

Newsletter of HOPOS, The International Society for the History of Philosophy of Science

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From the Editor

This issue of the Newsletter breaks all past records for publication delays. Perhaps the delays can be justified by the significant news regarding our organization.

On the heels of our most successful conference so far—in Montréal this past June—HOPOS has taken leaps and bounds in its maturation as a scholarly society. A first step, which the reader may notice from the Newsletter masthead, is that the organization's name has changed to HOPOS, the International Society for the History of Philosophy of Science (we are a Working Group no more). A second step is that we have adopted more thorough by-laws to help govern our organization. These can be viewed in detail on the HOPOS website, but a central theme guiding the new by-laws is that we will be operat-

ing in a more regular and organized fashion—not to say rigidly!—much like our sister scholarly societies, such as PSA and HSS.

These changes have been pursued to help the progress of HOPOS towards status as an independently incorporated non-profit entity. That status is the next step in our evolution, and is currently being sought. The rationale for all these changes is that we have, over some ten years, grown as a scholarly society to the point where our own expectations and aspirations—and those expressed by others—demand the full-blown apparatus of a mature and legally incorporated organization. We are confident that none of this will diminish the informal culture of our group. Indeed, in this transitional period, as always, the input of the broad HOPOS family is critical.

The breadth of our group is evident in this issue of the Newsletter, which features a regional map of HOPOS-related resources in Scotland (by Andrew Aberdein), and reviews of books on Kant's *Opus postumum* (Eckart Förster's collection of essays, reviewed by Eric Palmer), Tycho Brahe's scientific enterprise (Robert Christianson's volume, reviewed by Pawel Kawalec), foundations of QM (W. Michael Dickson's volume, reviewed by Steven French), and Gödel's thought (André Delessert's volume, reviewed by Jean-Pierre Belna).

Finally, readers may note that the next elections under our new structure require dues-paying membership to cast an eligible ballot. Please join HOPOS 'officially' to ensure your full participation!

Best,
Saul Fisher



San Francisco Selected for HOPOS 2004 Meeting

The Fifth Congress of HOPOS, the International Working Group in History of Philosophy of Science, will be held in San Francisco, California (USA) in June or July 2004.

The congress will be held at the University of San Francisco, in

cooperation with Stanford University and the University of California, Berkeley. The conference is open to scholarly work on the history of philosophy of science from any disciplinary perspective. A detailed call for papers and conference

dates will be available soon, on the HOPOS-L mailing list.

David Stump
University of San Francisco
HOPOS 2004
Local Organizing Committee



News of the profession.

Call for Reports.

The Newsletter features occasional, concise reports on conferences of interest to HOPOI. If you are interested in writing such reports, please contact the Editor.

Seminars, Conferences, and Colloquia.

- March 11-May 27, 2003
Université de Paris 7
Scientific Knowledge: Epistemology, History of Science, and Disciplinary Didactics
Weekly seminar of Dominique Lecourt. For information, contact diderot@club-internet.fr.
- March 15-16, 2003
Virginia Tech, VA
Galileo in Blacksburg
For information, go to <http://www.phil.vt.edu/ariew/galileo.htm>.
- March 21-23, 2003
University of Missouri, St. Louis, MO
5th Annual St. Louis Philosophy of Social Science Roundtable
For information, go to <http://www.umsi.edu/~phil/roundtable.htm> or contact James Bohman (bohmanjf@slu.edu).
- March 26-28, 2003
Maison des Sciences de l'Homme, Paris
Colloquium: Philosophy of Nature Today?
For information, contact Joseph Kouneiher (kouneiher@paris7.jussieu.fr) or go to <http://www.sigu7.jussieu.fr/hpr/colloque.html>.
- March 27, 2003
History of Science Department, University of Aarhus, Denmark
Workshop on the history of science in public culture

For information, go to <http://www.ivh.au.dk/sciencepopularisation> or contact Anita Kildebaek Nielsen (ivhagn@ivh.au.dk).

- March 27-29, 2003
Clare College, Cambridge, UK
Conference on Platonism at the Origins of Modernity
Sponsored by the British Society for the History of Philosophy. For information, go to <http://www.open.ac.uk/Arts/bshp/fconfs/plato/plato.htm> or contact David Leech (dl240@cam.ac.uk).

- April 2-3, 2003
Institut Henri Poincaré, Paris
Conference on Method in Mathematics
Sponsored by the Institut de Recherche sur l'Enseignement des Mathématiques, Université Paris VII. For information, go to <http://www.ccr.jussieu.fr/irem/Paris7/> or contact Michel Serfati (serfati@math.jussieu.fr).

- April 6-10, 2004
Interdisciplinary Centre for European Enlightenment Studies, Martin Luther Universität Halle-Wittenberg, Germany
Conference on Christian Wolff & the European Enlightenment
For information, go to <http://www.izea.uni-halle.de> or contact Juergen Stolzenberg (wolffkongress@izea.uni-halle.de).

- April 11-13, 2003
Center for the History and Philosophy of Science, Johns Hopkins University, Baltimore, MD
Conference on Scientific Evidence
For information, contact Peter Achinstein (peter.achinstein@jhu.edu) or go to <http://www.jhu.edu/~phil/center/conference.html>

- April 12-13, 2003
American Association for the Advancement of Science, Washington, DC
Graduate Student Conference

on the Local and the Global: Contexts in Science and Technology

For information, go to <http://www.gwu.edu/~cistp/stg/obal.html> or contact David Bruggeman (dbrugg@vt.edu).

- May 1-4, 2003
Bjerringbro, Denmark
1st Nordic post-graduate workshop in History of Science and Technology
For information, go to <http://www.ivh.au.dk/nordicworkshop>.

- May 5-6, 2003
REHSEIS and IHPST, Paris
Conferences on Measurement in the 19th Century and Today
For information, contact Anouk Barberousse (barberou@philosophie.ens.fr).

- May 17, 2003
CNAM, Paris
Annual General Assembly, Société Française d'Histoire des Sciences et des Techniques
For information, contact Anne Bonnefoy (anne.bonnefoy@pictascience.org).

- May 18, 2003
University of Western Ontario, London, ON, Canada
4th Annual Graduate Conference in Logic, Math, and Physics (in conjunction with the 8th Annual Conference in Contemporary Issues in Philosophy of Physics—May 17, 2003)
For information, go to <http://www.uwo.ca/philosophy/lmp>

- May 24-25, 2003
Johns Hopkins University, Baltimore, MD
Mid-Atlantic Seminar in Early Modern Philosophy Inaugural Meeting
For information, contact Sean Greenberg (sgreenb@jhu.edu).

- May 29-31 2003
Halifax, Nova Scotia
Annual conference of the Canadian Society for History and Philosophy of Science
For information, go to <http://www.ukings.ns.ca/cshps/> or contact Jean Leroux

(jleroux@uottawa.ca).

- June 1-6, 2003
Vaxjo University, Sweden
International Conference on Quantum Theory: Reconsideration of Foundations-2
For information, go to <http://www.msi.vxu.se/aktuellt/konferens/Quantum.pdf> or contact cecilia.eriksson@msi.vxu.se.
- June 20-22, 2003
Milan (Italy)
Workshop on Migrant Scientists in the Twentieth Century
Sponsored by the Istituto di Fisica Generale Applicata of the Università degli Studi di Milano and Science Studies Group of the Universidad Nacional de Colombia. For information, contact Alexis De Greiff (alde@uniandes.edu.co) or Leonardo Gariboldi (leonardo.gariboldi@unimi.it).
- June 23-July 18, 2003
Virginia Tech, VA
NEH Summer Seminar: Leibniz and His Contemporaries
Directors: Roger Ariew and Daniel Garber. For information, go to <http://www.phil.vt.edu/ariew/neh.html>.
- June 23-July 25, 2003
University of Pittsburgh
NEH Summer Institute: Science and Values
Directors: Sandra D. Mitchell and Peter K. Machamer. For information go to <http://www.pitt.edu/~pkmach/valuesci.htm> or contact valuesci@pitt.edu.
- June 27-July 2, 2003
Lisbon & Coimbra, Portugal
** Colloquium on Common Sense and Scientific Knowledge*
Museu da Água and Museu e Jardim Botânico, Lisbon
** Colloquium on Savants, Voyages, Expeditions, and Institutions*
Faculty of Letters, Universidade de Coimbra
10th anniversary colloquia for the Exchange Network of the History and Epistemology of the Chemical and Biological Sciences (RIHECQB). For

(Continued on page 3)

Seminars, Conferences, and Colloquia.

information, contact

aleop@ci.uc.pt or go to http://www.triplov.com/ana_luisa/rotas_natura.doc.

- July 7-9, 2003
IHR, University of London
17th Summer Conference of the Institute of Contemporary British History: Science, Its Advocates and Adversaries
For information, contact Harriet Jones (hjones@icbh.ac.uk) or go to <http://www.ihrinfo.ac.uk/icbh/news/science.html>.

- July 7-10, 2003
Cumberland Lodge,
Windsor Great Park, UK
8th Annual Meeting of the International Society for the History of the Neurosciences and 9th Meeting of the European Club for the History of Neurology
For information, contact John T.E. Richardson (j.t.e.richardson@open.ac.uk) or go to <http://www.ishn.org>.

- July 14-27, 2003
Universität Wien (Vienna) and the Institute Vienna Circle
Vienna International Summer University / Scientific World Conceptions 2003: Biological and Cosmological Evolution
For information, contact Friedrich Stadler (friedrich.stadler@univie.ac.at) or go to <http://ivc.philo.at/VISU/>.

- July 16-20, 2003
Universität Wien (Vienna)
International Society for History, Philosophy, and Social Studies of Biology
For information, go to <http://www.phil.vt.edu/ishpssb> or contact Rob Skipper (skipperra@email.uc.edu).

- July 17-19, 2003
College of York St John, UK
British Society for the History of Science Annual Conference
For information, go to <http://www.bshs.org.uk/york2003>.

- July 17-19, 2003
Queen's University Belfast
British Society for the Philosophy of Science Annual Conference
For information, contact David Evans (jd.evans@qub.ac.uk).

- July 30-August 3, 2003
Winnipeg, Manitoba
Seventh International History, Philosophy and Science Teaching Conference
For information, contact Arthur Stinner (stinner@cc.umanitoba.ca) or go to <http://www.ihpst.org>.

- July 31-August 2, 2003
Wadham College, Oxford, UK
Knowledge and Reality: A Conference on Philosophy and its History in honor of Michael Ayers
For further information, contact Quassim Cassam (al-quassim.cassam@wadham.oxford.ac.uk).

- August 3-10, 2003
Los Angeles
XI International Congress on the Enlightenment
* *Roundtable on vision, perception, cognition*
For information, contact Paolo Quintili (quintili@lettere.uniroma2.it).
* *Session on Kant and biology*
For information contact Philippe Huneman (huneman@wanadoo.fr).

- August 7-13 2003
Oviedo, Spain
XII International Congress of Logic Methodology and Philosophy of Science
For information, contact Luis Manuel Valdés Villanueva (frege@correo.uniovi.es) or go to <http://www.uniovi.es/congresos/2003/dlmps/>.

- September 19-20, 2003
Université de Nantes and Fontenay-le-Comte
Colloquium on François Viète, Mathematician of his Times
For information, contact Evelyne Barbin (eve-lyne.barbin@wanadoo.fr).

- September 24-26, 2003
Paris, France
International meeting on Correspondence and History of Biology (18th-20th Centuries)
Jointly sponsored by the Centre Alexandre Koyré, Muséum National d'Histoire Naturelle, and Université Paris I-Sorbonne. For information, contact Josquin Debaz (correspondances@voila.fr).

- October 23-25, 2003
Montreal, Québec
Science (s) et Culture (s): 56th Annual Conference of the Institut d'histoire de l'Amerique française
Theme: construction of knowledge in social, political, intellectual, or material contexts, with a focus on history of science and medicine. Call for papers deadline is March 30, 2003. For information, contact Catherine Desbarats (catherine.desbarats@mcgill.ca).

- November 20-23, 2003
Cambridge, MA
History of Science Society 2003 Annual Meeting
Call for papers deadline: April 1, 2003. For information, go to <http://www.hssonline.org> or contact meeting@hssonline.org.

- July 19-30, 2004
Universität Wien (Vienna) and the Institute Vienna Circle
Vienna International Summer University / Scientific World Conceptions 2004: The Quest for Objectivity
For information, contact Friedrich Stadler (friedrich.stadler@univie.ac.at) or go to <http://ivc.philo.at/VISU/>.

- Summer, 2005
Beijing, China
22nd International Congress of the History of Science
Theme: Globalization and diversity: the diffusion of scientific and technical knowledge throughout history. For information, contact 2005bj@ihns.ac.cn or go to <http://www.2005bj.ihns.ac.cn>.

Memorial notes.

- Robert K. Merton (1910-2003)
Merton was author of *Science, Technology and Society in Seventeenth-Century England* (1938/1970), *Social Theory and Social Structure* (1949/1968), *On the Shoulders of Giants* (1965), *On Theoretical Sociology* (1967), and *The Sociology of Science* (1973), and other signal works in sociology of science — and other areas of empirical sociology and its foundations.

- Richard Jeffrey (1926-2002)
Jeffrey authored numerous works, including *The Logic of Decision* (1965), *Formal Logic, Its Scope and Limits* (1967/1981/1991), *Computability and Logic* (1974, with G. Boolos), *Probability and The Art of Judgment* (1992), and a last mss., *Subjective Probability: The Real Thing!* He taught at Stanford, CCNY, Penn, and Princeton, and UC Irvine. Jeffrey was AAAS member and PSA president (1999-2000). His webpage is at <http://www.princeton.edu/~baysway/VITA.html>.

