Reference and Book List

*The **Reference** section of the* Notices *is intended to provide the reader with frequently sought information in an easily accessible manner. New information is printed as it becomes available and is referenced after the first printing. As soon as information is updated or otherwise changed, it will be noted in this section.*

Contacting the *Notices*

The preferred method for contacting the *Notices* is electronic mail. The editor is the person to whom to send articles and letters for consideration. Articles include feature articles, memorial articles, communications, opinion pieces, and book reviews. The editor is also the person to whom to send news of unusual interest about other people's mathematics research.

The managing editor is the person to whom to send items for "Mathematics People", "Mathematics Opportunities", "For Your Information", "Reference and Book List", and "Mathematics Calendar". Requests for permissions, as well as all other inquiries, go to the managing editor.

The electronic-mail addresses are `notices@math.ou.edu` in the case of the editor and `notices@ams.org` in the case of the managing editor. The fax numbers are 405-325-7484 for the editor and 401-331-3842 for the managing editor. Postal addresses may be found in the masthead.

Upcoming Deadlines

April 15, 2005: Nominations for Maria Mitchell Women in Science Award. See `http://209.68.19.123/museums/wmnInsc.php`, or contact the Maria Mitchell Women in Science Award Committee at the Maria Mitchell Association, 4 Vestal Street, Nantucket, MA 02554; telephone 508-228-9198.

May 1, 2005: Applications for AWM Travel Grants. See `http://www.awm-math.org/travelgrants.html`; telephone: 301-405-7892; email: `awm@math.umd.edu`.

May 4, 2005: Letters of intent for NSF Graduate Teaching Fellowships in K–12 Education (GK–12). See "Mathematics Opportunities" in this issue.

May 31, 2005: Registration for International Mathematics Competition for University Students. See `http://www.imc-math.org` or contact John E. Jayne, Department of Mathematics, University College London, Gower Street, London WC1E 6BT, United

Where to Find It

A brief index to information that appears in this and previous issues of the *Notices*.

Kingdom; telephone +44-20-7679 7322; fax +44-20-7419 2812; email: j.jayne@imc-math.org.

June 1, 2005: Applications for fall program of the Christine Mirzayan Science and Technology Policy Graduate Fellowship Program of the National Academies. See http://www7.nationalacademies.org/policyfellows or contact The National Academies Christine Mirzayan Science and Technology Policy Graduate Fellowship Program, 500 5th Street, NW, Room 508, Washington, DC 20001; telephone: 202-334-2455; fax: 202-334-1667.

June 2, 2005: Full proposals for NSF Graduate Teaching Fellowships in K–12 Education (GK–12). See "Mathematics Opportunities" in this issue.

June 2, 2005: Applications for NSF University-Industry Cooperative Research Programs in the Mathematical Sciences (UICRP). See http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf05504.

June 30, 2005: Nominations for the 2005 Fermat Prize. See http://www.ups-tlse.fr/ACTUALITES/Sciences/Prix_Fermat_2004/Areglement.html.

July 31, 2005: Nominations and applications for the Monroe H. Martin Prize. Contact R. Roy, Director, Institute for Physical Science and Technology, University of Maryland, College Park, MD 20742-2431.

August 1, 2005: Submissions for Competition 2005 of the European Mathematical Society. See http://www.mat.dtu.dk/people/V.L.Hansen/rpa/secondartcomp.html.

September 16, 2005: Proposals for NSF program on Enhancing the Mathematical Sciences Workforce in the Twenty-First Century. See "Mathematics Opportunities" in this issue.

October 1, 2005: Nominations for Lucien Godeaux Prize. Contact J. Aghion, c/o Secretariat of the Royal Society of Sciences of Liege, Institute of Mathematics of the University of Liege, 12 Grande Traverse, Sart Tilman Bat. B 37, B-4000 Liege 1, Belgium; email: jaghion@ulg.ac.be.

October 19, 2005: Applications for NSF Postdoctoral Research Fellowships (MSPRF). See "Mathematics Opportunities" in this issue.

January 1, 2006: Submissions for Competition 2006 of the European Mathematical Society. See http://www.mat.dtu.dk/people/V.L.Hansen/rpa/secondartcomp.html.

January 1, 2006: Applications for ICM 2006 Travel Grants. See http://www.icm2006.org or email: grants@icm2006.org.

