

## Review: *Seven Ages of Science*, BBC Radio 4

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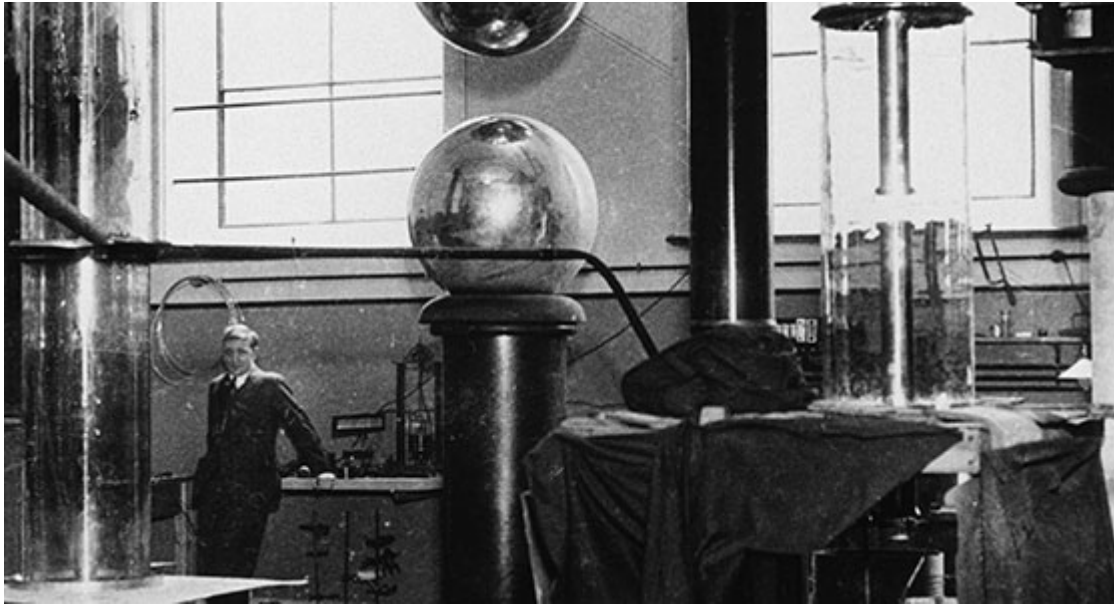
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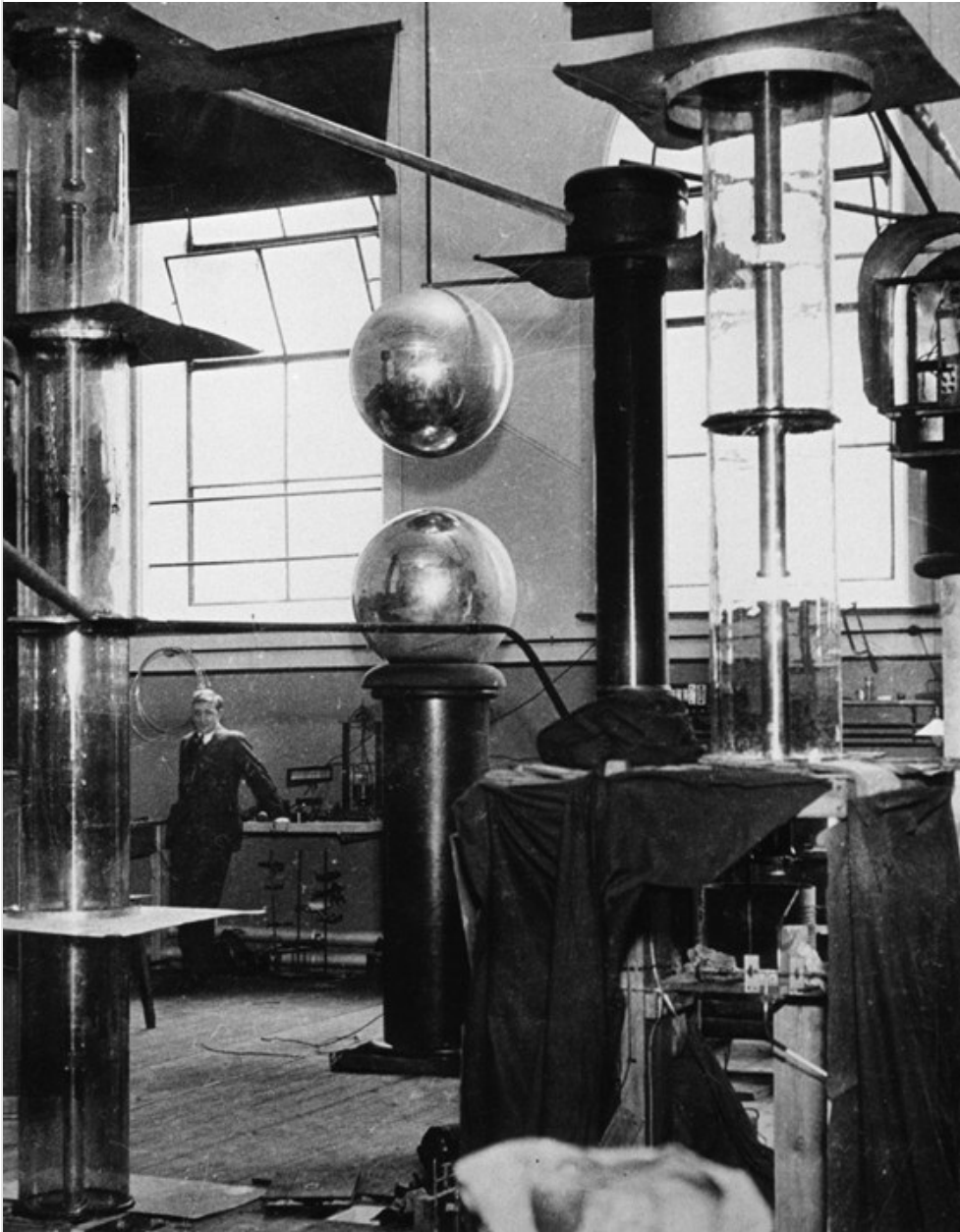