- Pierre Souffrin (1935-2002)
Souffrin was a distinguished astronomer as well as historian of Galilean and 16th c science. Working at the Observatoire de Nice, he focused on Oresme's physics and 14th c scholastics before writing on Galileo. Souffrin's webpage is at <http://www.rc.obs-azur.fr/cerga/hdsn/Psouffrin/souffrin.html>, and a bibliography (1980-2001) is available at <http://www.dm.unito.it/sism/souffrin.pdf>.

- Robert Clifton (1964-2002)
For information, go to <http://www.pitt.edu/utimes/issues/35/020829/03.html>.

- George Molland (1941-2002)
Molland was honorary senior lecturer at the University of Aberdeen. His writings focused on Roger Bacon and late medieval and early modern mathematics and science. For information, contact Ben Marsden (b.marsden@abdn.ac.uk).

Jobs, Fellowships, and other Opportunities.

- *University of Leeds, UK Graduate Studentships*
Up to 4 studentships for the MA and PhD in HPS, starting Sept/Oct 2003; the deadline for application is February 28, 2003. For information, contact Josie Green

(phljog@leeds.ac.uk) or go to <http://www.leeds.ac.uk/students/schol.htm>.

- *History and Philosophy of Science Department, University of Pittsburgh Post in History and Philosophy of 17th C Science*
Beginning September, 2003, pending budgetary approval. For information, contact The Appointment Committee, Department of History and Philosophy of Science, 1017 Cathedral of Learning, University of Pittsburgh, Pittsburgh, PA 15260. Review of applications begins March, 2003.

- *Dept of Logic and Philosophy of Science, UC Irvine Tenured Professorship*
Post for distinguished researcher in one or more of these fields: logic; philosophy

of mathematics, logic, language, and mind; decision and game theory; philosophy of biology and physics; and general philosophy of science. For information, contact the Search Committee, LPS, UCI, 3151 Social Science Plaza, Irvine, CA 92697-5100, by March 15, 2003.

- *University of Pittsburgh Center for the Philosophy of Science Fellowships in Residence*
For one or two semesters; applications for 2004 Spring term are due March 15, 2003. For information, contact Jim Bogen (jbogen@pittl.edu).

- *Muséum National d'Histoire Naturelle, Paris Research Travel Grants*
EU funds provide access to European (and associated states) researchers for short research visits (up to a month) involving the collections and resources in Paris. This program covers the period from April, 2002 to June, 2004. For information, go to <http://www.mnhn.fr/colparsyst/index.html>.

- *Max Planck Institute for the History of Science, Berlin Postdoctoral Fellowships*
(September 2003-August 2005)
Two-year postdoctoral fellowships in connection with the "Knowledge and Belief" project (with Lorraine Daston). For information, go to <http://www.mpiwg-berlin.mpg.de/knowledge>.

- *Erasmus Institute for Philosophy and Economics Graduate program*
Students are invited to apply for the graduate program in philosophy and economics. For information, contact Loes van Dijk (vandijk@fwb.eur.nl) or go to <http://www.eur.nl/fw/philecon/>.

- *NSF STS Funding*
The NSF STS program welcomes proposals for its various programs which include STS Scholars Awards, Collaborative Research grants, Postdoctoral Fellowships, Professional Development Fellowships, Doctoral Dissertation Improvement Grants, Small Grants for Training and Research, and support for Conferences and Workshops. The program has two

target dates for submission of proposals every year; the next date is August 1, 2003. For information, look at NSF announcement 01-159 (STS Program home page) at <http://www.nsf.gov/sbe/ses/sts/start.htm>.

- *Facoltà di Lettere e Filosofia, Università degli Studi di Urbino, and Centro interuniversitario di ricerca in Filosofia e fondamenti della fisica Masters in Philosophy of Physics*
This Masters degree starts in the current academic year. For information, contact philos@uniurb.it or physica@infinito.it or go to <http://www.uniurb.it/Filosofia/icephy/index.htm>.

- *Institute for Science & Technology Studies, Bielefeld University Graduate Program Fellowships*
The Institute is offering doctoral and postdoctoral fellowships. For information, contact Justus Lentsch (justus.lentsch@web.de) or go to <http://www.uni-bielefeld.de/iwt/gk/WS02-03/Ausschreibung.htm>.

Electronic and other Scholarly Resources.

- An online bibliography of medieval Islamic mathematics, restricted to works published since 1950 in western European languages, is available at <http://facstaff.uisi.edu/~oaks/Biblio/Intro.htm>.

- Italian philosophical theses and dissertations (for the laurea and dottorato) online—a project of SWIF, entitled Tesi Filosofiche Online, is available at <http://www.swif.it/tfo>.

- The International Commission for the History of Mathematics is creating a database of

mathematics historians; to help populate the database, go to <http://www.math.uu.nl/ichm>.

- A new website provides most writings of Charles Darwin in citable form, at <http://pages.britishlibrary.net/charles.darwin/>.

- New web-based texts of interest to Hopoi are now available from the French digital publisher Vigdor. For information, go to <http://www.vigdor.com>.

- The Centre d'Histoire des Sciences et des Philosophies

Arabes et Médiévales website is located at <http://www.chspam.vjf.cnrs.fr>.

- The Institut Jean Nicod has created an online archive of over 100 essays and articles by its resident researchers, at <http://jeannicod.ccsd.cnrs.fr>.

- The new PSA website is available at: <http://philosophy.wisc.edu/psa>.

- The Rose Rand Collection at the Archives of Scientific Philosophy. The papers of Rose Rand (1903-1980)—student member of and participant in the Vienna Circle (1930-1935)—are now accessible to

researchers at the Archives of Scientific Philosophy, Special Collections Department, University of Pittsburgh Library System. For information, go to <http://www.library.pitt.edu/libraries/special/asp/archive.html>.

- The University of Durham Philosophy Department has an electronic mailing list for the study of history and philosophy of science and medicine in the North of England and Scotland. For information, go to <http://www.dur.ac.uk/m.d.eddy/HPSMHomepage.html>.

Books, Publication Series, and Journals.

- Commission Inter-IREM Histoire et Epistémologie des mathématiques, Acts of the Rennes Conference on 4000 Years of Mathematics History (May 2000). For information, contact J-P Escofier (jean-pierre.escofier@univ-rennes1.fr).
- David B. Malament (ed.), Reading natural philosophy: essays in the history and philosophy of science and mathematics. Chicago and La Salle: Open Court, 2002. For information, go to <http://www.opencourtbooks.com>.
- Ernest Hook (ed.), Prematurity in Scientific Discovery: On Resistance and Neglect. University of California Press, 2002. For information, go to <http://go.ucpress.edu/prematurity>.
- Olaf Breidbach & Dietrich von Engelhardt (ed.), Hegel und die Lebenswissenschaften. Berlin: Verlag für Wissenschaft und Bildung, 2002. For information, go to <http://www.vwb-verlag.com/Katalog/m484.html>
- Pierre Wagner (ed.), Philosophes et la science. Paris: Gallimard, 2002. For information, go to <http://www.gallimard.fr/>.
- Ian Hacking's The Emergence of Probability is available in French translation with new preface by Hacking, from Editions du Seuil.
- The first volume of the critical edition of D'Alembert's "Oeuvres complètes", volume 6 (series I), is now available: Premiers textes de mécanique céleste, 1747-1749 (Michelle Chapront-Touzé, ed.), Paris, CNRS-Editions, 2002. For information, go to <http://maply.univ-lyon1.fr>.
- Thoemmes Press is offering Hopoi a special 20% discount through March 31, 2003 on selected titles in the "Thoemmes Library in Science" series. For information, go to <http://www.thoemmes.com/libraries/science.htm>.
- The Journal of the History of Philosophy's new series, JHP Books, succeeds the now-terminated JHP Monograph Series. JHP Books will publish

textual and archival histories, scholarly editions and translations, and interpretative and contextual studies; the editors are interested in 20th c philosophy as well as previous periods. For information, contact Charles Young (charles.young@cgu.edu).

- Methodos, a French journal of classical philology, philosophy, and history of science, has published Volume 3 on 'Shapes of the Irrational'. For information, go to http://www.univ-lille3.fr/www/recherche/set/methodos_pres.htm.
- EspacesTemps.net Le Journal, an electronic journal of social science, is available at <http://espacestems.revues.org/>.
- Knowledge, Technology & Policy Volume 15, Number 1-2, on "Science Wars", features James Drake's "The Academic Brand of Aphasia: Where Postmodernism and the Science Wars Come From". For information, go to <http://www.moted.org/kt&p/15-1.htm>.
- Papers from the Popper Centenary Conference (Vienna, July, 2002) are posted at <http://www.the-rathouse.com/forum.html> until the volume of conference papers is in press.

Society News.

- The Société de Philosophie des Sciences, a new French scholarly society, is soliciting members. For information, go to <http://www.cavaillies.ens.fr/SPS-appel.html>.
- The European Physical Society has a new interdivisional group on the history of physics. For information, go to <http://www.eps.org/divisions/historyofphysics.html>.
- The Society for the History of Natural History offers an annual Alwyne Wheeler Bursary for travel by scholars under age 30 to the SHNH annual meeting (this year's meeting is in Florence, Italy in May 2003). The award includes up to £100 for travel, plus conference registration. For information, go to <http://www.shnh.org>, or contact kmw@nhm.ac.uk.
- Bernard Lightman of York University has been appointed as Society Editor of the History of Science Society. Founded by George Sarton in 1912, Isis is currently edited by Margaret Rossiter at Cornell University; Lightman's five year term begins in January, 2004.

Awards and Calls for Papers.

- The Public@tions Electroniques de Philosophie Scientifique seeks papers on pragmatist epistemology. The deadline for submissions is April 15, 2003. For information, go to <http://philosophiascientiae.free.fr/appels.html>.
- The Dictionary of 19th-Century British Scientists http://www.thoemmes.com/dictionaries/science_dic.htm (publication: June 2004) is looking for contributors for unassigned entries; for information, go to <http://www.arts.yorku.ca/human/lightman/research.html> or contact Bernard Lightman (lightman@yorku.ca).
- The family, students, and colleagues of Jim Cushing are pleased to announce the inauguration of the annual James T. Cushing Prize in the History and Philosophy of Physics to recognize and reward the work of younger scholars. The winner will receive \$1,000 and an invitation to deliver a paper in Notre

Dame's History and Philosophy of Science Colloquium series during the 2003-2004 academic year. The winner will be announced in April 2003. For information, go to <http://www.nd.edu/~cushpriz>.

- The Henry and Ida Schuman Prize is awarded for the best original essay by a graduate student on the history of science and its cultural influences. The prize carries a \$500 award and up to \$500 reimbursement in travel expenses to help the winner attend the HSS annual meeting. For information, contact info@hssonline.org or go to

<http://www.hssonline.org>.
Deadline for submissions is April 1, 2003.

- The British Society for the Philosophy of Science offers its biennial President's Prize for Textbook in the Philosophy of Science to recognize excellence and innovation in the promotion of philosophy of science to broader academic audiences. The prize is £1,000; deadline for nominations is June 30, 2003. For information, contact James Ladyman (james.ladyman@bristol.ac.uk).

Regional maps of HOPOS activity and infrastructure.

Scotland (No. 8).

Report on HOPOS-related resources in Scotland.

Introduction

Scotland is a small country, geographically remote, and politically subordinate to England for most of its history. Yet it has been responsible for a staggering record of fundamental achievement in philosophy, science, medicine, and engineering. How this came about has long been the object of intense, if inconclusive, speculation.

However, all agree that Scotland owes a lot to the early development of its universities: St Andrews was founded by 1411, building on the success of Scottish schoolmen, most notably John Duns Scotus (c. 1266-1308), in Paris and Oxford in earlier centuries. By the late 16th c, there were also well-established civic universities in the three principal cities of Edinburgh, Glasgow, and Aberdeen. A number of distinguished pre-Reformation thinkers, including the logicians George Lokert (c. 1485-1547), Hector Boece (c. 1465-1536) and John Mair (c. 1467-1550), were thus able to return home from continental success to senior positions at the Scottish universities.

This rich intellectual tradition was built upon by many 17th c figures, including the physician and herbalist Robert Sibbald (1641-1723) and the mathematician James Gregory (1638-1675). Gregory is best known for his reflecting telescope, but his unpublished writings contain many important anticipations of much later mathematics. Moreover, the Scottish universities remained in vigorous health throughout the 18th c, when

Oxford and Cambridge had become notoriously decadent. This may owe something to the greater social diversity of the Scottish institutions. At least in Lowland Scotland, tertiary education was a possibility for bright young men from all but the very poorest backgrounds. This was a direct consequence of a crucial element in Scottish intellectual history: the Reformation. Scotland embraced Protestantism far more fundamentally than England, adopting a Presbyterian state church. The resultant emphasis on individual Bible reading as essential for salvation led John Knox (1505-1572) and other reformers to develop a system of elementary education far in advance of English practice. The nonconformist tradition of critical engagement with scripture may be seen as a decisive step towards the Enlightenment. The 1707 Act of Union between the governments of England and Scotland, and the defeat of the Jacobite rebellions of 1715 and 1745, have also been claimed as unexpectedly positive influences on Scottish science and philosophy. After 1707 the local elites were obliged to find less contentious outlets for their intellectual interests, so the argument runs, since politics for Scots meant either a move to London or the high risks of Jacobitism.

