tears Become a deluge, overflow’d and drown’d; For why my bowels cannot hide her woes, But like a drunkard must I vomit them. That final image of vomiting out woes reinforces the understanding of tears as a voiding of bodily waste. This moment is the high water mark of Titus's epic, meteorological, humoural, natural weeping. And it is part of a literary tradition of tears that continued into the seventeenth century — including religious texts by Catholics, Puritans and Anglicans. In the latter category John Donne's 1623 sermon on the text 'Jesus Wept': George Herbert's 1633 poem 'Grief', and the 1646 devotional work by John Featley entitled A Fountain of Teares are notable examples. Herbert's poem on grief starts:

O Who will give me tears? Come all ye springs, Dwell in my head & eyes: come clouds, & rain: My grief hath need of all the watry things, That nature hath produc’d.

And in Descartes's treatise on the passions of the soul we find a physical rationale for the identification of tears with natural aquatic processes. For Descartes weeping and raining are not just metaphorically but literally the same thing; both are instance of vapours, in the body or in the air, being converted into water — as rain or as tears, respectively. This occurred when the vapours were more abundant and less agitated than usual. So, when weeping eyes are described as 'rainy' in Titus Andronicus, Descartes, at least, would not have read that as a metaphor. Renaissance bodies were weather systems, with their vapours, humours, and liquors, flowing like tributaries, amassing like oceans, and falling like rain.

We can also gain an insight into the meanings of Titus's tears by turning to medical texts of the period. Bright's treatise on melancholy, which Shakespeare may have read, was published a few years before the play was first performed. Here we learn something interesting about the cessation as well as the production of tears. Learned Elizabethans had religious, philosophical, medical, and political reasons to be afraid of excesses of passion, including sorrow, and we can read Titus Andronicus as a reflection on the dangers of excessive weeping, as well as on the monstrosity of those who do not weep.

Tears are repeatedly shown, in the play, to impair the functions of the rational mind. On more than one occasion tears choke or interrupt an attempt at articulate speech. Tears are signs and symptoms of strong passions, themselves widely conceived as diseases of the soul. The Roman Catholic writer Thomas Wright, in his 1601 work on The Passions of the Minde, wrote that there were three main consequences of inordinate passions: blindness of understanding, perversion of will, and alteration of humours; and by them, maladies and diseases. And these are precisely the effects that Titus's inordinate sorrows seem to have on him.

After the speech in which Titus declares 'I am the sea' and 'she is the weeping welkin', a messenger enters the stage carrying two heads and a hand. The heads belong to Titus's sons, and the hand is Titus's own, chopped off by himself and misguidedly offered as a ransom for his sons' lives. This mocking of Titus's pleas for mercy by the execution of his sons, and the scornful return of his hand, is the final blow. This is when the crying stops. Titus in fact responds with laughter. His brother protests that this is unfitting. Titus replies: 'Why? I have not another tear to shed. Besides, this sorrow is an enemy, And would usurp upon my watery eyes, And make them blind with tributary tears.'

From this moment, Titus weeps no more and, 'pretending' to be mad, he sets out to exact his clear-eyed, dry-eyed revenge on Tamora and her sons, whom he lures to their doom in a piece of weird and macabre clowning, which ends with him slitting their throats, making them into a pie, and serving it to their mother at the feast of death at which he also kills Lavinia — 'her for whom my tears have made me blind'. Surely, however, Titus is not 'pretending' to be mad. He is mad. His dry eyes show not that he has mastered his sorrow but that his sorrow has mastered him.

It was widely agreed in treatises on the passions and on melancholy, throughout the period, that tears were signs of moderate, but not extreme sorrow. That was the view of Aristotle, and was echoed by Bright in 1586, by Montaigne in his Essays, by Descartes in his treatise on the passions of the soul, and by Walter Charleton in his Natural History of the Passions of 1674. Extreme sorrow, according to medical authorities of the period, could lead to physical illness, could take the form of melancholia, could drive people mad and could dry up their tears. The inability to weep, in turn, could cause madness, or even death.

Timothy Bright wrote of the passion of sorrow that 'if the perturbation be too extreme, and as it were ravisheth the conceite and astonisheth the heart' then tears are dried up and other, stronger movements replace them, 'as voydance of urine, & ordure.' This final possibility is not explored by Shakespeare, but in other respects Titus, described in the play as 'the woefull'st man that ever lived in Rome', is a textbook example of the progress of the passions. His conceit is ravished, and his heart astonished. Titus's abundant weeping in inordinate passion is replaced by a destruction of the mind, a stupidity of heart, and a dryness of the eyes: 'I have not another tear to shed'.

In Titus Andronicus, the final tears of the final act belong to a young boy — Titus's grandson. The boy's father, Lucius, Titus's only remaining son, addresses the child in words that are surely also addressed over his head to the theatre audience beyond:

Come hither, boy, come and learn of us To melt in showers.

What Shakespeare presents his audience with here is a task — somehow to learn to weep without becoming morally and mentally deranged, without going blind, without losing the power of speech. More importantly he provides them with an activity through which to make the attempt — the collective witnessing of a classical tragedy. And thanks to Shakespeare, gathering in theatres and weeping over tragedies — experiencing a sympathy of woe — became a part of the English national character, noted by foreign visitors, long before the tide turned so that it would become possible for someone to claim that 'Englishmen rarely cry'.

Thomas Dixon
Director, Centre for the History of the Emotions
Queen Mary, University of London
t.m.dixon@qmul.ac.uk

See http://emotionsblog.history.qmul.ac.uk/ for more on the activities of the Centre for the History of the Emotions. Weeping Britannia: Portrait of a Nation in Tears will be published by Oxford University Press in 2014.

Butler-Eyles Fund

The Butler-Eyles Fund provides support for students or independent scholars attending conferences organised or sponsored by the BSHS. Over the past 5 years this dedicated fund has awarded over £6,000 to 67 students. Francis H.C. Butler and Joan and Victor Eyles were founding members of the BSHS in 1947. They all served on Council at various stages in the 1950s and 1960s, and F.H.C. Butler was the first secretary of the Society. The Butler-Eyles Fund derives from their bequests, and subsequent donations by members of the Society.

If you are able, please consider donating to the Butler-Eyles Fund when renewing your BSHS membership, to help support this important initiative.

www.bshs.org.uk/grants/butler-eyles-travel-grants
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Feeling a little accedid?

Chris Millard takes us to **THE CARNIVAL OF LOST EMOTIONS.**

I was very surprised when asked to participate in a ‘public engagement with neuroscience’ project. As an historian of 1960s social psychiatry, I know very little about neuroscience! Even when it became clear that it would be an event to showcase the work of Queen Mary’s Centre for the History of the Emotions – alongside eight other Wellcome Trust-funded research groups – I still hesitated. I had just submitted my PhD and was looking forward to getting on with some serious relaxation, before getting my head down on the research for postdoctoral applications. The height of my public engagement experience up to that point was giving a general academic paper to an audience of clinicians about my PhD research – not exactly the general public!

Anyway, my lack of experience didn’t matter – so I was told – as the Wellcome Trust and the National Co-ordinating Centre for Public Engagement (NCCPE) were hosting a number of workshops to help researchers acquire the skills to engage with the public, after which the researchers would apply for up to £7,000 to put on the event in Brain Awareness Week in March 2013.