Book List

The Book List highlights books that have mathematical themes and are aimed at a broad audience potentially including mathematicians, students, and the general public. When a book has been reviewed in the Notices, *a reference is given to the review. Generally the list will contain only books published within the last two years, though exceptions may be made in cases where current events (e.g., the death of a prominent mathematician, coverage of a certain piece of mathematics in the news) warrant drawing readers' attention to older books. Suggestions for books to include on the list may be sent to* notices-booklist@ams.org.

*Added to "Book List" since the list's last appearance.

13: The Story of the World's Most Popular Superstition, by Nathaniel Lachenmeyer. Thunder's Mouth Press, October 2004. ISBN 1-568-58306-0.

1089 and All That. A Journey into Mathematics, by David Acheson. Oxford University Press, July 2002. ISBN 0-19-851623-1. (Reviewed February 2005.)

Across the Board: The Mathematics of Chessboard Problems, by John J. Watkins. Princeton University Press, April 2004. ISBN 0-691-11503-6.

**Action This Day*, edited by Michael Smith and Ralph Erskine. Random House of Canada, February 2003. ISBN 0-593-04910-1.

Adam Spencer's Book of Numbers, by Adam Spencer. Four Walls Eight Windows, January 2004. ISBN 1-568-58289-7.

Alfred Tarski: Life and Logic, by Anita Burdman Feferman and Solomon Feferman. Cambridge University Press, October 2004. ISBN 0-521-80240-7.

Alpha and Omega: The Search for the Beginning and End of the Universe, by Charles Seife. Viking, July 2003. ISBN 0-670-03179-8.

Automated Reasoning and the Discovery of Missing and Elegant Proofs, by Larry Wos and Gail Pieper. Rinton Press, December 2003. ISBN 1-58949-023-1.

Beyond Coincidence, by Martin Plimmer and Brian King. Icon Books, March 2004. ISBN 1-840-46534-4.

Beyond Reason: Eight Great Problems That Reveal the Limits of Science, by A. K. Dewdney. Wiley, April 2004. ISBN 0-471-01398-6.

Cogwheels of the Mind: The Story of Venn Diagrams, by A. W. F. Edwards. Johns Hopkins University Press, April 2004. ISBN 0-801-87434-3.

Constantin Carathéodory: Mathematics and Politics in Turbulent Times, by M. Georgiadou. Springer, September 2004. ISBN 3-540-44258-8.

The Constants of Nature: From Alpha to Omega—The Numbers That Encode the Deepest Secrets of the Universe, by John D. Barrow. Jonathan Cape, September 2002. Pantheon Books, January 2003. ISBN 0-375-42221-8. (Reviewed November 2004.)

Count Down: Six Kids Vie for Glory at the World's Toughest Math Competition, by Steve Olson. Houghton Mifflin, April 2004. ISBN 0-618-25141-3. (Reviewed August 2004.)

** The Curious Incident of the Dog in the Nighttime*, by Mark Haddon. Vintage, May 2004. ISBN 1-400-03271-7.

The Curious Life of Robert Hooke, the Man Who Measured London, by Lisa Jardine. HarperCollins, February 2004. ISBN 0-060-53897-X.

** Dark Hero of the Information Age: In Search of Norbert Wiener*, by Flo Conway and Jim Siegelman. Basic Books, December 2004. ISBN 0-738-20368-8.

** The Essential Turing*, edited by B. Jack Copeland. Oxford University Press, September 2004. ISBN 0-198-25080-0.

Everything and More: A Compact History of Infinity, by David Foster Wallace. W. W. Norton, October 2003. ISBN 0-393-00338-8. (Reviewed June/July 2004.)

The Fabric of the Cosmos, by Brian Greene. Knopf, February 2004. ISBN 0-375-41288-3.

Fields Medalists' Lectures, edited by Sir Michael Atiyah and Daniel Iagolnitzer. World Scientific, 2nd edition, December 2003. ISBN 9-812-38259-3.

From Eudoxus to Einstein: A History of Mathematical Astronomy, by C. M. Linton. Cambridge University Press, August 2004. ISBN 0-521-82750-7.

From Newton to Hawking: A History of Cambridge University's Lucasian Professors of Mathematics, edited by Kevin C. Knox and Richard Noakes. Cambridge University Press, November 2003. ISBN 0-521-66310-5.

Gamma: Exploring Euler's Constant, by Julian Havil. Princeton University Press, May 2003. ISBN 0-691-09983-9. (Reviewed August 2004.)