Finally, as with Australia in the 20th c, Scotland's very remoteness has proved an asset to the development of an autonomous intellectual tradition. In the 18th c travel between Scotland and London was a formidable undertaking,

easier by sea than land. This encouraged Scots to travel further afield, and to collaborate more closely at home. The major population centers of Scotland remain far enough away from those of England for most Scots to be closer to each other than to anyone else. This factor has been diluted since 19th c by much greater job mobility, but it still fosters efficient local collaboration, as demonstrated by the learned societies listed below.

The Scottish Enlightenment.

By the second half of the 18th c Scotland had a well-established tradition of open-minded intellectual endeavor which was to explode into prodigious accomplishment across a diverse range of fields. A profoundly social phenomenon, the Scottish Enlightenment emerged from the exchange of ideas between businessmen, lawyers, churchmen, and professors in dozens of literary and philosophical clubs.

Scotland's most celebrated philosopher, David Hume (1711-1776), is the best-known figure of this period. Whether or not a thinker from an age when philosophy and science were still to be distinguished can properly be called a philosopher of science, Hume's influence on the discipline has been immense, and needs no introduction here. Famously snubbed by the Scottish university system, and reluctant to engage his critics in written debate, this influence was exercised through his books, and the wide circle of his personal acquaintance, rather than in lasting institutional structures. By contrast, the "common sense" school, defined in reaction to Hume by Thomas Reid (1710-1796), was to prove Scottish philosophy's most enduring tradition. It

acquired numerous adherents, over many years and in many countries, especially the United States. Through Reid's influence, American philosophy and psychology can trace their roots back to the Scottish Enlightenment. Reid's work, which includes an anticipation of non-Euclidean geometry, is informed by a powerful mathematical intelligence. This may owe something to the teaching of Colin Maclaurin (1698-1746). A professor at nineteen, Maclaurin was one of Newton's most brilliant heirs, both mathematically and philosophically. Adam Smith (1723-1790) is famous as one of the founders of economics, but in his early work on the history of astronomy he also displays a novel account of the psychology of scientific discovery, emphasizing the subordination of reason to the passions. However, arguably Scotland's first true philosopher of science was Dugald Stewart (1753-1828). A disciple of Reid, his legacy was the application of the common sense philosophy to specific, recognizable questions about science.

Nineteenth-Century Science.

If the 18th c was the heyday of Scottish philosophy, in the 19th c Scottish science was at its most productive. Earlier Scottish scientists such as John Napier (1550-1617) and Joseph Black (1728-1799) had made important contributions to their disciplines, but from James Watt's (1736-1819) development of the steam engine through to James Clerk Maxwell's (1831-1879) mathematization of electromagnetism, Scottish scientists and engineers made the science of energy their own (Smith (1998) is an excellent account). Thermodynamics was pursued by scien-

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tists of many different nationalities—indeed it is a classic example of apparent simultaneous discovery—but the Scottish contribution to its development was considerable. Important work is attributable to Lord Kelvin (1824-1907; born William Thompson in Belfast, and claimed for Northern Ireland in an earlier article in this series, but a professor at Glasgow for more than fifty years), Macquorn Rankine (1820-1872), Peter Guthrie Tait (1831-1901), and most decisively Maxwell. Other 19th c Scottish scientists include Charles Lyell (1797-1835), arguably the first geologist to put the discipline on a scientific footing—unless that was James Hutton (1726-1797)—and a crucial source for Darwin; the chemists Robert Brown (1773-1858) and Thomas Graham (1805-1869), of Brownian motion and Graham's law respectively; the doctors Joseph Lister (1827-1912) and James Young Simpson (1811-1870), pioneers of antisepsis and anesthesia, and a long run of polar explorers from John Ross (1777-1856) to Robert Scott (1868-1912), including John Rae (1813-1893), arguably the most determined and successful of them all.

Philosophy since the Enlightenment.

The last major Scottish figure in the common sense school was William Hamilton (1788-1856). A highly respected figure amongst his contemporaries, his reputation now rests principally on his editions of Reid and Stewart. He has some claim to be the first Scottish philosopher since the reformation to take a serious interest in logic, and was a

minor influence on George Boole (1815-1864). Hamilton bequeathed this interest to his students, including Thomas Spencer Baynes (1823-1887) and James Ferrier (1806-1864). Ferrier is best remembered for having coined the term 'epistemology' (as well as its lesser known counterpart 'agnoiology', for the theory of ignorance). He was also an early, and not uncritical, proponent of German idealist thought in Britain. One of Hamilton's most determined critics was John Stuart Mill (1806-1873). Although he was Scottish only by descent, he had a loyal pupil in the Aberdeen professor Alexander Bain (1818-1903), the founder of *Mind*, whose contributions to logic and psychology both display Mill's influence. However, by the late 19th c, the dominant school of philosophy on both sides of the border was British Idealism, an appropriation of Hegel far less nuanced than that of Ferrier. If idealism was rapidly eclipsed in 20th c English philosophy, it continued to hold sway in the Scottish universities until well after the Second World War. For example, John MacMurray (1891-1976), whose work includes some philosophy of science, did not relinquish his Edinburgh chair until 1958. However, idealism should be distinguished from the 'Critical Realist' school of Norman Kemp Smith (1872-1958), best known as a translator of Kant, and G. F. Stout (1860-1944), most influential as a pioneer of psychology. The school's work was informed by a close interest in the history of science and a strong scepticism about the relevance of mathematical logic to philosophy. The suc-

cessor to Kemp Smith's Edinburgh chair, A. D. Ritchie (1891-1967), combined these themes with experience earned in a lengthy career as professional biochemist to produce several works in the philosophy of science. However, critical realism's most enduring legacy is through Kemp Smith's pupil and colleague John Anderson (1893-1962), who had a decisive influence on the development of the distinctive traditions of Australian philosophy. The critical realists have affinities with Oxford realists such as John Cook Wilson (1849-1915) but their closest influence was from the Manchester philosophers Robert Adamson (1852-1902) and Samuel Alexander (1859-1938). In the latter case this influence was exercised through his 1915 Glasgow Gifford lectures (published as *Space, Time and Deity*, 1920). The Gifford lectures have been delivered regularly at each of the four ancient universities in Scotland for over a century. Deriving from a bequest of the Scottish judge Adam, Lord Gifford (1820-1887), their ostensible subject is natural theology but this has been interpreted liberally enough to attract a roll-call of distinguished scientists and philosophers of science, including William James, Whitehead, Bohr, Heisenberg, Mary Hesse, Freeman Dyson, Hilary Putnam, and Michael Dummett. The endowment has also funds postdoctoral positions at these universities in areas including philosophy of science. At the beginning of the 20th c history of science, in Scotland as elsewhere, was principally a sideline of professional scientists such as the Edinburgh mathematics professor Edmund Whittaker (1873-1956), whose *History of the Theories*

of Aether and Electricity (v 1 1910, v 2 1953) remains influential. In the course of the century this domain was to become the preserve of professional historians. An important transitional figure was William P. D. Wightman (1899-1983), a chemistry graduate who secured his London doctorate in scientific method while teaching school science in Edinburgh. His 1951 appointment as Lecturer (subsequently Reader) in History and Philosophy of Science at Aberdeen was the first such made by a British university outside of London, Oxford, or Cambridge. A founder member of the British Society for the History of Science, he did much to establish this discipline in Scotland.

Today.

In the contemporary landscape, a distinctive Scottish tradition in philosophy is hard to pin down. While there are still Scottish philosophers who could be assimilated into the tradition, some of the most prominent (such as Alasdair MacIntyre or Alastair Hannay) are long-term exiles, and many philosophy posts in Scotland are occupied by incomers from England or further afield. Yet philosophy in Scotland will succeed or fail by international standards: one true legacy of the Scottish tradition may be that its current practitioners have never lost sight of this. Indeed, there are thriving centers for research into the history, sociology or philosophy of science in Scotland today:

- The 'strong programme' in the sociology of scientific knowledge will always be associated with the Science Studies Unit at Edinburgh, even if many of its early

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proponents are now dispersed elsewhere (Barry Barnes to Exeter, Martin Kusch to Cambridge). However, David Bloor remains and the SSU continues to prosper.

- At St Andrews, the Department of Logic & Metaphysics has had considerable success in attracting external research funding, much of it attributable to the international stature of its long-serving professor, Crispin Wright. The Arché research centre is the latest and most ambitious manifestation of this, with a remit that extends into logic and the philosophy of language; the neo-Fregean programme in the philosophy of mathematics has been a recent priority. St Andrews also hosts the *British Journal for the Philosophy of Science*, and a successful collaboration in provision of postgraduate courses with Stirling (whose strengths are largely in complementary areas) has permitted it to concentrate in HPS.
- There are also significant centers of HPS research interest in other departments, including philosophy of mathematics at Glasgow, philosophy of science at Edinburgh, and history of science at Aberdeen.

In the contact information that follows, I include UK dialing codes in all telephone numbers; if calling from outside the UK, omit the first '0' and dial the international calling code and country code '44' instead.

Academic and Scholarly Institutions (including Libraries).

Faculty members with HPS-related interests are listed after details of their departments. These lists are exhaustive of neither faculty

nor their interests. I do not include all universities, or all departments of history and philosophy in Scotland, and departments in other disciplines appear if they are of particular relevance. For further details of UK higher education institutions, see the interactive map at <http://www.scit.wlv.ac.uk/ukinfo>.

Edinburgh

The University of Edinburgh

<http://www.ed.ac.uk/>
Old College, South Bridge,
Edinburgh EH8 9YL
(tel 0131 650 1000)
Britain's first civic university was granted its Royal Charter in 1582.

Department of Geography

<http://www.geo.ed.ac.uk>
Drummond Street,
Edinburgh EH8 9XP
(tel 0131 650 2565;
office@geo.ed.ac.uk)
Charles Withers
(cwjw@geo.ed.ac.uk);
Enlightenment geography,
science and national identity).

Department of Philosophy

<http://www.arts.ed.ac.uk/philosophy>
David Hume Tower, George Square, Edinburgh EH8 9JX
(tel 0131 650 3661; philosophy-department@ed.ac.uk)
Andrew Aberdein (andrew.aberdein@dunelm.org.uk;
theory change), Alexander Bird (alexander.bird@ed.ac.uk);
Kuhn and philosophy of mathematics), Peter Milne (peter.milne@ed.ac.uk; foundations of probability and logic), Huw Price (huw.price@ed.ac.uk); philosophy of physics), and Denis Walsh (d.walsh@ed.ac.uk); philosophy of biology). The program includes an MSc in Philosophy.

Institute for Advanced Studies in the Humanities
<http://www.ed.ac.uk/iash/>
Hope Park Square, Edinburgh

EH8 9NW (tel 0131 650 4671;
iash@ed.ac.uk)

The Institute promotes interdisciplinary research in the humanities and social sciences and maintains a number of visiting fellowship schemes. It is also home to the

Centre for the History of Ideas in Scotland

(<http://www.ed.ac.uk/iash/history.ideas.scotland.html>);
Director—Cairns Craig,
cairns.craig@ed.ac.uk), which encourages research in the traditions of Scottish thought through research seminars and conferences.

The Science of Man in Scotland

<http://www.scienceofman.ed.ac.uk>
This externally funded project pursues research on the development of the human sciences in the Scottish Enlightenment. For information, contact Thomas Ahnert (ashtas@srv0.arts.ed.ac.uk).

Edinburgh University Library

<http://www.lib.ed.ac.uk/>
George Square, Edinburgh EH8 9LJ (tel 0131 650 3373;
library@ed.ac.uk)

Extensive collections of manuscripts and rare books include the papers of Colin Maclaurin and Joseph Black and the libraries of Adam Smith and Dugald Stewart. For information, contact the Sub-Librarian for Special Collections, Richard Ovenden (richard.ovenden@ed.ac.uk).

Science Studies Unit

<http://www.ssu.ssc.ed.ac.uk/>
21 Buccleuch Place, Edinburgh EH8 9LN (tel 0131 650 4256;
Department Secretary—
carole.tansley@ed.ac.uk)
The unit, probably the best-known contemporary Scottish institution among hopoi, is now home to David Bloor (d.bloor@ed.ac.uk); sociology of scientific knowledge), Wendy Faulkner (wendy.faulkner@ed.ac.uk); socio-economics of technology, gender and technology), John

Henry (john.henry@ed.ac.uk); early modern science, philosophy, medicine, magic, and religion), Steve Sturdy (s.sturdy@ed.ac.uk); history and sociology of medical science), and Donald MacKenzie (d.mackenzie@ed.ac.uk); social history of science and technology). The Unit contributes much of the teaching to the MSc in Science and Technology Studies.

Heriot-Watt University

<http://www.hw.ac.uk/>
Edinburgh EH14 4AS
(tel 0131 449 5111)
Founded in 1821 as the "School of Arts of Edinburgh for the Education of Mechanics in Such Branches of Physical Science as are of Practical Application in their several trades", it subsequently benefited from a memorial fund commemorating James Watt, and was elevated to university status in 1966.

International Centre for

Mathematical Sciences
<http://www.ma.hw.ac.uk/icms/>
14 India St, Edinburgh EH3 6EZ
(tel 0131 220 1777;
icms@maths.ed.ac.uk)

The Centre organizes seminars, symposia, and workshops on the applications of mathematics to science, industry, commerce, and medicine. It occupies premises owned by the James Clerk Maxwell Foundation (*q.v.*).