A number of valuable workshops and support/feedback meetings later, we had a small, flexible team, centred around two people from the Emotions Centre, myself and Rebecca O’Neal (who was just embarking upon a PhD), backed up by Centre Director Thomas Dixon. Through various feedback processes and conversations the central idea for the event was born: a ‘Lost Emotions Machine’. This – in case you were wondering – is a machine that produces emotional states from the distant (and not-so-distant) past. These were to be emotions that do not exist anymore – or at least provoke debate as to whether they do or not.

We appealed for volunteers to help us research past emotional states, and to help us with the main part of the event: a dramatic performance by academic historians, followed by an academic reflection. We engaged a professional prop-maker to construct the machine, and hired costumes from the National Theatre.

The aim was to provoke discussion about whether some emotional states in the past were truly lost, or simply the same eternally-valid emotions, masquerading under different names. For us, simply presuming that there is a fixed human emotional repertoire with a secondary set of varying ‘cultural responses’ is to deny the possibility of meaningful historical change. It is to restrict the richness and difference of the past to a superficial and secondary level.

**The Lost Emotions Machine in action. Photograph by Katie Garner.**

Our central dramatic conceit involved a mysterious Ringmaster who had lost his ability to experience emotions in a tragic accident. With the help of his faithful Engineer, he devoted his life to rediscovering his emotions, building the Lost Emotions Machine, which was able to channel past emotional states through the ether, for him to experience.

He thought that this wouldn’t be a problem, holding the view that there is little, if any, real variation in emotional states across time. This view is repeatedly confounded by the strange emotions that emerge from the past.

For example, when trying to experience sadness, the Ringmaster is confronted with accedia – a sense of spiritual crisis that existed in the 13th century involving disgust, restlessness and extreme weariness. Trying again, he stumbles upon early modern melancholy, a 17th-century state characterised by a delusions of this period’s melancholy, with others including the fear that one is turning into a wolf, or is made of butter.) Strictly speaking, neither of these states are ‘emotions’ either, that word having only acquired its modern meaning around 1800.

In his varied experiences the Ringmaster also comes face to face with characters from the past, including a Monk, a number of Physicians, an Army Psychiatrist and a Baroque Man. This method of explanation illustrates the second point that we wanted to make – ‘emotional states’ are largely incomprehensible without historical context. We experience feelings as part of a complex, interpersonal, cultural network of meanings. Without this network, feelings are meaningless, empty abstractions.

The machine enjoyed a second run-out at the Barbican’s Wonder Street Fair in April, where we had a number of enquiries about using the machine at other events, in different ways. A short film of the March event will be online soon on QMUL’s Emotions Blog. The event was thoroughly exhausting, but exceptionally rewarding. The training and funding provided by the Wellcome Trust was invaluable. A great experience, a sustainable project, and a large number of people engaged, intrigued, provoked and enlightened about the history of the emotions.

Chris Millard
Queen Mary, University of London
chris.millard@qmul.ac.uk
'Tables of the veines, nerves, and arteries'

Emma Shepley introduces ‘Curious anatomys’ at the Royal College of Physicians, which won the small display prize in the 2012 BSHS Great Exhibitions competition.

The Royal College of Physicians’ (RCP) historical collections have been gathered by fellows since the College’s foundation in 1518. Amongst the many rare items on display are six 17th-century anatomical tables displaying preserved human remains.

The RCP’s anatomical tables are some of the oldest surviving human anatomy preparations in Europe. They are human veins, nerves and arteries dissected at the University of Padua’s famous anatomy theatre in the 1650s, skilfully arranged on to large varnished pine panels in life-size reconstructions of the human nervous, arterial and venous systems. The dissected remains were probably injected with wax to maintain their shape and may have been adhered to the panels primarily by their own fluids. Visually spectacular and marvelously strange, the tables are stunning visual evocations of the flowering of anatomical discovery in 16th- and 17th-century Italy.

The tables have an intriguing history and a remarkable presence in the RCP’s public galleries, but surprisingly little is definitively known about the tables’ origins. They had not been researched since the early 20th century, and although two were lent to high profile exhibitions (Hayward Gallery, Spectacular Bodies, 2001; Wellcome Collection, Heart, 2007) they remained largely unknown and physically inaccessible to RCP visitors, permanently located as they were on a dark recessed library gallery, out of public view.

We started the exhibition project by reviewing the known facts of the tables: they arrived at the RCP in 1823, the gift of George Finch, 9th Earl of Nottingham and Winchelsea. The Earl described them as ‘anatomical preparations which belonged to the late Dr. Harvey’ and his assertion of ownership by William Harvey (Finch’s ancestor by marriage) went unquestioned for nearly 100 years. It was not until 1916 that an analysis of the improbabilities of Harvey’s ownership was first published and another Finch ancestor, Sir John Finch, was introduced as the most probable first owner of the tables. John Finch’s late career as British ambassador to Constantinople clearly eclipsed family knowledge of his early Italian studies in anatomy in the 1650s and his reputation as a ‘lynx with a knife’ during his tenure as professor of anatomy at the University of Pisa. There is clear contemporary evidence that Finch owned anatomical tables: in 1665 Padua student Edward Browne, wrote: ‘Sir John Finch… hath tables of the veines, nerves, and arteries, five times more exact then are described by any author.’ Finch himself described ‘our own tavole’ (tables) as superior to Dutch human tissue preservation methods.

The tables languished at Burley-on-the-Hill, the Finches’ Rutland estate, for over a century following their likely arrival after Finch’s death. Our research uncovered only one reference to the tables during this period - a 1772 house inventory recording their location in the library in ‘a press containing some curious anatomys’ – a single note that did at least provide an excellent title for the exhibition.

Centuries of neglect and exemplary dark and stable storage conditions account for the current excellent condition of the RCP tables, in contrast to the only other set of tables in existence. The scholar and diarist John Evelyn commission and purchased four anatomical tables at Padua in 1646 and recorded the transaction in his diary and letters. Evelyn’s set arrived in London in 1649 and are now on display at the Hunterian Museum at the Royal College of Surgeons, London.

The exhibiting of human remains is of huge interest to the public and ‘Curious anatomys’ was strongly led by current ethical guidelines on the display of human remains in museums and our central aim of promoting an understanding of the history of the teaching of human anatomy and dissection. The RCP’s own rare book collection was used to illustrate developments in anatomy from Andreas Vesalius’ De humani corporis fabrica (1543) to early works by Juan Valverde de Amusco, Jacopo Berengario da Carpi, and Mondino de Luzzi amongst others. We wanted to find out who the table’s human subjects were, and it is likely the bodies used were executed criminals or deceased impoverished patients supplied by Padua’s San Francesco hospital (located immediately adjacent to the anatomy theatre). This would account for female bodies used in the set.

To create a contemporary analysis of the tables, Francis Wells, consultant cardiologist at Papworth Hospital assessed the set. Wells’ filmed reflections on historical and modern anatomical study created a strong sense of the continuity of medical training and emphasised the importance of hands-on study of the human body from the beginning of modern anatomy in Padua to today’s medical students.

Finally to supplement the RCP collections in the display, we borrowed intricate 19th century wax anatomical models by Joseph Towne from the Gordon Museum of Pathology and specimens using other tissue preserving techniques - alcohol, drying and resin casts from the Royal College of Surgeons. These objects helped to give visitors a full sense of the journey from 17th-century experimentation to the work of doctors and anatomists today.