### Review: 'Seven ages of science'

First broadcast last year, BBC radio's series *Seven Ages of Science*, presented by Lisa Jardine and produced by Anna Buckley, takes the well-used but arbitrary concept of 'seven ages' to structure an exploration of the history of science in Britain from the end of the 17th century until today. The 'ages', treated in seven half-hour episodes, are not all equal in length of period or breadth of coverage, but all allow Jardine to explore concepts that have been central to academic history of science in recent decades. It is a series not simply about the people who carried out experiments, observations and calculations, but one that puts them in their context and demonstrates the relevance of politics, economics, craft skills, education, warfare, imperialism, religion, spectacle, technology, aesthetics and geography to the development of scientific knowledge.

The seven episodes are: 'Age of Ingenuity' (London and the Royal Society at the end of the 17th century), 'Age of Exploration' (18th-century botany, exploration and empire), 'Age of Opportunity' (the Industrial Revolution, Wedgwood and the Lunar Men), 'Age of Inspiration' (19th-century science's big ideas, from electromagnetism to evolution), 'Age of the Lab' (the creation, from the end of the 19th century, of distinct spaces in which science happens), 'Age of War' (the impact of both world wars) and 'Age of Now'. As coherent characterisations, some of these are more satisfactory than others. Ingenuity and inspiration, at least, might apply to almost any period, while the rise of the research laboratory and response to war are significantly more focused concepts (see Figure 1).

**Figure 1**



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The Cavendish Laboratory at Cambridge University, 1932

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However, over the whole, Jardine convincingly builds up a set of developments that lead her to a picture of what science has become in the 21st century.

There are, inevitably, gaps and biases, reflecting the interests of Jardine, her contributors and existing literature. (Recent books aimed at a Radio 4-listening public – for example Patricia Fara’s *An Entertainment for Angels and Sex, Botany and Empire*, Richard Holmes’s *The Age of Wonder*, Jenny Uglow’s *The Lunar Men* and Graham Farmelo’s *Churchill’s Bomb* – seem to have been behind many of the choices made, and not only because these authors were significant contributors on air.) One example is that 18th-century astronomy is represented only by William Herschel, echoing Holmes’s account of Herschel exploring the skies in analogy with Banks’s botanical collecting in the South Seas. This ignores the much more dominant project of positional astronomy, which was directly allied to voyages of exploration and survey. The ‘shift in emphasis’ from mathematics and