Napier University

<http://www.napier.ac.uk/>
219 Colinton Road, Edinburgh EH14 1DJ (tel 0131 444 2266)
The university began life as Napier College of Science and Technology in 1964. The buildings incorporate Merchiston Tower, the home of John Napier, the inventor of logarithms.

Napier University Learning Information Services
<http://nulis.napier.ac.uk/>
Merchiston Campus, 10 Colinton

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Road, Edinburgh EH10 5DT (tel 0131 455 2582; merchistonlc@napier.ac.uk)
Special collections include the Edward Clark Library of printing and book production history since the 15th c. For information, contact the Director, Chris Pinder (c.pinder@napier.ac.uk).

National Library of Scotland

<http://www.nls.uk/>
George IV Bridge, Edinburgh EH1 1EW (tel 0131 226 4531; enquiries@nls.uk)
Highlights include the papers of engineers John Rennie (1761-1821) and Thomas Telford (1757-1834), and of scientists Lord Boyd Orr (1880-1971), Sir Robert Watson Watt (1892-1973), and father and son J.S. (1860-1936) and J.B.S. Haldane (1892-1964). The NLS also hosts the archives of the Royal Scottish Society of Arts (*q.v.*) and the Royal Society of Edinburgh (*q.v.*), including an important collection of Hume's correspondence and papers. For information, contact the Director of Special Collections, Murray Simpson (m.simpson@nls.uk).

The Open University in Scotland

<http://www.open.ac.uk/near-you/in-scotland/>
10 Drumsheugh Gardens, Edinburgh EH3 7QJ (tel 0131 225 2889; scotland@open.ac.uk)
The Open University offers distance-learning courses throughout the UK, though most full-time staff are based in Milton Keynes, Berkshire. However, some faculty are based in Scotland, including Ian Donnachie (Robert Owen & New Lanark; history of technology in Scotland).

The Royal College of Physicians

<http://www.rcpe.ac.uk/library/>
9 Queen Street, Edinburgh

EH2 1JQ (tel 0131 225 7324)
The college was founded in 1681 and its library of over 200,000 volumes is particularly strong in the history of science and medicine. Highlights include the books and papers of James Young Simpson. For information, contact the Rare Books Librarian, John Dallas (j.dallas@rcpe.ac.uk).

The Royal College of Surgeons

<http://www.rcsed.ac.uk/>
Nicholson Street, Edinburgh EH8 9DW (tel 0131 527 1600; library@rcsed.ac.uk)
The Barber Surgeons of Edinburgh were formally incorporated as a Craft Guild in 1505. The library has extensive materials relating to the history of medicine, including the papers of many former fellows. For information, contact the College Librarian (msmith@rcsed.ac.uk).

Crawford Library, Royal Observatory

<http://www.roe.ac.uk/library/>
Blackford Hill, Edinburgh EH9 3HJ (tel 0131 668 8395; library@roe.ac.uk)
The 26th Earl of Crawford (1847-1913) donated his scientific library to the Royal Observatory in 1889, after Ralph Copeland (1837-1905), the director of the Earl's observatory, was made Astronomer Royal for Scotland. The collection, of international importance, comprises some 15,000 books, pamphlets and manuscripts from the 12th c to 19th c. Highlights include first editions of major works in astronomy and mathematics and the library of Charles Babbage (1792-1877). The Royal Observatory collections also include an extensive stock of modern astronomical material. For information, contact the Librarian, Karen Moran (ksm@roe.ac.uk).

Scottish Science Library

<http://www.nls.uk/collections/sciencetech/>
Causewayside Building, 33 Salisbury Place, Edinburgh EH9 1SL (tel 0131 466 3811; ssl-eng@nls.uk)
The contemporary science collections of the National Library of Scotland, a copy-right deposit library. For information, contact the Head Librarian, John Coll (j.coll@nls.uk).

Glasgow

The University of Glasgow

<http://www.gla.ac.uk/>
University Avenue, Glasgow G12 8QQ (tel 0141 339 8855)
Founded 1451.

Department of Philosophy

<http://www.gla.ac.uk/acad/philosophy/>
65-69 Oakfield Avenue, Glasgow G12 8QQ (tel 0141 330 5692/3; philosophy@arts.gla.ac.uk)
Alexander Broadie (a.broadie@philosophy.arts.gla.ac.uk); history of logic, Enlightenment science and philosophy), Bob Hale (r.hale@philosophy.arts.gla.ac.uk); philosophy of mathematics), Philip Percival (p.percival@philosophy.arts.gla.ac.uk); probability, Carnap, theories, explanation, and decision-theoretic epistemology), Adam Rieger (a.rieger@philosophy.arts.gla.ac.uk); philosophy of mathematics).

Department of Physics and Astronomy

<http://www.physics.gla.ac.uk/>
The Kelvin Building, University of Glasgow, Glasgow G12 8QQ (tel 0141 330 4709)
The successor to Lord Kelvin's Department of Natural Philosophy, where he held the chair for more than fifty years. Four cases of his equipment are preserved in the common room, including his tar glacier, an experiment which is still running.

Glasgow University Library
<http://special.lib.gla.ac.uk/>

Hillhead Street, Glasgow G12 8QE (tel 0141 330 6767; special@lib.gla.ac.uk)

Special collections include the libraries of Robert Simson (1687-1768), William Hunter (1718-1783), and Sir William Hamilton; the papers of Lord Kelvin and R. D. Laing (1927-1989); and the Ferguson Collection of alchemical literature. Many manuscripts are available online at <http://special.lib.gla.ac.uk/manuscripts/msslst.html>. For information, contact the Keeper of Special Collections, David Weston (d.weston@lib.gla.ac.uk).

University of Glasgow Archives & Business

Records Centre
<http://www.archives.gla.ac.uk/>
77-87 Dumbarton Road, Glasgow G11 6PW (tel 0141 330 5515; dutyarch@archives.gla.ac.uk)
The Public Search Room is nearby at 13 Thurso Street.

Centre for the History of Medicine

<http://www2.arts.gla.ac.uk/history/medicine/>
5 University Gardens, Glasgow G12 8QQ (tel 0141 330 6071; wellam@arts.gla.ac.uk)
Kenneth Collins (medical history of Jews in Scotland), Anne Crowther (a.crowther@socsci.gla.ac.uk); 19th and 20th c Scottish medical history), Megan Davies (med@arts.gla.ac.uk); early 20th c rural medicine), Marguerite Dupree (mdupree@arts.gla.ac.uk); 19th and 20th c social history of medicine), Malcolm Nicolson (history of medical technology, history of ecology, and sociology of scientific knowledge), and Edna Robertson (edna.robertson@ecosse.net); history of dentistry).

Greater Glasgow Health Board Archive

<http://www.archives.gla.ac.uk/gehb/>
(tel 0141 330 2992;

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gghb@archives.gla.ac.uk)

Located at the Mitchell Library (*q.v.*) but separately administered, this is one of the largest health authority archives in the United Kingdom, dating back to the late 18th c. For information, contact the Archivist, Alistair Tough.

Mitchell Library

<http://www.mitchelllibrary.org/>

North Street, Glasgow G3 7DN (tel 0141 287 2999)

The largest public reference library in Europe, founded in 1877 from the bequest of tobacco merchant Stephen Mitchell. Of special interest is the *Science and Technology Department* (tel 0141 287 2931; science_and_technology@cls.glasgow.gov.uk).



Dugald Stewart (1753-1828)

The Royal College of Physicians and Surgeons of Glasgow

<http://www.rcpsglasg.ac.uk/>

232-242 St Vincent Street, Glasgow G2 5RJ (tel 0141 221 6072)

The college was founded in 1599 and has a library of over 300,000 volumes, including many of Joseph Lister's manuscripts and lecture notes. There is also a large collection of medical instruments dating from the 18th c onwards, including further Listeriana. For information, contact the Librarian, James Beaton (james.beaton@rcpsglasg.ac.uk).

The University of Strathclyde

<http://www.strath.ac.uk/>

16 Richmond Street, Glasgow G1 1XQ (tel 0141 552 4400)

The principal constituent college of Strathclyde University was founded by a bequest of John Anderson (1726-1796), Professor of Natural Philosophy at Glasgow University.

Andersonian Library

<http://www.lib.strath.ac.uk/>

University of Strathclyde, Curran Building, 101 St. James Road, Glasgow G4 0NS (tel 0141 548 3701; library@strath.ac.uk)

John Anderson's personal library formed the nucleus of his college's collections and has been preserved intact. Other highlights include several significant collections of early mathematics books and the Young Collection of books and manuscripts on alchemy and early science. For information, contact the University Librarian, Derek Law (d.law@strath.ac.uk).

Department of History

<http://www.strath.ac.uk/departments/history/>

McCance Building, 16 Richmond Street, Glasgow G1 1XQ (tel 0141 548 2206; contact-history@strath.ac.uk)

Patricia Barton (p.barton@strath.ac.uk); history of medicine), Neil Rafeek (n.rafeek@strath.ac.uk); Scottish occupational health), and Eileen Yeo (eileen.yeo@strath.ac.uk); cultural history of social science).

Elsewhere

The University of Aberdeen, King's College

<http://www.abdn.ac.uk/>

Aberdeen AB24 3FX (tel 01224 272000)

King's College was founded in 1495, Marischal College in 1593: until the 19th c the two

colleges functioned as separate universities.

Department of Cultural History

<http://www.abdn.ac.uk/ch/>

Old Brewery, High Street, Aberdeen AB24 3UB (tel 01224 273938/272457; Departmental Secretary: j.davey@abdn.ac.uk) Nick Fisher (emeritus) (n.fisher@abdn.ac.uk; history of chemistry, cultural history of modern science), Ben Marsden (b.marsden@abdn.ac.uk; Victorian science and technology; history of thermodynamics; historical relations between science and music). The department maintains a useful index of HPS resources at the University of Aberdeen, at <http://www.abdn.ac.uk/ch/hpsabd.hti>.

Department of History

<http://www.abdn.ac.uk/history/>

Crombie Annexe, Meston Walk, Aberdeen AB24 3FX (tel 01224 272199; history@abdn.ac.uk)

William Naphy (w.g.naphy@abdn.ac.uk; plague), Eve Seguin (e.seguin@abdn.ac.uk; politics and science), David Smith (d.f.smith@abdn.ac.uk; 20th c British medical history), and Oonagh Walsh (o.walsh@abdn.ac.uk; (19th c Irish psychiatry).

Department of Philosophy

<http://www.abdn.ac.uk/philosophy/>

Old Brewery, High Street, Aberdeen AB24 3UB (tel 01224 272366; philosophy@abdn.ac.uk)

Robin Cameron (emeritus) (j.r.cameron@abdn.ac.uk); philosophy of mathematics), Nigel Dower (n.dower@abdn.ac.uk; philosophy of technology, environment), Gordon Graham (g.graham@abdn.ac.uk; philosophy of technology, philosophy of the internet), Alasdair Richmond (a.m.richmond@abdn.ac.uk; philosophy of science, space and time), and Paul Tomassi

(p.tomassi@abdn.ac.uk; philosophy of science). The Department also hosts several smaller institutions of interest, including:

The Centre for the Study of Scottish Philosophy

<http://www.abdn.ac.uk/cssp>

(director—Gordon Graham) Formerly 'The Reid Project', the Centre publishes the *Journal of Scottish Philosophy* (*q.v.*) hosts research visitors, and organizes conferences. A book series, reprinting classic works of Scottish philosophy, is planned. For information, contact Jon Cameron (cssp@abdn.ac.uk).

Special Libraries and Archives

<http://www.abdn.ac.uk/diss/history/specilib/specilib.hti>

King's College, Aberdeen AB24 3SW (tel 01224 272598; specilib@abdn.ac.uk) Excellent collections in 17th, 18th and 19th c history of science. Extensive local manuscript collections (some of which are available online, at <http://www.abdn.ac.uk/diss/heritage/collects/>) include the papers of Thomas Reid (for which an online catalogue is available at <http://www.abdn.ac.uk/cssp/catalogue>).

Crichton Campus

<http://www.cc.gla.ac.uk/>

Rutherford Building, Bankend Road, Dumfries DG1 4ZL (tel 01387 702001; information@crichton.gla.ac.uk)

The last, and grandest, of Scotland's Royal Asylums was founded in 1839 by Elizabeth Crichton (1779-1862), a wealthy local widow. Her intention to found a university was blocked by the existing Scottish universities; ironically, the site has recently become a remote campus for the Universities of Glasgow and Paisley. Local Glasgow faculty include Sean Johnston (s.johnston@crichton).

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[gla.ac.uk](http://www.gla.ac.uk); relations between science and technology since the 19th c; emergence of technical professions; history of scientific instruments).

The University of Dundee

[http://www.dundee.ac.uk/](http://www.dundee.ac.uk)
Tower Building, Nethergate,
Dundee DD1 4HN (tel 01382
344000)

Founded in 1881, as University College, Dundee was one of the first colleges in Scotland to be open to both sexes. In 1897 it became a constituent of the University of St Andrews but was spun off as a separate university in 1967.

Department of Philosophy
<http://www.dundee.ac.uk/philosophy/>

Tower Building, Nethergate,
Dundee DD1 4HN (tel 01382
223181/345199;

Departmental Secretary—
j.shepherd@dundee.ac.uk)

Michael Wheeler (philosophy of science), Roger Young (r.a.young@dundee.ac.uk); philosophy of science).