With the support of MLA grants the tables are now cleaned and rehoused in purpose-built cases. The responses to the exhibition were overwhelmingly positive and in January 2013 we decided not to return the tables to their former dark library home and instead created a new permanent public display on the RCP’s 2nd floor gallery - a first in the history of these spectacular tables who may now get the attention they have long deserved.

Emma Shepley
RCP curator
Emma.Shepley@rcplondon.ac.uk
In the second of our articles from the BSHS Great Exhibitions 2012 prize-winners, David Rooney introduces the emotional research and design behind ‘Codebreaker - Alan Turing’s Life and Legacy’.

A century after the birth of the British mathematician Alan Turing, the Science Museum opened a retrospective exhibition to explore his life, work and legacy. Using a diverse range of artefacts, archival material, historic photographs and film footage, as well as interactive screen presentations, the exhibition placed Turing’s undoubtedly exceptional work into the context of science, technology and everyday life in the middle decades of the 20th century.

Taking a biographical approach, it highlighted the breadth of Turing’s contributions, the close working relationships he formed with others, his ability to work with both theory and practice, and the complex interplay between his personal and professional life. It was aimed at an adult audience, reflecting a strategic ambition of the Science Museum to build its audience in this sector, with a secondary target audience of families with children aged 14 and older.

The exhibition used Alan Turing’s high profile, in the centenary year of his birth, to engage the public in important narratives in the history of 20th-century science. A biographical approach was chosen in an attempt to secure the biggest reach for the exhibition, but care was taken to defuse unsophisticated historiographical approaches such as ‘lone genius’ myths and invention priority disputes.

The exhibition was divided into five historical areas. The first dealt with the broad context of Turing’s seminal 1936 paper ‘On Computable Numbers’, which has come to be seen as containing an outline of the theory of modern computing, but which was written as a contribution to mathematical theory. The second space explored Turing’s wartime work at Bletchley Park, part of a huge organisation cracking codes first with manual techniques and then with banks of machines including those called ‘bombers’.

The third area contained the most significant Turing artefact in existence, the device known as the ‘Pilot ACE’, the only computer built to Turing’s specification. Early uses of high-speed digital computing were explored here. The fourth section looked at Turing’s work on machine intelligence in two contexts: one shedding light on his own intellectual background, the other on fashionable ideas in the early 1950s. This led to a fifth display, a small room dedicated to the last years of Turing’s life, when he was simultaneously working on the novel field of ‘morphogenesis’ (the development of pattern and form in growing organisms) and struggling with a conviction for gross indecency. A sixth space contained hands-on interactive exhibits looking at principles of computer programming.

The exhibition introduced a network of historical actors from Turing’s life and work, including people working in related fields (such as women computers in the Scientific Computing Service or collaborators in early machine intelligence), people whose impact on Turing’s personal life could be related to his scientific work (such as his school friend Christopher Morcom and the staff of the Burden Neurological Institute), and people with whom Turing worked closely (such as his Bletchley Park collaborators or his NPL colleagues). In some cases these actors were represented by original audio recordings of their reminiscences. Iconic Turing artefacts were displayed, most notably Pilot ACE, but also rare surviving relics of his Bletchley Park bombe machines, essays he wrote as a young man on the nature of spirit, and a unique electrical ‘logical computer’ built by one of his Manchester protégés.

To achieve the goals of engaging adults and young people with these complex stories in the history of science, the design of the exhibition was of great significance. A close working relationship was forged at an early stage with the designers, Nissen Richards Studio, who have a background in architecture and theatre design, to choreograph a multi-disciplinary experience crucial to the success of the exhibition.

The artefacts took centre stage, and the physical design of the space was configured to generate shifts of scale, intriguing backdrops and thought-provoking juxtapositions. The Pilot ACE, for instance, sat near a piece of aircraft wreckage from the 1954 Comet jet crash investigation and a model of vitamin B12 made by Dorothy Hodgkin. Both projects used the computer in their data-processing. The Manchester logical computer sat alongside the Jevons ‘logical piano’ made in Manchester 80 years previously, directly cited in the work of Turing’s collaborators. And discussion of Turing’s work on computable numbers was juxtaposed with a tabulating machine operated by a female ‘computer’, making manifest the physical and practical context of his theoretical work.

A key design requirement was for a space which, while containing striking objects and theatrical elements, was also intimate and quiet. Here, two key exhibits were sited which invited emotional reflection. The first was archival material revealing Turing’s heartbreak at the death of his childhood friend, Morcom. The second explored the circumstances of the end of Turing’s life. However, success in these emotionally charged areas depended on a particularly sensitive curatorial approach, and there was one crucial aspect of Turing’s story in which the historical literature did not appear to be sufficient to enable a subtle and enriching account to be told. Whilst there is a small but growing literature on the experiences of lesbian, gay, bisexual and transgender (LGBT)
people in Britain in the mid-20th century, the project curators lacked confidence in making assertions about the nuanced range of impacts that sexuality played on the everyday lives of LGBT people. Consequently, in order better to understand the experiences of LGBT people in Turing’s day, the project curators and the museum’s audience research team set up a research project in which a group of older LGBT people, organised by the charity Age UK, took part in a series of structured discussion sessions. Several of the 15 participants had become adults in the late 1940s or early 1950s and all had direct experience of some of the issues faced by Turing.

Topics for discussion (which were held in confidence) included geography (how experiences differed in different places), the law (experiences of the police and courts), medicine (experiences of elective or compulsory ‘treatments’ for homosexuality) and work and family relationships. These discussion sessions were explicitly not designed to generate first-person accounts for the exhibition, for a variety of reasons, not least to prevent inhibition of discussion. Rather, they were to give the curators a much deeper awareness of some of the issues and experiences faced by gay people in a time when homosexual acts were illegal.

It is hard to quantify the extent to which these exceptionally moving discussions affected the development of the exhibition. But in reflective sessions after the process ended, the curators expressed certainty that the exhibition was materially different, and they believed substantially better, as a result of these conversations, and audience research carried out after the exhibition opened supported their view that the emotional tone of the museum’s representation of Turing’s sexuality was balanced and well-judged.

The exhibition invited emotional reflection on Alan Turing’s story and the issues it raises, and the audience research revealed a surprising fact. In an exhibition which displayed the Pilot ACE computer and fragments of the Bletchley Park bombs, it was a much more commonplace artefact which visitors found the most powerful: a tiny bottle of oestrogen hormone pills, displayed in a quiet space deep inside the exhibition. This thought-provoking exhibit encapsulated a complex representation of science in society, and demonstrated in a rather tragic way the rhetorical power of real things.

David Rooney
Lead curator, ‘Codebreaker’
Science Museum
David.Rooney@sciencemuseum.ac.uk

Can literature make scientific discoveries? Science fiction is well known for pre- vision, particularly of technological advances. But can the processes and forms of literature also do theoretical work? In 1999 I showed a love poem, based around the idea of radical disconnection in space, to someone with a physics degree. ‘That’s a nice description of a black hole,’ came the response. ‘When was the poem written?’ William Empson’s ‘Letter I’ was first published in 1928. A black hole is a massive star that, having burned up its fuel, cannot stop collapsing because its own gravity drives the matter inward. Gravitational collapse reduces the massive star to a point, from which nothing – not even light – can escape. But the physics of black holes, along with their romantic name, did not come for another thirty years after Empson concluded his poem, in the mid-1960s.