mechanics to collecting and classifying that Jardine identifies at the beginning of this episode is more of a shift of disciplinary focus than a change over time. That the series is 'a personal view' is particularly clear in the first episode, with its focus on Robert Hooke, Jardine's declared 'personal hero'. This is also the only episode that Jardine suggested renaming. Buckley had originally suggested 'Age of Experiment', but by broadening the title Jardine is better able to present her view of Hooke and of the importance of artisans and instrument-makers to experimental philosophy in Restoration London (see Figure 2).

**Figure 2**



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Wedgwood mortar and pestle

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However, such choices and lacunae are inevitable. What is enjoyable is that the topics covered are supported, and indeed defined, by expert contributors. Few radio and TV documentaries give this kind of power to the experts, and it was in appreciation of this that I [reviewed the first episode](#) on my blog at the Guardian's website. It is a welcome counterbalance to the many other documentaries that touch on history of science. Usually fronted by scientists rather than historians of science, they often focus on heroic individuals and great discoveries and too often prefer to maintain a neat, triumphalist story than to take on board the experts' more nuanced or less positive accounts. Although not deliberately contrasting with the superficially similar [Science Britannica](#), fronted by physicist Brian Cox and broadcast on BBC2 from 18 September to 2 October 2013, Jardine clearly puts forward the historian's preferred version. It is about collaboration not lone geniuses, about more ordinary skills and talents as well as the extraordinary, and about the contexts and wider culture that shape science rather than the insistence that it is simply curiosity-driven science and technology that 'changed the world'.

Although the voices of scientists and science writers become more prominent than those of historians over the course of the series, Jardine is in control of the message of the whole (although it would have been interesting to hear some of the historian contributors commenting on 'Age of Now'). Given that the series is so clearly historical it seems strange that this, like most other history-of-science documentaries, is presented only as science broadcasting. The BBC website categorises the series as 'Science & Nature' and not 'History', when presumably the online environment means it could easily be tagged as both. It seems a missed opportunity not to suggest to those interested in history documentaries that they might enjoy this too, particularly as

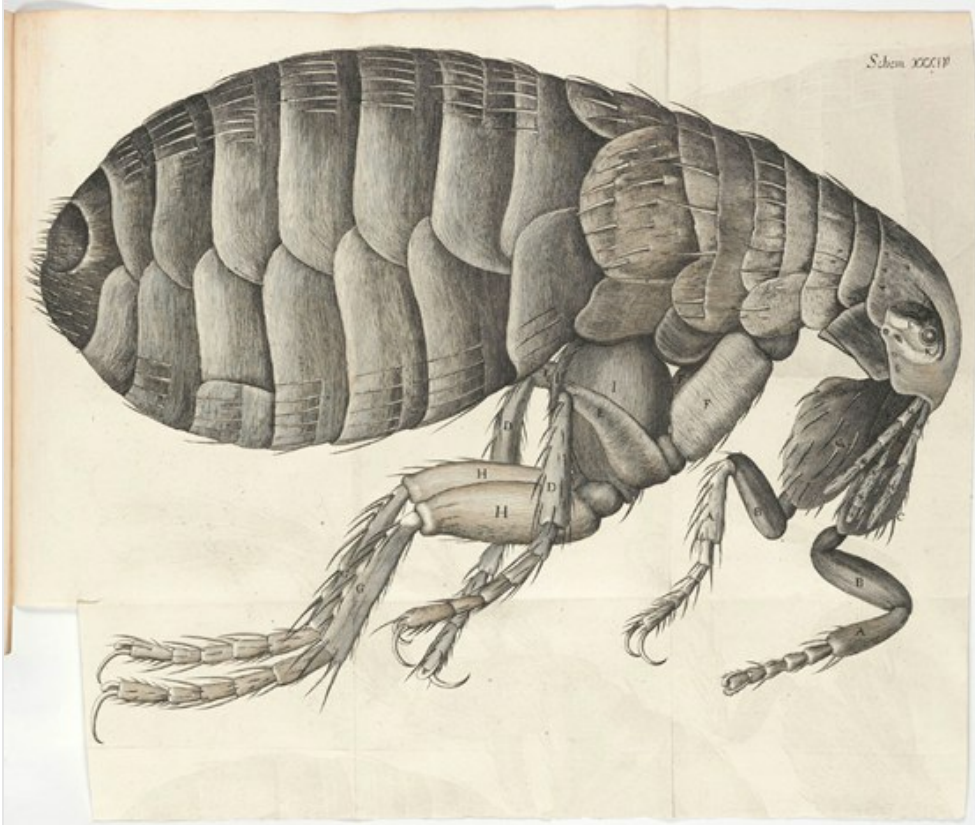
at least part of Jardine's message is aimed at those who might usually be uninterested in science.