Dundee University Archives
<http://www.dundee.ac.uk/archives/>

Tower Building, Nethergate,
University of Dundee, Dundee
DD1 4HN (tel 01382 344095)

The manuscript collection, catalogued online, includes the papers of Sir D'Arcy Wentworth Thompson (1860-1948) who was Professor of Natural History at the University. For information, contact the University Archivist, Patricia Whatley (p.e.whatley@dundee.ac.uk).

The University of St Andrews

<http://www.st-and.ac.uk/>
North Street, St Andrews,
Fife KY16 9AJ

Scotland's oldest university was founded in 1411.

Department of Modern History
<http://www.st-and.ac.uk/>

[academic/history/modhist/](http://www.st-and.ac.uk/academic/history/modhist/)

St Katherine's Lodge, St Andrews, Fife KY16 9AL (tel 01334 462923; Departmental Secretary—nlp@st-and.ac.uk)

J F M Clark (jfc2@st-and.ac.uk); history of natural history, comparative psychology, and gender and science), Peter Maxwell-Stuart (pgm1@st-and.ac.uk); early modern occult science).

Departments of Philosophy

<http://www.st-and.ac.uk/academic/philosophy/>

Edgecliffe, The Scores, St Andrews, Fife KY16 9AL (tel 01334 462486;

philosophy@st-and.ac.uk)

St Andrews retains the traditional Scottish division of philosophy into separate departments of Moral Philosophy and Logic and Metaphysics, although the two departments share a building.

Amongst the faculty of the latter department are Peter Clark (pjc@st-and.ac.uk); history and philosophy of natural science), Roy Cook (rtc1@st-andrews.ac.uk); philosophy of mathematics), Katherine Hawley (kjh5@st-and.ac.uk); philosophy of science, especially persistence), Fraser MacBride (flpm@st-andrews.ac.uk); philosophy of mathematics), Stephen Read (slr@st-andrews.ac.uk); history of logic), Stewart Shapiro (ss17@st-andrews.ac.uk); philosophy of mathematics), and Crispin Wright (cjgw@st-andrews.ac.uk); philosophy of mathematics). The Department of Logic and Metaphysics also hosts:

The Arché Centre for the Philosophy of Logic, Language, Mathematics and Mind

<http://www.st-and.ac.uk/academic/philosophy/arche/>

Directors: Crispin Wright, Fraser MacBride (*q.v.*). Arché has attracted funding for a range of major projects.

It sponsors conferences, PhD studentships, and professorial and postdoctoral fellowships. For information, contact the administrator, Patricia Barrie (arche@st-andrews.ac.uk).

School of Mathematics and Statistics,

Mathematical Institute

<http://www.mcs.st-and.ac.uk/>

North Haugh, St Andrews,
Fife KY16 9SS

(tel 01334 463744/462344;

eng.maths@mcs.st-and.ac.uk)

John O'Connor (joc@st-and.ac.uk) and Edmund

Robertson (edmund@dcs.st-and.ac.uk) are responsible for the celebrated MacTutor History of Mathematics archive, at <http://www-groups.dcs.st-and.ac.uk/~history/>.

The University Library

<http://www-library.st-and.ac.uk/>

North Street, St Andrews, Fife
KY16 9TR (tel 01334 462281;

library@st-and.ac.uk)

The Special Collections include approximately 80,000 rare printed books with strong collections in philosophy, science, and medicine; they also house one of Scotland's most important photographic collections. For information, contact the Keeper of Manuscripts and Muniments, Norman Reid (nhr1@st-and.ac.uk) or Keeper of Rare Books, C. Gascoigne (cmg@st-and.ac.uk).

The University of Stirling

<http://www.stir.ac.uk/>

Stirling FK9 4LA
(tel 01786 473171)

Founded as a new university in 1967.

Department of History

<http://www.history.stir.ac.uk/>

Pathfoot Building, Stirling
FK9 4LA (tel 01786 467580)

Helen Dingwall

(hmd1@stir.ac.uk); history of

medicine in Scotland), Jacqueline Jenkinson (jlj1@stir.ac.uk); history of medicine).

Department of Philosophy

<http://www.stir.ac.uk/philosophy/>

Pathfoot Building, Stirling
FK9 4LA (tel 01786 467555)

Peter Sullivan

(p.m.sullivan@stir.ac.uk;

philosophy of mathematics).

Stirling University Library

<http://www.library.stir.ac.uk/>

Stirling FK9 4LA
(tel 01786 467235)

The special collections include the Ritchie-Calder collection of popular scientific texts. For information, contact the University Librarian, Peter Kemp (pk2@stir.ac.uk).

Scholarly Societies and Professional Associations.

Edinburgh Mathematical Society

<http://www.maths.ed.ac.uk/edmathsoc/>

James Clerk Maxwell Building,
Mayfield Road, Edinburgh EH9
3JZ (edmathsoc@maths.ed.ac.uk)

Scotland's principal mathematical society was founded in 1883. Regular meetings occur throughout the academic year; a volume of *Proceedings* is published by Cambridge University Press. The Society produced a 1995 conference on 'Scotland's Mathematical Heritage'.

The Royal Philosophical Society of Glasgow

<http://myweb.tiscali.co.uk/royalphil/rps/>

Hutchesons' Trust Office, 21

Beaton Road, Glasgow G41
4NW (tel 0141 433 4484;

info@royalphil.org)

Founded in 1802, the Society drew a distinguished membership from the scientists and industrialists of Victorian Glasgow. Although the *Proceedings* are no longer published, an index to earlier volumes is available from the website, as are details of a regular programme of lectures on scientific and philosophical topics.

Royal Scottish Society of Arts

<http://www.rssa.org.uk/>

Despite its name, the RSSA is

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concerned with the promotion of science and technology. Founded in 1821 by the physicist Sir David Brewster (1781-1868) as 'The Society for the Encouragement of the Useful Arts in Scotland', it was incorporated by Royal Charter in 1841. Activities include lectures on scientific and technical topics. For information, contact the Secretary, Graham Rule (secretary@rssa.org.uk).

Royal Society of Edinburgh

[http://www.rse.org.uk/](http://www.rse.org.uk)
22-26 George Street; Edinburgh, EH2 2PQ (tel 0131 240 5000)
Founded in 1783, the RSE's early members included principal figures of the Scottish Enlightenment, and such foreign luminaries as Benjamin Franklin and Goethe. Today it hosts lectures, conducts inquiries on public policy issues, and sponsors research fellowships. For information, contact the Research Fellowships Secretary (resfells@royalsoced.org.uk).

The Scots Philosophical Club

[http://www.scotphil.org.uk/](http://www.scotphil.org.uk)
Pathfoot Building, Stirling FK9 4LA
The association's membership comprises the academic staff of all Scottish philosophy departments. It holds twice-yearly conferences and publishes the *Philosophical Quarterly* (*q.v.*). For information, contact the Secretary and Treasurer, Antony Duff (r.a.duff@stir.ac.uk).

The Scottish Postgraduate Philosophy Association

http://www.st-and.ac.uk/~www_sppa/
This society for postgraduate students of philosophy in Scotland organizes conferences and maintains an email list. For information, contact Paul Renton (p.renton@abdn.ac.uk).

Scottish Society of the History of Medicine

<http://www.st-and.ac.uk/~sshm/>
The Society promotes the history of medicine through a

regular speaker program. For information, contact the Hon. Secretary, A R Butler (arb3@st-and.ac.uk).

Museums and other attractions.

Marischal Museum

http://www.abdn.ac.uk/marischal_museum/
Marischal College, University of Aberdeen, Broad Street, Aberdeen AB10 1YS (tel 01224 274301; museum@abdn.ac.uk;
Senior Curator: Neil Curtis, neil.curtis@abdn.ac.uk)
Includes the University's collections in scientific instruments, anthropology, and geology.

The Natural Philosophy Collection of Historical Scientific Instruments

<http://www.abdn.ac.uk/~nph126/>
The School of Physics, Fraser Noble Building, University of Aberdeen, Aberdeen AB24 3UE (Curator—John Reid, j.s.reid@abdn.ac.uk)
This collection of equipment (used for 250 years of teaching and research in natural philosophy) is one of the best of any British physics department, though little is on display.

Zoological Museum

<http://www.abdn.ac.uk/~nhi708/>
Department of Zoology, University of Aberdeen, Tillydrone Avenue, Aberdeen AB24 2TZ (Curator—Martyn Gorman, m.gorman@abdn.ac.uk)

Banff Museum

<http://www.aberdeenshire.gov.uk/heritage/>
High Street, Banff AB45 1AE (tel 01771 622906)
Exhibits include scientific instruments of the astronomer James Ferguson (1710-76).

James Watt's Cottage

Kinneil Estate, nr. Bo'ness EH51 OPR
The ruins of the cottage where James Watt devised his improved steam engine of 1765.

30-31 Somerville Square
Burtisland, Fife KY3 9DN

The childhood home of the mathematician and astronomer Mary Somerville (1780-1872), Victorian Britain's most accomplished woman scientist.

Hugh Miller's Cottage

<http://www.nts.org.uk/hugh.html>
Church Street, Cromarty, Ross-Shire IV11 8XA (tel 01381 600245)
The birthplace and residence of geologist Hugh Miller (1802-1856) contains an exhibition on his life and work.

Lochfield Farm

near Darvel, East Ayrshire
The birthplace of Alexander Fleming (1881-1955), Nobel laureate and discoverer of penicillin; there is a monument in Darvel town square.

Crichton Royal Hospital Museum

<http://www.dumfriesmuseum.demon.co.uk/crichroy.html>
Easterbrook Hall, Bankend Road, Dumfries DG1 4TG (tel 01387 255301 ext 2360; Curator—Morag Williams, morag.williams@virgin.net)
This former asylum at Crichton Campus (*q.v.*) has a museum of psychiatric medicine.

Dumfries Museum and Camera Obscura

<http://www.dumfriesmuseum.demon.co.uk/dumfmuse.html>
The Observatory, Dumfries DG2 7SW (tel 01387 253374; postmaster@dumfriesmuseum.demon.co.uk)
The camera obscura, occupying a redundant windmill tower, was installed to observe the 1835 passage of Halley's comet.

The University of Dundee Museum Collections

<http://www.dundee.ac.uk/museum/>
Carnegie Building, University of Dundee, Dundee DD1 4HN (tel 01382 344310; museum@dundee.ac.uk)
Many of the 13,000 items here are natural history specimens; there are also scientific instruments and some 500 objects related to 20th c history of medicine. On display on various locations throughout the

university. For information, contact the Curator of Museum Services, Matthew Jarron.

Mills Observatory

<http://www.dundee.gov.uk/mills/>
Glamis Road, Balgay Park, Dundee DD2 2UB (tel 01382 435846; mills.observatory@dundee.gov.uk)
The only full-time public observatory in the UK features exhibits on astronomy and the history of the observatory.

The Anatomy Museum

Hugh Robson Building, George Square, Edinburgh EH8 9XD (tel 0131 650 3717)
Based in the University Medical School since 1886; includes the Henderson phrenology collection. For information, contact Mathew Kaufman (m.kaufman@ed.ac.uk).

Anchor Close

Cockburn Street, Edinburgh EH1 1XD
The first edition of *Encyclopaedia Britannica* was printed here in 1768 by William Smellie (1740-1795), as commemorated by a small plaque.

City Observatory

<http://www.astronomyedinburgh.org/>
Calton Hill, Edinburgh EH7 5AA (tel 0131 556 4365; secretary@astronomyedinburgh.org)
An observatory has sat atop Calton Hill since 1776, and the present building (built in 1818) has become a familiar Edinburgh landmark. The former home of the Royal Observatory, it is now run by the Astronomical Society of Edinburgh.

Calton Hill, Edinburgh

The circular temple at the summit is a monument to Dugald Stewart. John Playfair (1748-1819) is also commemorated nearby.

Canongate Kirk

153 Canongate, Edinburgh EH8 8BN
Adam Smith, James Gregory

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(1753-1821), and Dugald Stewart are all buried here.

Camera Obscura

<http://www.camera-obscura.co.uk/>
Castlehill, Edinburgh EH1 2LZ
(tel 0131 226 3709;
info@camera-obscura.co.uk)
Originally known as Short's Observatory, Edinburgh's camera obscura was established in the 1850s by Maria Theresa Short (daughter of Thomas Short) who built the first observatory on Calton Hill in 1776. Exhibitions of camera obscuras and pinhole photography are also on display.

The Dental Museum and the Sir Jules Thorn Exhibition of the History of Surgery

<http://www.rcsed.ac.uk/geninfo/museums.asp>
9 Hill Square, Edinburgh EH8 9DR (tel 0131 527 1649;
museum@rcsed.ac.uk)
The Royal College of Surgeons' public exhibitions include one of the country's largest dental collections and memorabilia of Joseph Lister's surgical innovations. A third collection, an extensive display of pathological anatomy in Playfair Hall on Nicholson Street (*q.v.*), may be viewed by prior arrangement.

Edinburgh International Science Festival

<http://www.sciencefestival.co.uk/>
Roxburgh's Court, off 323 High Street, Edinburgh EH1 1PW
(tel 0131 220 1882;
mathilda@scifest.demon.co.uk)
A wide variety of events for the general public, held in April.

The Granton Centre

<http://www.nms.ac.uk/granton/>
242 West Granton Road,
Edinburgh EH5 1JA
(tel 0131 247 4470)
Storage facility of the National Museums of Scotland (*q.v.*).