It has taken a long time to decode the astro-poetics of ‘Letter I’, because its four stanzas are densely packed with eclectic reading matter, and for decades its messages have remained trapped inside. The speaker begins by throwing out a few lines about space, stars and galaxies: a trusted method in the history of wooing. But things go wrong when the lover begins to doubt whether there is any real connection or communication possible with the person being addressed. ‘Only, have we space, common-sense in common?’ the third stanza begins. Passion has fallen into a ‘Too non-Euclidean predicament’, an extreme form of ‘banishment’ in which the curvature of spacetime has separated lover and beloved. The poem concludes by comparing unrequited passion to the fate of the Sun: Our jovial sun, if he avoids exploding (These times are critical), will cease to grin, Will lose your circumambient foreboding: Lose the full radiance his mass can win While packed with mass holds all that radiance in; Flame far too hot not to seem utter cold And hide a tumult never to be told.

How to classify this poetic object? Do the lines actually describe a black hole, the same thing that Wheeler and his colleagues later worked on? Or is it simply a coincidence, thanks to some lucky word play by a poet who has been consuming astrophysical texts?

Massive, dense stars from which light could not escape had been proposed as early as 1796, but these hypothetical objects received a new twist under Einstein’s general theory of relativity, where gravitation was reconceived as curvature of spacetime in the vicinity of mass. Arthur Eddington, a British astronomer who worked hard to convince scientists and the wider public that Einstein was right, explained in his popular and technical writings why a massive star like Betelgeuse could not also be extremely dense: curvature would be so great that space would close up around the star, leaving the rest of the universe ‘nowhere’. A less drastic fate lay in store for our Sun. It would become hotter and hotter, its matter more and more densely packed, entering the ‘white dwarf’ state. There was a mystery over the final stages of a star in this condition, however: as the energy store failed, the star would cool, and this would require it to expand; but expansion required a supply of energy to overcome gravitation. Stars could not be expected to save up for their own funerals, and astronomers turned to the latest developments in atomic theory for assistance with the energy conundrum. The answer came in the form of hydrogen atoms that have their one electron jammed up against the central proton. A star composed of these atoms would behave in a suitably contradictory manner, Eddington was pleased to report: ‘If you measure temperature by radiating power its temperature is absolute zero, since the radiation is nil; if you measure temperature by the average speed of molecules its temperature is the highest attainable by matter. The final fate of the white dwarf is to become at the same time the hottest and the coldest matter in the universe.’

Empson had fallen for a close friend who would not acknowledge his advances, let alone return them. The full sequence of six Letter poems avoids gendered pronouns, universalising the affair in a series of intensely metaphysical attempts at maintaining a platonic poise. Queer images drift in and out, culminating in the arrows of Saint Sebastian in ‘Letter V’. But in ‘Letter I’ that the tradition of unspoken homosexual affection receives a powerful Einsteinian twist, as the extreme curvature around a hypothetical dense massive star is conflated with the hottest-coldest white dwarf state. Eddington famously dismissed the curvature idea as ‘stellar buffoonery’, and ridiculed the young mathematician Subramanyan Chandrasekhar for proposing it to the Royal Astronomical Society in 1935. As a poet, Empson was not subject to the astronomer’s authority, and it was precisely the forbidden aspect of extreme curvature that made it the perfect conceit for his disallowed passion. The borrowing is an appropriate tribute to the muting of close male companionship: Eddington’s own early thoughts on stellar structure are hidden from historians because his letters to a close friend were destroyed after his death.

Katye Price
Queen Mary, University of London
k.price@qmul.ac.uk

Viewpoint No. 101

Queer stars
William Empson’s non-Euclidean predicament, by Katy Price.
Big history of science

Alexander Hall and James Sumner give a sneak preview of what to expect at the 24th International Congress of the History of Science, Technology and Medicine in Manchester this July.

Manchester, the original ‘shock city’ of industrial change, birthplace of the civic university, and home and workplace to luminaries ranging from John Dalton to Brian Cox (via Marie Stopes, Alan Turing, and a little-known aeronautical engineer named Ludwig Wittgenstein), is gearing up to host the largest ever gathering in our field.

The International Congress, organised on behalf of the International Union of History and Philosophy of Science Division of Science and Technology (DHST), meets once every four years, most recently in Mexico City (2001), Beijing (2005) and Budapest (2009). The twenty-fourth meeting in the Congress series marks its third visit to the UK, following the Edinburgh meeting of 1977 and the famous Second Congress, held in London in 1931, which gave many Western scholars their first taste of Marxist interpretations in the history of science. International dialogue remains central to the Congress’s goals, with participants from over 60 countries expected in Manchester. Recent meetings have attracted well over a thousand delegates, but Manchester’s promises to be unique in its scale, with more than 1600 accepted papers, discussion sessions and special events programmed across the week of Sunday 21st-28th July.

Organising this most international of meetings is very much a local affair. As the UK’s DHST affiliate, the BSHS has overall responsibility, and manages the Congress through a local organising committee including BSHS Council representatives and headed by members of the University of Manchester’s Centre for the History of Science, Technology and Medicine. The University is providing the main Congress venues and administrative support, with contributions from nearby universities, museums, and several other institutions in and around Manchester, and from colleagues nationwide. The Congress, then, offers unique opportunities not only for scholars in the UK to learn more about HSTM as it is practised around the world, but for bringing the flavour of BSHS meetings and activities to a wider audience than ever before.

Following the opening ceremony and keynote plenary – given by BSHS President Hasok Chang, on ‘Putting science back into the history of science’ – the programme explodes into more than twenty parallel tracks. With four paper sessions per day, there are well over 400 sessions across the week of the Congress. Session topics embrace all regions of the world (with South and East Asia, the Islamic world, and post-colonial contexts particularly well represented); all disciplines (notably medicine and healthcare, represented in the Congress title for the first time at Manchester); all periods (from ‘Comparative perspectives on ancient astronomy’ to ‘Contemporary medical practice and ethics’); and all analytical approaches (including gender, literary approaches, the transnational, the use of oral history methods and Virtual Research Environments, and the pursuit of chemical materials ‘from bench to brand and back’). Most presentations are in English, although there is some work in each of the Congress’s nine official languages.

If all this sounds disorientating, don’t worry: the organisers have grouped the material into thematic strands and provided a comprehensive classified guide for ease of navigation. The full provisional programme, including a clickable timetable, is on the Congress website at www.ichstm2013.com/programme/.

Beyond the traditional paper sessions, a variety of ‘special sessions’ will explore the field through different formats. Those confirmed include a discussion on the future of HSTM journals, including open access; screenings of documentaries on Ernest Rutherford and the seismographer, John Milne; and a session on social media and public engagement, appropriately including a live electronic link-up with the Science in Public conference in Nottingham. Luncheon sessions aimed at graduate students and early-career researchers will cover practical matters such as presenting research, publishing books and articles, and job-hunting and working across international borders.

A book exhibit will run throughout the Congress in the main venue, with stands from publishing houses from around the world: many publishers’ representatives will be in attendance to discuss opportunities with prospective authors. There will also be an extensive second-hand bookstall.