The overarching narrative is, indeed, prompted by Jardine's insistence that the concerns of scientists are 'the concerns of us all' (Episode 7). It shows the context in which scientific knowledge is produced, in part to say that scientists are no different from ourselves and that science is shaped by the concerns of the time and place in which it happens, but also to convince us to pay attention to and have opinions about what science is done today. In the story of how modern science and the scientific career assumed their current shape, Jardine's particular concern is that science is viewed as separate and, taking place in locations that are out of the public gaze, has been made mysterious. She insists that, even in the 'Age of Now' and whatever the assumptions or appearances, science is by no means a separate sphere and that it is, as ever, defined by politics, broader culture and the interests of those who can afford to pay for it. The science of today is a product of all the previous ages, with its questions as always defined by current needs, desires and problems. Her suggestion that citizen science projects and open-access publishing may allow wider involvement 'once more' seems over optimistic, but the call for widening participation, and sources of funding, is welcome.

Despite there being no lone geniuses, there are plenty of featured individuals. Although many of them are the usual suspects (Hooke, Herschel, Banks, Watt, Davy, Faraday, Maxwell, Crick), there are other less well-known names (Thomas Tompion, James Keir, Thomas Beddoes, Lise Meitner and Dorothy Hodgkin being just a few examples). Jardine and Buckley early made a decision to ensure they featured a significant number of women, both as contributors and as subjects. Finding the former, happily, proved simple according to Jardine, and women make up a high proportion of the expert voices, but it is inevitably a more difficult business to bring women into accounts of pre-20th-century science. Mary Anning is there but, for the period before women began to have educational opportunities, they are otherwise more typically present as members of the Royal Institution audience. It is to be celebrated that this aspect of science has so radically changed.

Whatever the story, we get a sense of Jardine's personal enthusiasm. It may not be scholarly, but having heroes and favourites works well in a radio programme. The interaction between Jardine and her expert contributors is also a pleasure to hear, sounding like real conversation and giving a sense of the moment. This is reinforced by recording on location, whether at the Royal Society (where we almost feel as if we too can see Hooke's *Micrographia* - see Figure 3), the Natural History Museum, the Wedgwood Museum, the 'super-size scientific instrument' that is the Monument (Episode 1) (see Figure 4) or the 'little gem' (Episode 2) that is the Chelsea Physic Garden. As well as an auditory change – echoes, conversation sparked by things physically there before the speakers – the locations often mean bringing in the voices of curators and their expertise. Above all, being on location emphasises the fact that place, space and material objects matter in science.

Figure 3



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Illustration of a flea from Robert Hooke's *Micrographia* (Plate XXIV), 1665

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Figure 4



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The Monument to the Great fire of London by Robert Hooke, City of London

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It is wonderful to have this series as a permanent resource, which I will be encouraging my students to download. The internet, of course, allows for more than just storage of the original broadcasts. Jardine joined Twitter (@ProfLisaJardine) around the time that the series was broadcast, which gave the opportunity for discussion and led to history-of-science blogger Thony

Christie interviewing her about the process of making the programmes – this can be read on [his Wordpress site](#). He posed some interesting questions about the creative process and the relationship between the writer/presenter, producer, experts and BBC editors. Jardine admitted that she and Buckley had ‘some stupendous fights in the course of brainstorming each programme’, as well as agreements and breakthroughs, so that, despite some editorial diktats, ‘these programmes are – as I believe all the best intellectual products are – the outcome of really strenuous thinking, researching and debating between two of us’. All of which was, we might think, well worth the effort.

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