Greyfriars Tolbooth & Highland Kirk

<http://www.greyfriarskirk.com/>

Greyfriars Place, Edinburgh EH1 2QQ (tel 0131 225 1900; admin-istrator@greyfriarskirk.com)
Colin MacLaurin's tomb is here, as are monuments to Joseph Black and James Hutton.

James Clerk Maxwell Foundation

<http://www.ma.hw.ac.uk/icmf/jcmf/maxwell1.htm>
14 India St, Edinburgh EH3 6EZ
(tel 0131 343 1036)
Maxwell's birthplace is owned by the foundation, though most of it is let to the International Centre for Mathematical Sciences (*q.v.*).

High Court of Justiciary

Lawnmarket, Edinburgh EH1 1RF
A statue of David Hume (Alexander Stoddart, 1997) has recently been erected in front of the court, on the corner with Bank Street.

Our Dynamic Earth

<http://www.dynaminearth.co.uk/>
Holyrood Road, Edinburgh EH8 8AS (tel 0131 550 7800)
Geology and geography themed exhibits.

National Museums of Scotland

<http://www.nms.ac.uk/>
Chambers Street, Edinburgh EH1 1JF (tel 0131 225 7534;
info@nms.ac.uk)
The National Museums comprise seven separate sites, with the principal collections housed in the Royal Museum and the new Museum of Scotland (adjacent to each other on Chambers Street). The Royal Museum has collections of scientific instruments and natural history and geological specimens, and a permanent display on the relationship between art, science, and industry. The new director, Gordon Rintoul (trained as an historian of science), recently announced plans for a three-story gallery dedicated to the history of science and technology in Scotland.

The Natural History Collections

<http://www.nhc.ed.ac.uk/>
Ashworth Laboratories, King's Buildings, Edinburgh EH9 3JT
(tel 0131 650 5454)
The collections are housed in the premises created for them in 1929 and are still used in teaching. Open by appointment; for information, contact the Curator, Pat Preston (pat.preston@ed.ac.uk).

Old Calton Cemetery

Waterloo Place, Edinburgh
David Hume and John Playfair are buried here.

Royal Botanic Garden Edinburgh

<http://www.rbge.org.uk/>
Inverleith Row, Edinburgh EH3 5LR (tel 0131 552 7171; Regius Keeper—Stephen Blackmore, s.blackmore@rbge.org.uk)
The Royal Botanic Garden was founded in 1670 and until 1763 occupied the site of what became Platform 11 of Waverley Station (where a commemorative plaque may be seen). The library contains more than 3,000 historical manuscripts and books, the earliest of which dates from 1486.

Royal Observatory

<http://www.roe.ac.uk/>
Blackford Hill, Edinburgh EH9 3HJ (tel 0131 668 8100;
info@roe.ac.uk)
The original 1894 Observatory building contains a visitor centre comprising exhibit areas and two large telescopes.

St. Cuthbert's Church

<http://www.st-cuthberts.net/>
5 Lothian Road, Edinburgh EH1 2EP (tel 0131 229 1142;
office@st-cuthberts.net)
There is a monument to John Napier here.

Scottish National Portrait Gallery

<http://www.natgalscot.ac.uk/>
1 Queen Street, Edinburgh EH2 1JD (tel 0131 624 6200;
pginfo@natgalscot.ac.uk)
A substantial collection, including Allan Ramsay's portrait of Hume.

Sir James Young Simpson Museum

52 Queen Street,
Edinburgh EH2 3NS
Simpson's residence for 25 years, where he discovered the anesthetic properties of chloroform in 1847.

Falconer Museum

<http://www.moray.gov.uk/museums/facilities/falconer.html>
Tolbooth Street, Forres,
Morayshire IV36 1PH
(tel 01309 673701;
museums@moray.gov.uk)
Fossils and other items commemorating the pioneering paleontologist and botanist Hugh Falconer (1808-1865).

Chaplaincy Centre

11 Professors' Square, Glasgow G12 8QQ (tel 0141 330 5419)
Formerly Lord Kelvin's townhouse; his astronomical clock may still be seen.

George Square, Glasgow

Among the statues in this central square are monuments to James Watt (F L Chantrey, 1830), and the experimental chemist Thomas Graham (William Brodie, 1872).

Glasgow Botanic Gardens

730 Great Western Road,
Glasgow G12 0UE
(tel 0141 334 2422;
ewen.donaldson@ls.glasgow.gov.uk)
Founded as a physic garden in 1801. The library is rich in antiquarian botanical books.

Glasgow Science Centre

<http://www.gsc.org.uk/>
50 Pacific Quay, Glasgow G51 1EA (tel 0141 420 5000)
A national center for science outreach activities.

The Hunterian Museum

<http://www.hunterian.gla.ac.uk/>
University Avenue, Glasgow G12 8QQ (tel 0141 330 4221)
Opened to the public in 1807, The Hunterian is the oldest public museum in Scotland, moving to its present site in 1870. Originating in the teaching collections of 18th c anatomist William Hunter, the mu-

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seum now includes a diverse range of exhibits. Of particular interest is the model New-comen engine which Watt was commissioned to repair as Mathematical Instrument Maker to the University, which repairs inspired his improved steam engine. The anatomy exhibits have moved to the Laboratory of Human Anatomy, also on the Glasgow campus.

Hunter House Museum

Maxwellton Road, East Kilbride, Glasgow G74 3LW (tel 01355 261261)

The residence of the surgeons William Hunter, founder of the Hunterian Museum (*q.v.*), and his brother John (1728-1793), is now a museum, with exhibits related to 18th c science, medicine, and anatomy.

James Watt's Boulder

south of Nelson's Column, Glasgow Green, Greendyke Street, Glasgow G1 5DB

Upon a large stone is inscribed "Near this spot in 1765 James Watt conceived the idea for the separate condenser for the steam engine".

Kelvingrove Art Gallery & Museum

Argyle Street, Glasgow G3 8AG (tel 0141 287 2699)

Best known for its paintings, the Kelvingrove also has extensive natural history collections.

Kelvingrove Park

Otago Street, Glasgow G12 8NR
Statues of Lord Kelvin (A M Shannan 1913) and Lord Lister (G H Paulin, 1923-4).

Ramshorn Theatre

(St David's Church), University of Strathclyde, McCance Building, 98 Ingram Street, Glasgow G1 1ES (tel 0141 548 2542; ramshorn.theatre@strath.ac.uk)
David Dale is buried here, and there is a memorial to John Anderson.

Kilmodan Manse

Clachan of Glendaruel, Colintraive, Argyll & Bute PA22 3AA

The birthplace of Colin Maclaurin; there is a monument in the nearby kirk.

Glenlair

<http://www.soft.net.uk/glenlair/>
Knockvennie, near Castle Douglas, Dumfries & Galloway DG7 3DF (tel 01556 650209; fergie@glenlair.softnet.co.uk)

The birthplace and home of James Clark Maxwell, where he wrote the *Treatise on Electricity and Magnetism* (1873). The house mostly burned down in 1929, but one wing is still inhabited and the current owner has established a charitable trust to preserve and repair the house. Maxwell is buried nearby in Parton Kirkyard, and commemorated by a stained glass window at Corsock Kirk (for information, contact James Guthrie, tel 01556 503645).

McLean Museum and Art Gallery

<http://www.inverclyde.gov.uk/museum/index.htm>
15 Kelly Street, Greenock, Renfrewshire PA16 8JX (tel 01475 715624)

Exhibits connected with the locally born James Watt, together with natural history and ethnography displays.

Watt Memorial School

Dalrymple Street, Greenock, Renfrewshire
In front of this former school, a statue of James Watt stands in the street (and perhaps on the site) of his birthplace.

220 High Street

Kirkcaldy KY1 1JT
There is a plaque on the site of Adam Smith's house, where he lived much of his life and wrote *Wealth of Nations* (1776). The house was demolished in 1844; one wall survives and a nearby path is called Adam Smith's Close.

Kinnordy

Kirriemuir, Angus DD8 5ER
The birthplace and family home of Charles Lyell, author

of *Principles of Geology* (1830-3). The estate is still owned by the Lyell family.

Netherhall

Largs, Ayrshire
Lord Kelvin's substantial seaside retreat—built for him in 1875—still stands, now divided into flats and surrounded by a recent housing development.

Montrose Library

214 High Street, Montrose DD10 8PH (tel 01674 671415)
Robert Brown (of Brownian motion fame) lived in an earlier house on this site, and is commemorated with a portrait bust.

Sunnyside Royal

Hospital Museum
Montrose DD10 9JP (tel 01674 830361)
Founded in 1781 as the first asylum in Scotland, Sunnyside Royal Hospital contains a museum with exhibits on psychiatry in Scotland since the 18th c.

New Lanark

<http://www.newlanark.org/>
Lanarkshire ML11 9DB (tel 01555 661345; [visit@newlanark.org](http://www.newlanark.org/visit))

Founded in 1784 (by textiles manufacturer David Dale and Richard Arkwright, inventor of the 'spinning jenny'), by 1793 this birthplace of the industrial revolution had become the largest industrial complex in the world. Robert Owen (1771-1858) purchased New Lanark in 1799, and integrated his educational and social values into the organization of the community. The sympathetically restored and fully intact village is now a UNESCO world heritage site.

Coats Observatory

<http://homepage.ntlworld.com/mark.pollock/>
49 Oakshaw Street West, Paisley, Renfrewshire PA1 2EH (tel 0141 889 2013)
Built in 1883 for the Paisley Philosophical Institution, the observatory has recently been renovated, with displays on astronomy, meteorology and the history of the building.

The Bell Pettigrew Museum
<http://biology.st-and.ac.uk/sites/bellpet/>

School of Biology, Bute Building, Westburn Lane, St Andrews, Fife KY16 9TS (tel 01334 463498)
This natural history museum dating back to 1838, includes specimens, fossils, and scientific instruments. For information, contact Sandy Edwards (ase1@st-and.ac.uk).

School of Geography and Geosciences

Irvine Building, The University, St Andrews, Fife KY16 9AL (tel 01334 462894; Departmental Secretary ar5@st-andrews.ac.uk)
Tens of thousands of geological specimens are on display throughout the school.

Physical Sciences Building
North Haugh, St Andrews, Fife KY16 9SS (tel 01334 463103 physics@st-and.ac.uk)

A display of scientific instruments from the 16th-19th c. A related collection may be seen at the *School of Psychology, St. Mary's College*, South Street, St Andrews, Fife KY16 9JU.

Schiehallion

1083m 3554« near Aberfeldy, Perthshire
One of Scotland's Munros, or 3000-plus mountains. Because of its symmetrical shape, it was ascended in 1774 by the Astronomer Royal Nevil Maskelyne (1732-1811) to measure the force of gravity by deflection of a plumb bob.

Strontian, Argyllshire

A river and a village on the A861, Strontian gave its name to the element Strontium, first discovered in ore samples found nearby.

Journals.

A major journal of hopos interest, the *British Journal for the Philosophy of Science* (<http://www3.oup.co.uk/phisci/>; bsps@st-and.ac.uk), is edited by Peter Clark (pjc@st-and.ac.uk) of the Department

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of Logic and Metaphysics, St Andrews (*q.v.*).

The former Centre for Philosophy, Technology and Society at Aberdeen used to publish a bi-annual journal, *Ends and Means* (which may still be read at <http://www.abdn.ac.uk/philosophy/cpts/techno.hti>).

Reid Studies has been re-launched for 2003 as *The Journal of Scottish Philosophy*, <http://www.eup.ed.ac.uk/newweb/journals/scotphil/>. It is now published by Edinburgh University Press, on behalf of the University of Aberdeen and the Scots Philosophical Club. For information, contact Gordon Graham (g.graham@abdn.ac.uk) at the Department of Philosophy, Aberdeen (*q.v.*), where it was formerly published in-house.

The Scots Philosophical Club (*q.v.*) is also responsible for the *Philosophical Quarterly*, <http://www.st-and.ac.uk/~pq/>, one of Britain's more important general philosophy journals. It is edited by an Editorial Board made up of staff of the two philosophy departments at St Andrews, and representatives from the other Scottish philosophy departments. For information, contact Stephen Read (slr@st-and.ac.uk) or David Archard (dwa@st-and.ac.uk).

Publishers.

The big four English-based academic presses (Blackwell, Cambridge, Oxford, and Routledge) dominate academic publishing throughout the UK. However there are several local presses of interest:

Edinburgh University Press
<http://www.eup.ed.ac.uk/>
22 George Square, Edinburgh EH8 9LF (tel 0131 650 4223; philosophy editor—Jackie Jones (jackie.jones@eup.ed.ac.uk))

Scotland's most important academic publisher. Although they have a respectable philosophy list, they seldom publish books in the history or philosophy of science.

Mercat Press
<http://www.mercatpress.com/>
10 Coates Crescent, Edinburgh EH3 7AL (tel 0131 225 5324; enquiries@mercaptopress.com)
Formerly the publishing arm of James Thin Booksellers, Mercat Press specializes in Scottish-interest non-fiction, and incorporates much of the backlist of the old Aberdeen University Press.



James Clerk Maxwell (1831-1879)

The Tuckwell Press
<http://www.tuckwellpress.co.uk/>
The Mill House, Phantassie, East Linton, East Lothian EH40 3DG
Small publisher specializing in academic Scottish history.