Helping visitors to explore the city of Manchester and the wider region has been an equally important part of planning. The formal programme includes a scheduled break in regular sessions (Thursday 25th July, afternoon), intended for off-site visits, plus evening receptions at nearby venues including Manchester Town Hall and the Museum of Science and Industry in historic Castlefield. The conference dinner will be held at Old Trafford, the home of Manchester United Football Club, on Saturday 27th July, preceded by an optional tour of the stadium.

The opening of the Bridgewater Canal, according to Ford Madox Brown’s mural in Manchester Town Hall. Image in public domain.
There will be coach excursions to Jodrell Bank Observatory, home of the iconic Lovell Telescope; Quarry Bank Mill and Styal Estate, a superbly preserved cotton mill with workers’ housing and gardens; and Chatsworth, the grand stately home and ornamental gardens in Derbyshire, home to the papers of Henry Cavendish. We are also co-ordinating visits to numerous other local sites such as the Godlee Observatory, the Manchester Museum herbarium, and the gardens at Ordsall Hall, with special exhibitions at the Working Class Movement Library, the People’s History Museum and the Imperial War Museum North. There will also be a vigorous programme of guided walking tours, revealing the early campus of the University of Manchester and the social history and fabric of the city itself, from Victorian civic grandeur to the equally grand ambitions of 1960s modernism.

Alongside these centrally organised activities, various of the contributing DHST Commissions, societies, and other subject-specific organisations have planned trips and social events to accompany their paper sessions. For example, the International Commission on the History of Meteorology is planning a ‘Weather walk with Wittgenstein’ visiting sites of interest in central Manchester and the Grouse Inn, in the nearby Peak District, where the young Wittgenstein released his kites as part of his research on the turbulent behaviour of the lower atmosphere. The Scientific Instrument Commission, International Commission on the History of Geological Sciences (INHIGEO), and Newcomen Society have also organised appropriate excursions or field trips. Some of these activities will be open to Congress-goers in general: details will be provided on the Congress website.

The social side is equally important to a good conference experience. The Congress has commandeered the use of a nearby pub and events venue, the Jabez Clegg (named after the eponymous hero of The Manchester Man, Isabella Banks’s 19th-century novel of industrial progress). By special arrangement, during the Congress, the Jabez will be supplementing its usual fine array of drinks with special cask ales inspired by famous figures from the history of science. The Jabez and other local venues will provide the setting for another important innovation, the ‘iCHSTM Fringe’, an evening programme of music, comedy and drama with HSTM connections. A key aim of the Fringe is to introduce our international audience to the Manchester region’s culture and history, from the hardships of factory life to the rise of electronic music in the iconic Haçienda nightclub. Highlights include a set by Haçienda DJ and broadcaster Dave Haslam, and a comedy night that challenges HSTM researchers to share the lighter side of their work.

There will also be several public events during the Congress, organised with support from the BSHS Outreach and Education Committee. Confirmed events include a re-creation of a Victorian science lecture, a discussion session on music and drug culture, and an author event marking the award of the 2013 BSHS Dingle Prize for a book on the history of science accessible to a wide audience of non-specialists.

We are also promoting wider public involvement through a range of social media and online activities scheduled to appear before, during and after the Congress. You may already have seen the iCHSTM blog (www.ichstm2013.com/blog), on which selected scholars are presenting short articles that profile and introduce the topics of the papers they are due to give at the Congress. The iCHSTM website will also host videos, interviews, and recordings of selected papers. Readers are encouraged to submit comments, questions and ideas via the blog, our Twitter account (@ichstm2013), or our Facebook page (search ICHSTM on www.facebook.com). Those attending the Congress in person should keep an eye out for our social media team recording the Congress, and we are also planning an introductory session for those new to video, with practical advice from seasoned online historians.

We hope that this short piece has got you as excited about the Congress as we are here in Manchester, and that even if you can’t attend in person, you can get involved online. For more information on all aspects of the Congress, please visit our website at www.ichstm2013.com, follow us on Twitter, or join the Congress Facebook group. Registration for the Congress remains open until Monday 1 July. You can register online through the form at www.ichstm2013.com/registration/. Finally, keep your eyes peeled for a full report on the Congress and all its related activities in the October edition of Viewpoint.
Reviews


Reading this unusual book has given me a strong sense of nostalgia and déjà vu. Born at the tail-end of the baby boom, my childhood reading included stacks of library books published between the postwar period and late 1960s. The graphic design and textual style of *A Little History of Science*, intentionally or not, evokes those times and attitudes. But it does so in a good way: this is a more balanced and inclusive account than the books that first nurtured my interest in science and its history.

The retro format is spartan. There are no illustrations apart from stylized pen-and-ink chapter headings reminiscent of mid-century Scientific American and New Yorker magazines. The text is devoid of explanatory boxes inset in the margins. Even the price – very reasonable for a hardback – suggests an earlier time.

The content, though, deviates from a 1950s template. The book is aimed at young people without quite alluding to the fact (the closest it comes is on the dustcover, offering ‘a volume for young and old to treasure together’). The age range is more difficult to gauge. The mentions of cartoons, trainers, Transformer toys, doctor’s visits, Coca Cola cans and mobile phones sprinkled through the text hint at preteens, perhaps; references to solving problems in algebra and geometry suggest an adolescent readership. In any case, there is an absence of condescension and proselytising. The writing style is in the form of a gentle and accessible narrative, suitable for children to pick up on their own, or even to be shared or read to them by parents. There are enough ‘hooks’ to appeal to a curious person of any age.

There is a refreshing intermingling of questions and explanations that transcend modern categories. The book is notable in devoting considerable space – at least nine chapters – to topics in biology and medicine. The treatment of diabetes, for example, receives over a page and a half. There is also good coverage of chemistry, geology, palaeontology and anthropology. On the other hand, this is not a book that focuses on links with technology, society or culture. Chapter 28 (‘Engines and Energy’) focuses on the thermodynamics of Carnot, Joule and Kelvin, although the final chapters suggest the relevance of inventive skills such as penicillin production, genetic sequencing and digital communications via packet switching.

As summarised on the final page, the book seeks to show that ‘science has been a product of that particular moment’ (p. 256). It does this well but, perhaps unavoidably, turns attention away from the collaborative and evolutionary aspects of scientific knowledge. The forty chapters (of about 6 pages or 2500 words each) focus on key thinkers and ideas in roughly chronological order. There are a few rare hints of hero worship (‘the father of medicine’, chapter 4; ‘giants of electromagnetism’, p. 99; Bill Gates and Steve Jobs as ‘modern scientific heroes’, p. 253). The social nature of science is scarcely hinted by brief mentions of colleagues of Rutherford, the wartime development of nuclear weapons and computers, and attempts to patent the human genome.

On the whole, this is an appealing book designed for a well-defined audience. Its strength is its straightforward and consistent approach, which may well be an attractive alternative to internet browsing.

Sean Johnston
University of Glasgow
sean.johnston@glasgow.ac.uk
Exhibition


For many, British science in the 18th and early 19th centuries often brings to mind the so-called industrial or chemical revolutions; but this temporary exhibition offers something a bit different. Through chemical specimens and material from the Royal Society’s archives, ‘Romantic Chemistry’ presents the stories of the isolation of new elements in this period through the inquisitiveness of their respective discoverers, while also hinting that these ideas resonated through art and politics.

