Part of the culture

Magazines and journals reveal how the Victorians viewed science.

Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature

by Geoffrey Cantor, Gowan Dawson, Graeme Gooday, Richard Noakes, Sally Shuttleworth & Jonathan R. Topham
Cambridge University Press: 2004. 346 pp. £45, \$75

Science in the Nineteenth-Century Periodical: An Electronic Index

www.sciper.org

Culture and Science in the Nineteenth-Century Media

edited by Louise Henson, Geoffrey Cantor, Gowan Dawson, Richard Noakes, Sally Shuttleworth & Jonathan R. Topham
Ashgate: 2004. 322 pp. £47.50, \$84.95

Science Serialized: Representations of the Sciences in Nineteenth-Century Periodicals

edited by Geoffrey Cantor & Sally Shuttleworth
MIT Press: 2004. 376 pp. £25.95, \$40

Aileen Fyfe

In 1829, the historian Thomas Carlyle noted that “every little sect among us, Unitarians, Utilitarians, Anabaptists, Phrenologists, must have its Periodical”. By the end of the century, periodical publishing had expanded dramatically: there were more titles, appearing more frequently, and reaching ever greater audiences. Periodicals were the closest Victorian Britain got to the mass media.

In 1999, the Science in the Nineteenth-Century Periodical (SciPer) project was established at the universities of Leeds and Sheffield to investigate the ways in which the sciences were discussed and represented in this important medium. Scientific journals had already been well studied, thanks to their importance as a means of communicating new research between members of the scientific community. Instead, the SciPer team decided to study generalist publications, ranging from such well known literary journals as *The Cornhill Magazine*, to *The Wesleyan-Methodist Magazine*, the comic journal *Punch* and even *The Boy's Own Paper*. These sorts of publications were widely read both within and outside the scientific community. Studying them is the equivalent for the nineteenth century of thinking about how modern science is portrayed on television and radio, and in the press. Such studies can tell us a vast amount about what non-scientists think of science and its practitioners.

The SciPer project is now coming to a close, and the annotated electronic index of the scientific references, allusions and commentaries in 16 generalist periodicals

A bright new age: an 1889 *Punch* cartoon said women should shade themselves from electric lights.

has just been published. Researchers can not only locate reports of Michael Faraday's lectures, or reviews of Charles Darwin's *On the Origin of Species*, but also uncover references to their favourite scientific topics buried deep within short stories, satirical poems, travelogues and articles on other unrelated areas. As well as the electronic publication, the SciPer team has also published a volume of essays, *Science in the Nineteenth-Century Periodical*, that discusses the representation of the sciences in the 16 periodicals that they have studied in depth over the past six years. They have also edited two volumes of conference proceedings, *Culture and Science in the Nineteenth-Century Media* and *Science Serialized*.

The conference proceedings illustrate Carlyle's point about the sheer variety of nineteenth-century periodicals, and show that science crops up in all sorts of unexpected places. Yet they also demonstrate the current approach of most historians to using periodicals: with some notable exceptions, it tends to be a case of turning to the highbrow reviews in search of reactions to particular scientific books, and using the literary weeklies to track the reporting of scientific meetings and discoveries. It is a bit like trying to write about science in twentieth-century culture by analysing the *London Review of Books* and the output of BBC Radio 4. Thus, *Science in the Nineteenth-Century Periodical* serves to remind us of the existence of many other sorts of periodical. To get a full picture

of the myriad ways in which science appears in the public arena, we would need to look not just at the *London Review of Books* but also at *Good Housekeeping*, *The Tablet* and *Private Eye*.

There is no doubt that the electronic index will be very helpful to all those hoping to unearth intriguing snippets of science in unlikely places, such as descriptions of Charles Babbage's designs for a calculating engine in *The Wesleyan-Methodist Magazine*, instructions on making your own optical toys in *The Boy's Own Paper*, and the intriguing political messages that *Punch* conveyed through an illustration referring to an 1868 solar eclipse in India. Nonetheless, the essays in *Science in the Nineteenth-Century Periodical* — and especially the well written and thought-provoking introduction — urge us to consider the context in which those snippets were found. A report on a new medical breakthrough in *Private Eye* is likely to serve quite a different purpose from a mention of the same development in *Good Housekeeping*. The SciPer essays demonstrate, for instance, how *The Wesleyan-Methodist Magazine* was a different sort of publication from *The Review of Reviews*, and how those differences of editorial policy, intended audience and internal format profoundly affected the ways in which the sciences could be reported, debated or criticized in each periodical.