The Scottish Publishers Association
<http://www.scottishbooks.org/>
Scottish Book Centre,
137 Dundee Street, Edinburgh EH11 1BG (tel 0131 228 6866; info@scottishbooks.org)
A full list of publishers in Scotland is available from this site.

Bookstores.

Vikings Books and Antiques
The Vikings, Cruden Bay, Aberdeenshire AB42 0PE (tel 01779 841675)

A second-hand bookshop in a pub (open during licensed hours), with strengths in history of ideas and history of science.

James Thin
<http://www.jthin.co.uk/>
53-62 South Bridge, Edinburgh EH1 1YS (tel 0131 622 8222; enquiries@jthin.co.uk)
An academic and general bookseller with several branches in Edinburgh and St. Andrews, recently acquired by *Blackwell's Bookshops*.

Peter Bell Books
<http://www.peterbell.net/>
68 West Port, Edinburgh EH1 2LD (tel 0131 229 0562; books@peterbell.net)
Second-hand academic books, including many philosophy and history of science titles.

West Port Books
<http://www.abebooks.com/home/westportbooks/>
147 West Port, Edinburgh EH3 9OP (tel 0131 229 4431; westport@compuserve.com)
A mixture of academic and general second-hand books, plus some specially commissioned reprints.

Caledonia Books
483 Great Western Road, Glasgow G12 8HL (tel 0141 334 9663; caledoniabooks@aol.com)
An extensive range of good quality second-hand and antiquarian stock, including many academic titles.

Voltaire et Rousseau
12-14 Otago Lane, Glasgow G11 7QY (tel 0141 339 1811)
A diverse range of inexpensive second-hand books.

John Smith & Son / Glasgow University Bookshop
<http://www.johnsmith.co.uk/>
University Avenue, Glasgow G12 8PP (tel 0141 339 1463; gu@johnsmith.co.uk)
An academic and general bookseller with several branches in Glasgow, Stirling, St Andrews, Dundee and other locations.

Thistle Books
61 Otago Street, Glasgow G12 8PQ (tel 0141 334 8777)

Second-hand and antiquarian stock, including many recent titles. Particularly strong in philosophy.

Mair Wilkes Books
3 St. Mary's Lane, Newport-on-Tay DD6 8AH (tel 01382 542260; mairwilkes.books@zoom.co.uk)
Extensive stock of antiquarian and second-hand philosophy of science titles, located between Dundee and St Andrews.

Bouquiniste
31 Market Street, St Andrews KY16 9NS (tel 01334 476724)
Small stock of second-hand books. The proprietor also runs a Saturday book stall in the center of town with a surprising variety of bargains.

Quarto Bookshop
8 Golf Place, St Andrews KY16 9JA (tel 01334 474616)
Second-hand, antiquarian and some new books, of both academic and general interest. The proprietor, Margaret Squires, is married to a retired member of the Department of Logic and Metaphysics.

Wigtown
<http://www.wigtown-booktown.co.uk/>
Wigtownshire, Dumfries & Galloway. An attempt to replicate the success of Hay-on-Wye in Wales, Scotland's 'National Booktown' now boasts 29 bookshops. One of these, *The Bookshop* (17 North Main Street, Wigtown DG8 9HL; tel 01988 402499; the-bookshop@freeuk.com), claims the largest stock of second hand books in Scotland. Two others may be of particular interest to hopoi, *451°F* (29 South Main Street, Wigtown DG8 9HG; ian@451f.org.uk; <http://www.451f.org.uk/>) and *Transformer* (26 Bladnoch, near Wigtown DG8 9AB; tel 01988 403455; caweaver@freeserve.co.uk).

The annual guide 'Secondhand and Antiquarian Bookshops in Scotland' lists more than a

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hundred shops, and is available from most of them; it is published by Edward Fenwick, 3 Thirlestane Lane, Edinburgh EH9 1AJ (tel 0131 447 0429), who also sells science and mathematics books by mail order. The magazine *Scottish Book Collector* maintains a list of bookshops on its website, at <http://www.scotbooksmag.demon.co.uk/booksell.htm>. See also the Scottish page of Evelyn Leeper's worldwide bookshop guide, at <http://www.geocities.com/evelynleeper/uk-scot.htm>.

Internet Resources.

The Scottish Museums Council (<http://www.scottishmuseums.org.uk/>) carries information on several hundred museums throughout Scotland, with links to sites where available. The NAHSTE (Navigational Aids for the History of Science, Technology & the Environment) project provides a detailed index to scientific archives at Edinburgh, Glasgow, and Heriot-Watt Universities (<http://www.nahste.ac.uk>).

An enormous quantity of historical material relating to Scotland is available online at <http://www.electricscotland.com/history/>.

Several UK-wide groups maintain sites with information on Scottish events, conferences and courses:

- The British Society for the History of Science (<http://www.bsbs.org.uk/>) The BSBS site is especially helpful, and includes a database of all UK history of science courses.
- The British Society for the History of Mathematics (<http://www.dcs.warwick.ac.uk/bsbm/>)
- The British Society for the Philosophy of Science (<http://www.dur.ac.uk/philosophy/department/bsps/bsps/home.html>)
- The British Logic Colloquium (<http://www.cs.bham.ac.uk/~exr/blc/>)

The government was revolutionized in 1999 with the (re)creation of a Scottish Parliament. The inception of this new body coincided with a welcome resurgence of interest and pride in many Scottish institutions. One such beneficiary is the Museum of Scotland (*q.v.*), soon to acquire a new gallery celebrating Scottish achievement in science and technology. Whether future devolved governments will so discharge their responsibilities for Scottish education and research that such achievements may continue remains to be seen.*

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Readings in the History of Scottish Science and Philosophy

A. Broadie. *The Scottish Enlightenment: An Anthology* (Edinburgh: Canongate, 1997)

— *The Scottish Enlightenment* (Edinburgh: Birlinn, 2001)

—, ed. *The Cambridge Companion to the Scottish Enlightenment* (Cambridge: C.U.P., 2002)

A. G. Clement & R. H. S. Robertson. *Scotland's Scientific Heritage* (Edinburgh: Oliver & Boyd, 1961).

G. E. Davie. *The Democratic Intellect: Scotland and her Universities in the Nineteenth Century*. (Edinburgh: Edinburgh University Press, 1961).

— *The Crisis of the Democratic Intellect: The Problem of Generalism and Specialisation in Twentieth-Century Scotland*.

(Edinburgh: Polygon, 1986).

A. Hook & R. B. Sher, eds. *The Glasgow Enlightenment* (East Linton: Tuckwell, 1995).

T. E. Jessop. *A Bibliography of David Hume and of Scottish Philosophy* (London: Brown, 1938)

P. Jones, ed. *Philosophy and Science in the Scottish Enlightenment* (Edinburgh: John Donald, 1988).

J. J. McCosh. *The Scottish Philosophy* (London: Macmil-

lan, 1875). Available online at <http://www.utm.edu/research/iep/text/mccosh/mccosh>.

C. Smith. *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain* (London: Athlone, 1998).

T. I. Williams. *Our Scientific Heritage: An A-Z of Great Britain and Ireland* (Stroud: Sutton, 1996).

C. W. J. Withers and P. Wood, eds. *Science and Medicine in the Scottish Enlightenment* (East Linton: Tuckwell, 2002).

Book Reviews

Kant's Final Synthesis

An Essay on the Opus postumum.

Eckart Förster, xx + 207 pp. Cambridge, MA: Harvard University Press, 2000. \$ 36.95

Kant's *Opus postumum* has begun to receive scholarly attention in recent years, for example, in Burkhard Tuschling's *Metaphysische und transzendente Dynamik in Kants opus postumum* (Berlin, 1971), Vittorio Mathieu's *Kants Opus postumum* (Frankfurt, 1989), and Michael Friedman's *Kant and the Exact Sciences* (Cambridge, MA, 1992). Yet this work has been largely ignored or perhaps avoided by scholars of Kant's thought. Förster's excellent book—the first in English to focus solely on the *Opus postumum*—should prove to all that Kant's last writings ought to be studied in greater detail and taken very seriously. It is convincingly argued that the *Opus postumum* shows Kant working on some of the deepest problems and issues in his philosophy: "...the objective validity of the categories, the dynamical theory of matter, the nature of space and time, the refutation of idealism, the theory of the self and its agency, the question of living organisms,...and, finally, the idea of transcendental philosophy itself." (p. xi) Förster's

book gives us a coherent and philosophically fascinating interpretation of these issues in Kant's final writings.

The *Opus postumum* is usually regarded as providing what Kant had described in the last years of his life as the "Transition from the Metaphysical Foundations of Natural Science to Physics." There has been a tendency on the part of some Kant scholars to equate, on the one hand, the 'transition' project and the *Opus postumum* and, on the other hand, the 'gap' in his philosophy that Kant claimed to see in 1798 and that tormented him so much. Förster spends the first four chapters of this book sorting out the nature of this transition project—showing what this 'gap' in Kant's philosophy was, and Kant's solution in the *Opus postumum* to the 'gap'.

In the process, he walks a fine interpretive line, arguing against the views of Tuschling, who holds that Kant was re-working his *Metaphysical Foundations of Natural Science* because of 'internal contradictions'; of Mathieu, who sees the

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Opus postumum as an attempt to correct a failure in the third *Critique*; and of Friedman, who claims that the *Opus postumum* is intended to take into account developments in chemistry since the publication of the *Metaphysical Foundations of Natural Science*. According to Förster, one of the main goals of the *Opus postumum* is to provide “an *a priori* ‘elementary system’ of the moving forces of matter.” (p. 11)

We are led, therefore, not only through the issue of the nature of matter *per se* but also through the issue of the nature of an organism, or a self-moving machine of nature. And Förster shows us that Kant’s account of matter is linked to his account of the ether: in the *Opus postumum*, Kant argues that “any matter of a particular form, hence any physical *body*, is conceivable only on the basis of a universally distributed, oscillating ether.” (p. 45) Nevertheless, Kant became aware of a problem in his matter theory that arose upon further reflection on the forces of attraction, repulsion, and cohesion, namely, that “the formation of an object of outer sense from these forces can no longer be constructed in pure intuition.” (p. 71) As Förster puts it, Kant slowly realized that “the exhibition of the subject’s own bodily forces in the systematization of experience...[must]...play the role previously assigned to the construction of the concept ‘matter.’” (p. 74)

This, then, is the ‘gap’ in Kant’s system, which is filled by a *Selbstsetzungslehre* (doctrine of self-positing), the subject of chapter four. The desired integrated solution in the *Opus postumum* to the problems of the critical philosophy is finally presented to us: “I must posit myself as object in order to know myself as subject....The determination of my own existence takes place...within the

context of the ideal of a single, all-embracing experience, itself depending on the collective unity of moving forces of matter, which the subject investigates, guided by the table of categories, progressing to a thorough determination of all phenomena.” (p. 113)

The final chapter is an interesting reflection on the self-constitution of reason and the possibility of transcendental philosophy. Förster starts this discussion with a line from a letter from Hölderlin to Schiller—“I regard reason as the beginning of the understanding”—and points to the apparent change in Kant’s view in his final years. Whereas in the *Critique of Pure Reason* Kant had famously claimed that “all our knowledge starts with the senses, proceeds from thence to understanding, and ends with reason” (A 298), in the *Opus postumum* we find such statements as “reason precedes, with the projection of its forms” and “ideas are images (intuitions), created *a priori* through pure reason, which, [as] merely subjective thought-objects and elements of knowledge, precede knowledge of things” (Ak. 21:15 and 21:51, quoted p. 150) According to Förster, Kant’s arguments and claims are similar to those made by Hölderlin and the German idealists and indicate that Kant was well aware of the direction that his critical philosophy could take. More interesting, however, is the parallel Förster finds between Kant’s *Ideenlehre* in the *Opus postumum* and the account of the roles of words in the late Wittgenstein. For Kant, certain ideas or ideals of reason, while thought-entities, must also be considered as things independent of the thinking subject. Here, however, Wittgenstein’s solution to his philosophical problem—that meaning is a community effort—points out

the real difficulty in Kant’s transcendental idealism: the self-constitution of reason is unintelligible.

I have only offered the reader a rough sketch of Förster’s interpretation. I urge all scholars interested in Kant and Kant’s place in the history of the phi-

losophy of science to take the time to read this book.

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On Tycho’s Island.

Tycho Brahe and His Assistants, 1570-1601.

Robert Christianson, xii + 451 pp. Cambridge, New York: Cambridge University Press 2000, £35 / \$34.95

The two central features of Christianson’s book are found in his title. For one, an exuberant style and tangible historical evidence creates the impression that the reader is *on Tycho’s island*, witnessing the research work being done. For another, the island is a symbol of the teamwork model of social organization of scientific research that Tycho helped foster.

Christianson’s book thus complements the prevailing view on Tycho Brahe as a central figure of 16th c planetary science, whose prominence is attributed mostly to the alternative astronomical model that informed much of 16th and 17th c scholarship and teaching. *On Tycho’s Island* demonstrates that Brahe was a significant figure in the history of organizational models of scientific research.

This story starts at a moment critical to the course of Tycho’s professional life. Instead of choosing a promising political career at the age of 29, Tycho in 1575 devoted himself to scientific research. He turned down the proposal of King Frederick II, who offered him a castle in return for his services. Some months later, the king learned about Tycho’s plans to leave Denmark and continue astronomical research in Germany. In response, in 1576 he offered the Baltic island of Hven—750 hectares—as Tycho’s fief. In addition, the king estab-

lished an annual pension to enable his research and granted him 400 talars to build a residence on Hven. By accepting this proposal, Tycho entered the institution of patronage, trading duty and dedication for prestige, funding, and protection.