Apprehensive about the way in which the Royal Society would use the anachronistic and loaded term of ‘Romantic’ for chemistry, I slowly made my way around the basement museum space viewing the accounts of chemists on their discoveries of elements such as titanium, rhodium, niobium and potassium. I became impressed that the overall organisation of the exhibition is directed by a neat definition on the nature of chemistry from the poet Samuel Taylor Coleridge: ‘The serious complacency which is afforded by the sense of truth, utility, permanence, and progression, blends with and ennobles the exhilarating surprise and the pleasurable sting of curiosity.’

Coleridge was awed by the work of his contemporary chemists, having counted Humphry Davy as one of his friends and an intellectual equal. The exhibition draws from his view of chemistry to remind us that the chemical discoveries came from the insatiable curiosity of men from all over the world to reveal the ‘truth’ and the utility of nature.

An example of these links can be seen with the display of Robert Boyle’s secret letter to the Royal Society in 1680. This archival document brings alive Boyle’s covert use of ‘considerable quantity of Man’s urine’ to isolate phosphorus, emulating Hennig Brand, a German chemist who had tried to hide his method of discovering phosphorus in 1667. Above this display hangs an image of Joseph Wright’s painting ‘The Alchemist Discovering Phosphorus’ (1795) which depicts the bright light emanating from the element when heated that inspired Boyle’s work. As such the exhibition suggests that Brand’s work influenced the world of both chemistry and art.

The accidental discovery of niobium by Charles Hatchett at the British Museum in 1801 is also another nice example: Hatchett explains in his letter to the Society; “in the course of the last summer when I was examining and analysing some minerals” the 17th-century specimen of ‘a darkly-coloured heavy substance attracted by attention.’ Hatchett goes on to describe his analysis of the specimen from North America and deduces it may be a new element that he names ‘Columbium’. This story, and others, is animated by the exhibition’s use of letters and drawings sent to the Royal Society at the time of the discoveries. Varied handwriting and contexts are brought together to relay the enthusiastic and diverse work of these Romantic chemists.

The displays also show how the life of chemists in this period could be shaped by larger political forces. While chemistry is shown as sometimes a collaborative endeavour of British, German, American and Swedish natural philosophers, we are reminded in the display of James Yates’s collection of pamphlets and prints on the Dissenter Joseph Priestley, that the discoverer of elements in air was attacked for his religious views and support for the French Revolution, leading to satirical cartoons showing that he was condemned to hell. Humphry Davy is another example of divisive politics, whereby his campaign as candidate for President of the Royal Society was criticised by Fellows for being part of the ‘constant round of canvas, intrigue and cabal’ not fitting to the illustrious role of a nominee.

The exhibition is slightly overdependent on archival documents, and more objects from organisations that directly relate to the experiments could make it a more visual and less interpretation-led experience for the visitor, and perhaps draw in a more diverse audience such as younger viewers. To compensate (and nicely linking past discoveries to the present) each cabinet, where possible, does provide specimens of the discovered element and a description of how that element is currently used in industry. Charles Hatchett’s discovery of niobium, for instance, is appended with an interactive screen on the work of CBMM, a company involved in the extraction and processing of niobium-based products. Niobium alloys are integral to the aerospace industry, and are used as superconductors in MRI machines and in the Large Hadron Collider. While the interactive screen is perhaps a jarring addition next to the letters, descriptions of experiments, and portraits, it does allow us to see how Romantic period discoveries are relevant to modern society.

The exhibition looks back at a time when both poets and chemists were captivated with the search for truth. It also looks forward to how these ideas ultimately shaped the current world. Overall, the exhibition is an interesting and thoughtful mix in the way it relates surprise with utility, individuals as part of networks, and the past with the present, where the term ‘Romantic’ helps it define scientific research as a social and intellectual endeavour. Noble aims for a small exhibition.

Wahida Amin
University of Salford and the Royal Institution
wahida.amin@gmail.com

Charles Hatchett’s letter, and a specimen of “Columbium”, now known as niobium, on display. Photograph by Wahida Amin, courtesy of the Royal Society.
Medical Matters

Centre for Eighteenth Century Studies, York, 9th March 2013

‘Medical Matters: the cultural politics of the body in 18th-century Britain’ was attended by over 50 staff and students from York and further afield. The interdisciplinary conference aimed to investigate representations of the human body as a site of political debate in the long 18th century. The array of stimulating papers drew from a plethora of literary, visual, medical, personal, and philosophical sources to discuss the conventions and innovations of representing the body, paying close attention to the political divisions underpinning medical discourse during this period.

Social fashion was a strong theme in the first panel. Clark Lawlor (Northumbria), whose paper was titled ‘Thinking Fashionable Disease and Literature in the 18th Century,’ outlined the aims of a new Leverhulme-funded project on fashionable diseases. The investigation will provide a comprehensive understanding of how conditions such as consumption, dyspepsia, and melancholy were assigned a positive cultural cachet in the eighteenth-century. Taking examples from Byron, Pope, and Richardson, Lawlor demonstrated how illnesses endowed the sick with fashionable status and transformed medical conditions into objects of social emulation across society.

Co-organiser Mary Fairclough (York) presented a paper titled “The grand instrument of life”: 18th-century Electrical Therapy which considered electricity as a political instrument and ‘subject in vogue’ from the 1740s to the 1790s. Electricity offered a new revolutionary potential for the circulation of information and afforded new possibilities for self-medication, posing profound challenges to the medical profession.

Jo Wharton, co-organiser and PhD student (York), opened the second panel with a paper titled ‘Materialising the Mind: Barbauld and Priestley’. Wharton considered the physicality of intellectual exchange between Anna Barbauld and Joseph Priestley, and the materialism of the mind in forming personal identity. She argued that Barbauld’s poem ‘An Inventory of the Furniture in Dr. Priestley’s Study’, exemplified the mind of the polymath and the interrelation of literature and science, arguing persuasively that Barbauld’s notion of ‘active matter’ was as influential upon Priestley’s work as Hartley’s associationism. In ‘Pathological Bodies: Medicine and Politics in the Age of Revolutions’ Corinna Wagner (Exeter) discussed three case studies from her forthcoming book to demonstrate how medical discourse migrated into political literature and visual culture of the 18th century. Wagner showed how political images of lactating mothers gave women a symbolic, but not active, role in nation building. Satirical dissection cartoons of William Pitt were contrasted with William Godwin’s Memoirs of Wollstonecraft to explain the fascination and anxiety which public biological knowledge of private bodies afforded. Caricatures of the Prince Regent demonstrated contemporary fears for appetite, over-indulgence, and moral weakness.

The final panel was particularly dynamic in its interdisciplinary scope. Jeremy Davies (Leeds) presented a paper on ‘Coleridge and the Sense of Sensing’. Tackling Coleridge’s more abstruse post-1800 research, Davies explained how medical reading infected Coleridge’s theorising on the reflexive nature of physical pain, providing a means for aestheticizing vitalist philosophy. Sharon Ruston’s (Salford) paper, ‘Humphry Davy and Thomas de Quincey: Medical Experiments with Drugs and Drink’ flagged up the similarities between Davy’s experiments with nitrous oxide and de Quincey’s opium use. Self-experimentation not only offered artificial enhancement of experiencing the sublime, but also challenged the medical profession as means of self-medication. Michael Brown’s (Roehampton) paper ‘A Theatre of Compassion: Emotion and Affect in Early 19th-Century Surgery’, argued for a reassessment of the traditional image of the emotionally detached surgeon in the early 19th century. Brown used Astley Cooper’s lectures to trainee surgeons in which he advocated an empathetic attitude and a moral authority towards patients. Compassion played a surprisingly important role in the decades preceding anaesthesia.