Those who believe that we now live in a world with 'two cultures' — science and the

arts — often see the origins of this situation in the late nineteenth century. As science became more specialized, its practitioners more professionalized and its language more technical, it is often thought to have become separated from the rest of culture. *Science in the Nineteenth-Century Periodical* shows that this is not an accurate picture of what was going on, and must make us question whether it holds for the twentieth century either. True, there were increasing numbers of specialist science journals, but there were increasing numbers of specialist journals in every other field of endeavour too. It isn't true that the sciences disappeared from generalist publications in the late nineteenth century, nor that the science which did appear there was "mere popular science".

Men of science continued to be part of an intellectual community that debated the issues of the day in the highbrow journals. *Science in the Nineteenth-Century Periodical* reveals that some new areas of science were actually pioneered in generalist periodicals before they were picked up by the scientific community. For example, theories of infant development were being discussed in *The Cornhill Magazine* at a time when most men of science would have scorned to enter the female domain of the nursery.

The SciPer project is not just about the popularization of science. Studying the sciences over the whole range of the nineteenth-century periodical press allows us to witness crucial debates about the formation of disciplines. Sometimes the pages of periodicals reveal constructive interplay between experts in two fields that we would now consider quite remote. At times they reveal non-scientific intellectuals appropriating a scientific theory for an intriguingly different purpose. Occasionally, a new theory or approach is presented that will later be incorporated into science, such as the case of infant development. And sometimes experts or journalists explain science to audiences who might not understand all the technicalities — but that is only one small part of the discussion of science in those periodicals.

The rhetoric of 'popular science' or of the 'public understanding of science' is very much a concern of a world where we can see a clear demarcation between 'science' and 'non-science'. But in the nineteenth century, there was still an enviable mixing and cross-fertilization between seemingly disparate subjects, and there was no clear consensus on what counted as science — let alone on how a 'public' understanding might differ from any other sort of understanding. Consensus was eventually reached, not in the pages of the specialist scientific journals, but in the pages of the generalist periodical press. ■

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SciPer project

▶ www.sciper.leeds.ac.uk

Enrico Fermi (left) probed the structure of nuclear particles with the Chicago synchrocyclotron.

Fermi's legacy

Fermi Remembered

edited by James W. Cronin

University of Chicago Press: 2004. 296 pp. \$45

Enrico Fermi: His Work and Legacy

edited by Carlo Bernardini & Luisa Bonolis

Springer: 2004. 380 pp. £30.50, \$49.95, €39.95

Giulio Maltese

Enrico Fermi was one of the most influential physicists of the twentieth century. He was born in Rome in 1901, and became Italy's first professor of theoretical physics, aged just 25, at the University of Rome. He created some of the cornerstones of modern theoretical physics, such as the Fermi-Dirac statistics, which explain the quantum behaviour of electrons, protons and neutrons, and the theory of beta decay, a radioactive process in which certain nuclei emit electrons or positrons. He also discovered the artificial radioactivity caused by neutron bombardment, and was awarded a Nobel prize in 1938 for his discovery of the properties of slow neutrons.

That same year he fled Italy to escape the racial laws, which affected his wife Laura, and the poor research conditions. He accepted an appointment at Columbia University in New York, where he continued his research on neutrons. In 1942 he moved to the University of Chicago, where he achieved the

first self-sustained nuclear reaction. Two years later he went to Los Alamos to help construct the first nuclear bomb.

On his return to Chicago after the war, he founded the most important school of physics in the world: many of its students were to be outstanding figures in physics in the second half of the century. He also came back to theoretical and experimental physics, achieving important feats in both fields, such as the idea of the compound pion — that pions are composed of a nucleon and an antinucleon — and the hint of the first pion-nucleon resonance, obtained with the Chicago synchrocyclotron, which came into operation in September 1951.

In 2001, to commemorate the centenary of his birth, celebrations were held in both Italy and Chicago. The University of Chicago organized a symposium, and this led to the book *Fermi Remembered*. The book contains recollections from some of Fermi's colleagues, a description of Fermi's impact on physics, and some well selected material from the Fermi archives in Chicago. It opens with a biographical sketch by Fermi's former student Emilio Segrè, first published in Fermi's *Collected Papers*. Also intriguing is the correspondence between Fermi and Leo Szilard in 1939 describing the genesis of some fundamental ideas about the chain reaction. Fermi's own account of those years is reprinted from *Collected Papers*. The book also includes letters and documents from the postwar years concerning scientific, political and personal topics, giving insights into Fermi's character and into his scientific