Hven thus became the location of Uraniborg—a new kind of scientific institution established as a research center with its own staff and equipment, and with autonomous projects and activities. Uraniborg was unlike the then-known scientific institutions, such as universities or academies. First, it was supported by the state; second, it was almost entirely dedicated to research activities with education as a by-product only.

Among the learned activities at Uraniborg, Christianson discusses research on the distance to Mars, comets, solar and lunar eclipses, the fixed stars, meteorology, and iatrochemistry. He also describes instructional offerings (geometry, architectural theory, trigonometry, observational theory and practice, astronomy and cosmology, and Paracelsian chemistry), construction of instruments (including wooden and steel sextants, cross-staffs, quadrants, and zodiacal armillaries), the establishment of a large library (with over 3,000 volumes), editing and printing of books (mostly dedicated to observational reports and elaboration of

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Tycho's cosmological model), and Uraniborg's role as visiting center for students, scientists, artisans, noblemen, and ruling princes. This account shows that the institution of patronage was of two natures: on one hand, the king had a patron relationship to Tycho, and on the other—as an aristocrat and renowned scholar—Tycho established the same relationship between himself and academics, artists, and craftsmen.

Christianson reveals a wider historical and social background of the Uraniborg settlement. In prior times, Hven was inhabited by a small number of villagers who enjoyed a fair amount of sovereignty. However, to realize his plans and build his residence, Tycho fought against the customary freedom of inhabitants, raising new taxes and work requirements—which decision was legitimized by the king.

As Christianson argues, Tycho deserves credit for initiating a number of now-ordinary practices of science. For instance, all staff members, assistants, and visiting scholars were employed on the basis of formal contracts. Tycho was also the first to initiate scientific expeditions. Moreover, his 1587 book on the comet of 1577 constitutes a model of what is now recognized as scientific monograph: a book entirely devoted to the study of one subject, written primarily for other scholars, with a comprehensive survey of other discussions of the same problem.

The author also discusses Tycho's political reasons for abandoning Uraniborg, and how he finally became an imperial advisor in Prague. Christianson concludes this story by noting that it is a matter of historical accident that his successor at Hven was Kepler rather than one of Tycho's dedicated assistants, such as Longomontanus.

The second part of the book is a biographical directory of Tycho's coworkers and staff members, which list includes architects, artists, bishops, instrument makers, mathematicians, noblemen, painters, pastors, politicians, printers, publishers, sculptors, students, teachers, university professors, and vassals. The biographies are based on 25 years of Christianson's research and provide substantial support for his view of Tycho as establishing a new organizational model for scientific research.



Tycho Brahe at Hven

On Tycho's Island is instructive not only for those interested in Tycho and his place in the history of science. The book is also a key source for those studying the social workings of science. Thanks to this impressive volume, we can assess in detail the capture and transmission of political and financial support for research, contract negotiation, and arrangement of research facilities in the early modern era. We can also better understand the careers and thought of many people influenced by Tycho's patronage.

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Quantum Chance and Non-Locality. Probability and Non-Locality in the Interpretations of Quantum Mechanics.

W. Michael Dickson, 264 pp. Cambridge, New York: Cambridge University Press 1998, £55 / \$75

As those who know Dickson's work might expect, this is a typically thoughtful and limpid exposition of the foundations of quantum mechanics. As stated in the preface, the aim is to employ certain well-known interpretations as tools for exploring issues to do with probability and non-locality at the level of quantum objects. More specifically, the question is addressed as to how features of such objects relate to features of 'everyday' objects. And Dickson's way of approaching this question is of particular interest for the historically inclined: in a move reminiscent of Cushing's attempt to resist the 'Copenhagen Hegemony', he takes us back to a time before the question was foreclosed by the 'orthodox' view through the 'whims of history', a time when Born, for example, talked of the wave function as representing a 'guiding field' and appeared to acknowledge the possibility of an underlying determinism. As Dickson notes, this historical move opens up new possibilities for interpretation and no one should be surprised to find that Bohm features prominently in the ensuing discussion.

Paraphrasing the sports commentator, this is a book of two halves. The first, entitled 'Quantum Chance', begins with the formalism of quantum probability before setting out the various interpretative options. The latter are spelled out in terms of the acceptance or denial of 'indefiniteness'—understood via the eigenstate-eigenvalue link—and 'dynamical indeterminism'—understood in terms of lack of prediction. This gives rise to

a four-fold classification: 'orthodox' interpretations, which accept both indefiniteness and indeterminism; 'no-collapse' interpretations, like many worlds and many minds, which accept indefiniteness but not indeterminism; 'modal' interpretations, which reject indefiniteness but accept indeterminism; and Bohm theory, which denies both indefiniteness and indeterminism. The principal problems with each approach are spelled out and along the way we are treated to nicely detailed accounts of continuous spontaneous localization theory, consistent histories, quantum logic, and recent developments of Bohmian mechanics.

This classification then feeds into the second half, on 'Quantum Non-locality'. Beginning with the EPR-Bohm experiment, Dickson explores the relationship between probability and non-locality, moving from simplified to more complete, 'dynamical' models of this experiment. Skipping the subtleties, his conclusion is that "... if one wants a local theory, one must be willing to countenance deterministic results and weak deterministic transitions." (p 162) What about Bell? Dickson insists that Bell's theorem does not completely rule out the possibility of complete locality and determinism since the derivation of the inequality also involves the condition— independent of all locality conditions—that the hidden variable distribution is independent of the setting of the apparatus is denied. It is pre-

(Continued on page 19)

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cisely this which allows the adroit Bohmian to evade the grip of Bell's Theorem, since the condition is violated by Bohm's theory.

What about Einstein? Dickson takes the increasingly familiar line that Special Relativity should be understood as a kind of phenomenological theory, on the grounds that, historically, the core physical principles were motivated by epistemic considerations. After a digression through the 'block universe' argument, in which he maintains that the conclusion of such arguments are actually of no interest in the relativistic context, Dickson discusses the relationship between the locality conditions he has set out, Lorentz invariance and local causality. His conclusion is that judgments regarding these relationships cannot be made at a general level but only on a case-by-case basis in the context of a complete model of the EPR-Bohm experiment.

These results are then brought to bear on the interpretations discussed in the first half and Dickson pays close attention to the implications for Bohm theory in particular. He argues that it can be viewed as both local and consistent with QM, with the impact of Bell avoided precisely in the way indicated above. As in the discussion of Special Relativity, this section supports Dickson's overall conclusion: questions in the philosophy of physics—regarding locality, determinism etc.—cannot be decided by appealing to general principles but only in the context of a detailed interpretation or model. And, presumably, as he indicates in the case of Special Relativity, for example, the nature of this interpretation or model may reflect historical considerations.

Thus the approach is 'local', focused, and 'situated'. As Dickson acknowledges, the issue of realism is side-stepped by reading QM as *purporting* to be about the 'sub-phenomenal' world. Still, one is left with the feeling that the concluding section might have been expanded to bring the discussion back round to the nature of quantum objects, for example. However, Dickson emphasizes that, "[w]e do *not* here have a case of physics, or philosophy of physics, teaching us something about more general debates in philosophy of science. Instead, philosophy of physics has its own reasons for adopting certain general principles about science." (p 216) This detachment of philosophy of physics from general philosophy of science is contentious, of course. One might insist that the 'reasons' Dickson speaks of cannot be so sharply delimited. And if physics, or the philosophy thereof, cannot help us resolve more general debates in philosophy of science, then one might well despair whether *anything* can! Having said that, the clarity and detail outweigh the lack of the sort of overarching philosophical framework which informs van Fraassen's *Quantum Mechanics: An Empiricist Approach*, for example. Rather than the latter, the point of comparison is with Redhead's *Incompleteness, Nonlocality, and Realism*. Against such a standard, Dickson's book measures up very well indeed.

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Gödel: une révolution en mathématiques. *Essai sur les conséquences scientifiques et philosophiques des théorèmes gödéliens.*

André Delessert, 288 pp. Lausanne: Presses
polytechniques et universitaires romandes, 2000
CHF 81.90 € 54.90 (pb).

André Delessert, professor emeritus of the Université de Lausanne and specialist in mathematics education, has set himself the difficult task of explaining in simple language Gödel's theorems and their consequences, and showing that they constitute a revolution in mathematics. Unfortunately, neither form nor substance are convincing.



David Hilbert (1862-1943)

Delessert chooses the concept of number as his angle of analysis, which would be a respectable choice if one understood the reason for doing so. The division of the book into two parts—the dividing point being post-Cantorian mathematics—seems to result more from drawing out the text than from true historical, philosophical, or mathematical research. The theme of 'revolution' unfortunately prompts the author to offer these titles for two sections: "Number in the *ancien régime*", "No, Sire! This is a revolution". Delessert thus makes a concession to a regrettable style in French-language scientific popularization: familiarity and humorous pretension.

Oddly, many figures here—some well known—are cited from the secondary literature. There is in this a regrettable lack of seriousness—all the more irritating that some references in the notes do not appear in the bibliography.

The entire first section leaves so much perplexing as to be superficial, flat, and for the most part useless. In one hundred pages, the history, math, and philosophy of the number concept is recounted, from old numeration systems to the Cantorian transfinite, passing through the doctrines of Plato and Aristotle, questions of theology, theories of complex and irrational numbers, and so forth. The reader who truly wants to be informed should seek more focused studies on this or that aspect—especially given such remarkable pearls as these:

- Relative to Bolzano's discovery of a nowhere differentiable yet everywhere continuous function, Delessert tells us that "that fact had passed unnoticed, undoubtedly repressed in the unconscious of analysts". Let us pass on this irritating reference to psychoanalysis to point out that Bolzano's works were not truly known until after 1870.
- As regards Kant—discussed in half a page—the author admits to "have been at pains to follow his thought on numbers". While he is undoubtedly not alone in this judgment, an attempt to do so might not have been useless.
- Dedekind's theory of natural integrals is not deemed of interest, given that the demonstration of the existence of an infinite set is deficient; this is a strange assessment.

One might well question Delessert's interests in this first

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section. Why such a broad range to his exploration of the concept of number—what is the interest relative to Gödel? Delessert implicitly introduces one element, an *a priori* realism—that he later on reveals and which occasionally undermines his interpretations of the authors mentioned.

With the second section, one hopes to enter the quick of the subject. But first we are only allowed a brief survey of the use of set-theoretic concepts in mathematics. The case of the axiomatization of geometry is better treated, but the Hilbertian formalism, reduced to only its syntactic aspect, leads to a conclusion that brushes with heresy: the formalism, we are told, is “also a manifestation of the logicism preached by Frege, Dedekind, and Russell.” And when Delessert adds that for those three authors, “all of pure mathematics, including geometry, rest entirely on logic”, one has the right to be irritated.

Despite other mistaken notions of this sort, the presentation of the Hilbert programme merits cheer. But when we pass on to Gödel’s theorems, the shock is

great. So that all that follows is easy to apprehend, Delessert presents us with a veritable précis of first order logic. It is understandable why he does this, but the effect is brutal and amplifies the impression that this book is padded.

Delessert next presents Gödel’s first great result, which he judges unjustly neglected by the commentators: the completeness theorem of first-order logic. Even if the demonstration is not detailed, the theorem and its ancillaries are expressed with all desirable rigor. But the uninitiated reader might now be lost, as he probably would be with the incompleteness theorems, even if Delessert introduces the principal notions necessary to their comprehension (completeness, consistency, non-contradiction), then expresses the theorems with simplified demonstrations. The mathematical consequences of these theorems are sometimes tackled superficially: Dedekind’s ‘constructivism’ (?) is rendered poorly, and Brouwer’s intuitionism is presented in a few quick pages and as if it were a consequence of Gödel’s results.

With what he calls ‘post-Gödelian mathematics’, Delessert wants to convince us of the validity of mathematical platonism. Let us render tribute to his attempt to lend this perspective the maximum of precision. The idea is to respond to these central questions:

- What is the object of mathematics?
- What are the respective places of the finite and infinite in mathematics?
- Were there revolutions in mathematics, other than that due to Gödel?
- Have mathematicians taken full stock of the results of the Gödelian revolution?

Delessert’s responses are disappointing. Relying on a synthetic work of T. Tymoczko, he compares different theses which are not of the same value, and in so doing falls into banality. One would have hoped for a more personal study of ‘Gödel’s response’, even if Delessert insists—intelligently so—on what Gödel understood by mathematical platonism and intuition.

It is more convincing when he takes up Gödel’s theorems in light of a distinction he introduces, recalling Aristotle, be-

tween ‘numeral’ and ‘natural number’. That distinction effectively makes the first a form of the second. Delessert critiques, as have others, Gödel’s ‘physicalist’ platonism as dissolving this dichotomy, and advances three characteristics of mathematical reality: the identity or unicity (rather than *unity*) of objects, resistance (to contradiction), and objectivity.

Delessert concludes by attributing to Gödel the paternity of a revolution in mathematics. One may agree with him, all the while contesting his having been the only father (as Delessert seems to suggest). But we are not certain that this work, with all the faults noted here, best supports claims one finds defended elsewhere.

It is disagreeable to speak ill of a work that would serve the history and philosophy of mathematics by addressing a difficult subject, yet this book, superficial and badly constructed, does not hold up to the promises of its title.

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