The keynote paper was delivered by Peter Kitson (Dundee): ‘British and Chinese Medical Exchange in the late 18th Century’. Taking as its stating point, the allure and anxiety felt by Western consumers towards China, the paper posed a series of questions interrogating the reciprocity of the Chinese and European relationship. Is British medical science a rhetoric that grows stronger as Chinese medical science grows weaker?

Generously supported by the BSHS, the dynamic interdisciplinary tone of the conference was testament to the vibrant intellectual environment at the Centre.

Peter Kitson gives the plenary address at the ‘Medical Matters’ conference in York. Photograph courtesy of Mary Fairclough.

Lucy Hodgetts
University of York
lmbh500@york.ac.uk
Cultures of Ancient Science
University College London, 15th-17th March 2013

‘Cultures of Ancient Science’ explored the diversity of science in the ancient world, how we should approach the study of science in the ancient world and the possibility of making cross-cultural comparisons of ancient sciences. It also reflected on how the study of ancient science had changed in the twenty years since three of the speakers (Rochberg, Lloyd, Bernal) had published seminal papers in a special edition of *Isis* in 1992, especially in terms of ancient science no longer being exclusively identified with ancient Greek science, along with prospects for further development. There were speakers on ancient Egypt, ancient Greece, ancient Babylonia, ancient China, ancient Rome, early Meso-America and the early Arabic/Islamic culture. There was a most interesting reception for the conference on the Friday evening at the Petrie Museum for Egyptology, where Alexandra von Lieven (Freie Universitat Berlin) very kindly talked us through some of the exhibits relevant to the study of science in ancient Egypt.

She also gave the first paper on the Friday afternoon, speaking on ancient Egyptian science, emphasising the wealth of material now available and how the study of ancient Egyptian science is beginning to flourish. She was followed by Vivien Nutton (UCL) who spoke on how the study of ancient medicine has changed in the last twenty years and is still changing.

On the Saturday morning Martin Bernal (Cornell) spoke on aspects of interaction between ancient Egyptian and ancient Greek science. Andrew Gregory (UCL) spoke on how he had been influenced by von Staden’s paper in the 1992 special edition of *Isis*, on how evidence of religious and magical belief among the Greeks had been marginalised and looked at some examples where evidence had been excluded from modern versions of ancient texts by their editors. Geoffrey Lloyd (Cambridge) and Nathan Sivin (Pennsylvania) both discussed ancient China and to a lesser extent ancient Greece and discussed the possibilities for making cross-cultural comparisons of ancient sciences. Francesca Rochberg (Berkeley) spoke on how the history of science of ancient Mesopotamia had changed radically in attitudes and methods and the implications of this for ancient science more generally. Eleanor Robson (Cambridge) spoke on geographies of science and networks of knowledge among the ancient Babylonians and Assyrians. Serafina Cuomo (Birkbeck) spoke on Roman science and how it had now emerged from the long shadow thrown by the assumption that all important ancient science emanated from the Greeks.

On the Sunday morning Stephanie Koerner (Manchester) spoke on science in pre-Colombus Andean America and discussed issues of folk-knowledge and where to find knowledge in ancient cultures. Charles Burnett (Warburg Museum) closed the conference with a paper on science in the early Arabic/Islamic civilization.

There was ample time for discussion of the papers and there were many stimulating questions and comments from the audience. The conference was very well attended with around 70 people attending over the three days. The possibility of a volume of papers covering the historiography of ancient science emanating from his conference was discussed with several publishers being interested. The conference was sponsored by the BSHS, The Institute of Classical Studies, The Department of Science and Technology Studies at UCL and The Petrie Museum for Egyptology.

Andy Gregory
UCL
andrew.gregory@ucl.ac.uk

Scientiae 2013
University of Warwick, 18th-20th April 2013

Seated in the heart of England, the campus of the University of Warwick is a natural hub for historians in the United Kingdom; at ‘Scientiae 2013’ it became an epicentre of global expertise on the topic of early modern knowledge and the scientific revolution. The call for papers this year was ambitiously broad, however this proved to be a masterstroke, as well over 100 enticing papers were delivered on topics stretching from atomism to zoological illustrations. Yet the organisation behind such a large conference was very much a strength of the event.

Proceedings were kicked-off by Sachiko Kusukawa’s (Cambridge) keynote paper on the historiography of the visual in early modern science. This paper was both a review of where this field of study currently stands and a call-to-arms, entreaty historians of science to reconsider the visual. Without question this paper will have successfully recruited a number of academics to the cause.

A conference over three days, with 32 concurrent sessions, could struggle to maintain its momentum; however, the second keynote speech - delivered at the end of the second day - energised proceedings and fuelled debate right up to the final papers and beyond. Stephen Clucas (Birkbeck) held no punches in his persuasive paper on the historiography of early modern magic, and he convincingly dispelled a number of misconceptions regarding the relationship between exorcism and conjuration in this period.

Perhaps the most remarkable aspect of ‘Scientiae 2013’ (especially considering its size) was the atmosphere of friendly collaboration, with a number of attendees commenting that there had never been a conference which felt quite so cohesive. Never was this better exemplified than at the conference banquet, where Warwick’s warm surroundings (and a generous bar tab) facilitated a truly enjoyable evening of discussion.

Following three days of papers, the event was brought to a close with a conference-wide roundtable discussion. In this conversation it was announced that the ‘Scientiae’ steering committee have decided to form a society in order to carry-on the outstanding work from the inaugural ‘Scientiae’ conference (Simon Fraser University, Vancouver in 2012) and ‘Scientiae 2013’, with the exciting news that ‘Scientiae 2014’ is already in the pipeline (with Vienna as the host city) and venues for 2015 are currently being considered.

The roundtable discussion also highlighted a number of areas where ‘Scientiae 2013’ had really delivered, as well as topics which the call for papers might give greater weight to in the future. The relationship between music and early modern knowledge was revealed to have been a particular strength of the event, with five outstanding papers on a topic which is rarely given the coverage it deserves at conferences. There was also a small number of excellent papers on visual culture, however the conference attendees expressed a desire to see more of the same, so expect the History of Art to feature more prevalently at ‘Scientiae 2014’. Indeed, ‘more of the same’ is perhaps the phrase which best summarises the attitude expressed at the roundtable and the event as a whole. ‘Scientiae 2013’ has certainly set a high bar for all future conferences on the topic of disciplines of knowing in the early modern world. I for one cannot wait for ‘Scientiae 2014’ to take up the challenge.

Tom Colville
University of Warwick
T.M.Colville@warwick.ac.uk
Call for Papers
‘Altered Consciousness, 1918-1980’
16th-17th November 2013
Queen Mary, University of London

Closing date for submissions: 14th June 2013; Keynote speaker: Jeffrey Kripal (Rice University)

This meeting will explore the theme of altered consciousness in relation to popular culture, psychology, philosophy, religion, medicine and literature during the period 1918-1980.