The Golden Ratio: The Story of Phi, the World's Most Astonishing Number, by Mario Livio. Broadway Books, October 2002. ISBN 0-767-90815-5. (Reviewed March 2005.)

A Handbook of Mathematical Discourse, by Charles Wells. Infinity Publishing Company, 2003. ISBN 0-7414-1685-9. (Reviewed September 2004.)

The Heart of Mathematics: An Invitation to Effective Thinking, by Edward B. Burger and Michael Starbird. Key College Publishing (Springer-Verlag), April 2000. ISBN 0-555953-407-9. (Reviewed February 2005.)

* *Incompleteness: The Proof and Paradox of Kurt Gödel*, by Rebecca Goldstein. W. W. Norton & Company, February 2005. ISBN 0-393-05169-2.

* *The Infinite Book: Where Things Happen That Don't*, by John D. Barrow. Jonathan Cape, February 2005. ISBN 0-224-06917-9.

Karl Pearson: The Scientific Life in a Statistical Age, by Theodore M. Porter. Princeton University Press, February 2004. ISBN 0-691-11445-5.

Kepler's Conjecture: How Some of the Greatest Minds in History Helped Solve One of the Oldest Math Problems in the World, by George G. Szpiro. Wiley, January 2003. ISBN 0-471-08601-0. (Reviewed January 2005.)

The Knot Book: An Elementary Introduction to the Mathematical Theory of Knots, Colin C. Adams. AMS, September 2004. ISBN 0-8218-3678-1.

The Liar Paradox and the Towers of Hanoi: The Ten Greatest Math Puzzles of All Time, by Marcel Danesi. Wiley, August 2004. ISBN 0-471-64816-7.

Masters of Theory: Cambridge and the Rise of Mathematical Physics, by Andrew Warwick. University of Chicago Press, July 2003. ISBN 0-226-87375-7.

* *Math and the Mona Lisa: The Art and Science of Leonardo da Vinci*, by Bulent Atalay. Smithsonian Books, April 2004. ISBN 1-588-34171-2.

Math Magic: How to Master Everyday Math Problems, by Scott Flansburg. Perennial Currents, revised edition, August 2004. ISBN 0-060-72635-0.

Math through the Ages: A Gentle History for Teachers and Others, by William P. Berlinghoff and Fernando Q. Gouvêa. Oxton House, 2002. ISBN 1-881929-21-3. (Reviewed October 2004.)

The Mathematical Century: The 30 Greatest Problems of the Last 100 Years, by Piergiorgio Odifreddi and Arturo Sangalli. Princeton University Press, May 2004. ISBN 0-691-09294-X.

Mathematical Journeys, by Peter D. Schumer. Wiley InterScience, February 2004. ISBN 0-471-22066-3.

A Mathematician at the Ballpark: Odds and Probabilities for Baseball Fans, by Ken Ross. Pi Press, July 2004. ISBN 0-131-47990-3.

Mathematicians as Enquirers: Learning about Learning Mathematics, edited by Leone Burton. Kluwer, April 2004. Hardbound, ISBN 1-4020-7853-6; paperback, ISBN 1-4020-7859-5; eBook, ISBN 1-4020-7908-7.

Mathematicians under the Nazis, by Sanford L. Segal. Princeton University Press, July 2003. ISBN 0-691-00451-X. (Reviewed April 2005.)

Mathematics: A Very Short Introduction, by Timothy Gowers. Oxford University Press, October 2002. ISBN 0-192-85361-9. (Reviewed February 2005.)

Mathematics and War, edited by Bernhelm Booss-Bavnbek and Jens Høyrup. Birkhäuser, December 2003. ISBN 3-764-31634-9.

Mathematics in Nature: Modeling Patterns in the Natural World, by John Adam. Princeton University Press, November 2003. ISBN 0-691-11429-3.

Meta Math! The Quest for Omega, by Gregory J. Chaitin. April 2004. Available at `http://www.cs.umaine.edu/~chaitin/omega.html`.

The (Mis)Behavior of Markets: A Fractal View of Risk, Ruin and Reward, by Benoit Mandelbrot and Richard Hudson. Basic Books, August 2004. ISBN 0-465-04355-0.

More Damned Lies and Statistics: How Numbers Confuse Public Issues, by Joel Best. University of California Press, August 2004. ISBN 0-520-23830-3.

More Mathematical Astronomy Morsels, by Jean Meeus. Willmann-Bell Inc., 2002. ISBN 0-943396-743.