Many literary and popular authors and performers during the mid-20th century represented altered states of consciousness in their work, responding to and participating in research relating to such topics as interplanetary contact, ESP, clairvoyance, telepathy, mind-altering drugs, psychic therapies, spiritualisms, shamanism, eroticism, conversion, revivals, somnambulism, precognition, distraction, group mind, multiple personality, hypnotism, lucid dreaming, Vedanta, hysteria and automatism.

What was the continuing legacy of 19th-century approaches to mind and spirit? How did work at the fringes of psychiatry and psychology intersect with minds sciences that consolidated their authority during the mid-20th century? What are the key interactions between European, North American and non-Western sources? How did investigations cross the borders between arts, sciences, religion, education and the military?

Priority will be given to submissions that show potential for sparking discussion across disciplinary boundaries, and are accessible to a non-specialist audience.

We are especially keen to hear from women contributors, and those whose work extends beyond British and North American contexts.

Please send a talk summary of approx 300 words and author bio of approx 50 words to: altconsc@qmul.ac.uk by 14th June 2013. Speakers accepted onto the programme will have 20 minutes to speak.

This event is generously supported by: the British Society for the History of Science, and the Faculty of Humanities and Social Sciences, the Centre for the History of the Emotions, and the School of English and Drama at Queen Mary, University of London.

Report - Bragg Day
University of Leeds, 23rd March 2013

Why is blood red, why is grass green, and why does water boil at 100 degrees C? The answer to all three questions, according to the Nobel Laureate Max Perutz, lies in the molecular structures revealed by X-ray crystallography. To mark the centenary of the development of this groundbreaking method in 1913 by the Leeds-based physicist Sir William Bragg and his son Lawrence, the University of Leeds hosted a series of events at the end of March inspired by their work.

A day of public lectures was chaired by Claire Jones and Emily Winterburn of the Museum of the History of Science, Technology and Medicine at Leeds and began with a welcome by Tony North, Emeritus Astbury Professor of Biophysics. A series of lively and engaging talks then explored the discovery of X-rays, how the Braggs applied them to the study of crystal structure leading ultimately to the birth of molecular biology, and how their work is now currently applied across a broad range of scientific disciplines including geology, chemistry, materials science, biology and medicine.

The lectures throughout the day was a series of related practical activities including demonstrations of how a simple net curtain can give diffraction effects and an exploration of the mathematical ideas underlying symmetry in crystal structure by making three-dimensional solids from 2D patterns. On display was William Bragg’s X-ray spectrometer, induction coil and vacuum tube, as well as the homemade X-ray camera with which his protégé William Astbury later pioneered the study of biological fibres. Regular demonstrations of how DNA can be easily extracted from strawberries (using only washing up liquid, table salt and ice-cold rum) then showed how Astbury’s X-ray studies of wool fibres for the local textile industries in Leeds led to the very first studies of the structure of nucleic acids.

By the end of the day, members of the public who braved the arctic conditions had been given a fascinating insight into the Braggs’ work, the importance of which was reflected in a recent online poll conducted by the Science Museum in which X-ray crystallography was voted the third most important British scientific innovation of the past 100 years.

Hands-on activities for young and old at the Bragg centenary celebrations. Photograph by Mark Webster, courtesy of University of Leeds.
The Viewpoint Interview

Charlotte Sleigh is Reader in the School of History at the University of Kent, and chair of the BSHS Communications Co-ordination Committee.

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

A mixture of push and pull: some terrible science teaching at university (I started out as a biology student) combined with, actually, a fascination with the philosophy of science. I got into the logical rigours of phil. sci. before I began also to appreciate the human complexities of history. Peter Lipton’s lectures were just brilliantly clear and compelling, guiding students through the challenges of epistemology. It’s been a long and slightly surprising journey. I loathed history at school and yet I am now employed in a history department. It is my guilty secret from colleagues that I don’t have a history A-level or even GCSE. At school I was one of those kids who was torn between arts and sciences and I remember someone telling me ‘well if you go to do science at Cambridge, you can always opt for the history of science’ – and specifically thinking, ‘wow, that sounds like the dullest thing ever’.

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

Novelist. Another guilty secret: e-publication of effort #1 (a black comic tale of an art-heist gone wrong in pre-crash London). Effort #2 is in progress – an attempt at something more serious, with a pinch of historical science thrown in …

Which historical person would you most like to meet?

That’s always a tricky question. If it’s a way of asking ‘who’s your hero?’, then I might say J. D. Bernal. But then there’s the question of whether one is supposed to enjoy the encounter or not. How am I supposed to know whether we’d get on? Or is the choice supposed to reveal some mystery, to see what someone was ‘really’ like? On balance, I’m going to say ‘my maternal grandfather’ as he was by all accounts a lovely man but died before I was born. That way I avoid the historiographical errors inherent in the personalization of science.

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

Eating with the children, I find that Horrible Histories are the most frequently told.

What has been your best career moment?

Gathering a bunch of very cool and clever PhD students at the University of Kent. More fun than undergraduate teaching or publication.

And worst?

The first article rejection by a journal. Oh, the pain.

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

For all the objectionableness of the rhetoric about the economic value of the humanities, a movement towards public engagement and social purpose has to be a good thing. Nor is it a bad idea to interrogate what the nature of our value is. It’s not feasible or desirable to maintain the notion that liberal knowledge somehow diffuses out into society and is Good For It. This always strikes me as a sort of cultural version of the etheric model. So: engagement with museums and mass media is all to the good, as is active involvement in public debates. And we shouldn’t be afraid of, or snobbish about, populist accounts. Academically rigorous history of science is sustained on this base just as elite classical music is built on an indispensable foundation of amateur participation of varying quality.

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

I think the post-70s paradigm is running its course, and though its methodologies are still good we don’t want to get stuck in a rut, picking ever more obscure case studies and telling them only to each other. For my money, it’s engagement with science communication that’s the way forward (hence, our masters course at Kent Science, Communication and Society, which is a hybrid of sci. comm. and hist. sci.). We have a story to tell, or an angle on stories, for scientists and science communicators. And we also have to get over our strange distance from science itself. Literary scholars by and large love the texts that they choose to study. Can historians of science admit to a (qualified) love of science? Doing so might help us gain entry to some of the important debates. We can start to use our skills and our insights to have an impact on science and its places in the contemporary world. In short: more personal, and more political.
The British Journal for the History of Science

The June 2013 issue will include:

C.R.C. Baxfield, “’To mend the scheme of Providence’: Benjamin Franklin’s electrical heterodoxy’

Leslie Tomory, ‘Fostering a new industry in the Industrial Revolution: Boulton & Watt and gaslight 1800–1812’

Michael Rectenwald, ‘Secularism and the cultures of nineteenth-century scientific naturalism’

Michael Heffernan & Heike Jöns, ‘Research travel and disciplinary identities in the University of Cambridge, 1885–1955’

Jonathan D. Oldfield & Denis J.B. Shaw, ‘V.I. Vernadskii and the development of biogeochemical understandings of the biosphere, c.1880s–1968’

Robert Bud, ‘Life, DNA and the model’

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Viewpoint: the Magazine of the BSHS

Contributions
All contributions and correspondence should be sent to the Editor, Dr Melanie Keene, Homerton College, Hills Road, Cambridge, CB2 8PH; 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 October 2013 and the deadline for copy is 15th August 2013.

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