The Music of the Primes: Searching to Solve the Greatest Mystery in Mathematics, by Marcus du Sautoy. HarperCollins, April 2003. ISBN 0-066-21070-4.

Number Theory from an Analytic Point of View, by Badih Ghusayni. Komati, December 2003. ISBN 9953-0-0282-7.

* *The Oxford Murders*, by Guillermo Martinez. Abacus, January 2005. ISBN 0-349-11721-7.

Phase Change: The Computer Revolution in Science and Mathematics, by Douglas S. Robertson. Oxford University Press, March 2003. ISBN 0-195-15748-6.

Prime Obsession: Bernhard Riemann and the Greatest Unsolved Problem, by John Derbyshire. Joseph Henry Press, March 2003. ISBN 0-309-08549-7.

Probability Theory: The Logic of Science, by E. T. Jaynes, edited by G. Larry Bretthorst. Cambridge University Press, April 2003. ISBN 0-521-59271-2.

The Reader of Gentlemen's Mail: Herbert O. Yardley and the Birth of American Codebreaking, by David Kahn. Yale University Press, March 2004. ISBN 0-300-09846-4.

The Riemann Hypothesis: The Greatest Unsolved Problem in Mathematics, by Karl Sabbagh. Farrar Straus & Giroux, April 2003. ISBN 0-374-25007-3.

* *The Road to Reality: A Complete Guide to the Laws of the Universe*, by

About the Cover

Extreme 3D visualization

The background image of this month's cover is a photograph included by Jonathan Borwein and David Bailey, perhaps somewhat whimsically, in their article on experimental mathematics. The photograph was taken for a publicity brochure for the now defunct New Media Innovation Centre in downtown Vancouver, British Columbia, an organization partially sponsored by Simon Fraser University, to which Borwein is affiliated. The two young men, who are graduate students in the the department of Electrical and Computer Engineering at the University of British Columbia, are in a kind of box with what might be called surround-projection. The approximate spheres are displayed in duplicate at rapidly alternating times in synchronization with the goggles they are wearing, so that what they see is a simulated 3D image, not just the flat projections on the walls on their box. The projections are interactive, controlled by input through a key pad held by Timothy Chen, the student on the right. The project the students are involved in is part of Mr. Chen's student work at U. B. C. What is being projected is a flow field of spheres in a cylinder with various obstacles interactively superimposed into the flow. The inset photographs are screen displays produced by Mr. Chen from the same project.

It's hard to imagine exactly what role such high end visualization technology will play in mathematical research, but not impossible. One likely application for similar, but not quite so sophisticated, display systems might very well be in public presentations. The effects can be spectacular.

Brian Corrie of Simon Fraser University provided us with the digital version of the background photograph.

—Bill Casselman, Graphics Editor
(notices-cover@ams.org)

Roger Penrose. Knopf, February 2005. ISBN 0-679-45443-8.

Signs of the Inka Khipu: Binary Coding in the Andean Knotted-String Records, by Gary Urton. University of Texas Press, August 2003. ISBN 0-292-78540-2.

* *Stalking the Riemann Hypothesis: The Quest to Find the Hidden Law of Prime Numbers*, by Dan Rockmore. Pantheon, April 2005. ISBN 0-375-42136-X.

Strange Curves, Counting Rabbits, and Other Mathematical Explorations, by Keith Ball. Princeton University Press, November 2003. ISBN 0-691-11321-1. (Reviewed in December 2004.)

Towards a Philosophy of Real Mathematics, by David Corfield. Oxford University Press, April 2003. ISBN 0-521-81722-6.

The Transformation of Mathematics in the Early Mediterranean World: From Problems to Equations, by Reviel Netz. Cambridge University Press, May 2004. ISBN 0-521-82996-8.

The Universal Book of Mathematics: From Abracadabra to Zeno's Paradoxes, by David Darling. Wiley, July 2004. ISBN 0-471-27047-4.

* *The Works of Archimedes: Translation and Commentary*. Volume I: *The Two Books on the Sphere and the Cylinder*. Translated by Reviel Netz. Cambridge University Press, April 2004. ISBN 0-521-66160-9. (Reviewed in this issue.)

A World without Time: The Forgotten Legacy of Gödel and Einstein, by Palle Yourgrau. Basic Books, January 2005. ISBN 0-465-09293-4.

You Can Do the Math: Overcome Your Math Phobia and Make Better Financial Decisions, by Ron Lipsman. Praeger Publishers, November 2004. ISBN 0-275-98341-2.