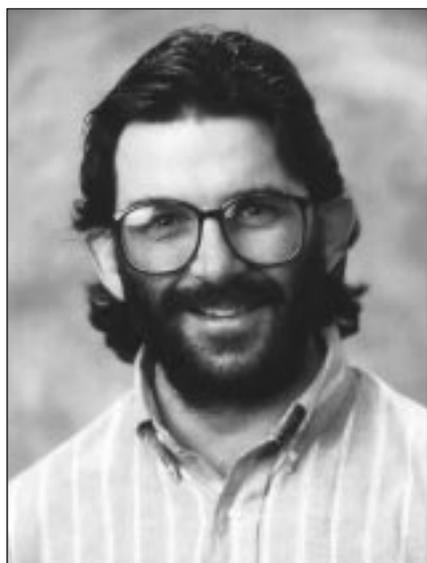


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# Mathematics People



**William McCallum**



**Kent Orr**



**Rafael de la Llave**

## AMS Centennial Fellowships Awarded

The AMS has awarded three Centennial Fellowships for 1995–1996. The recipients are WILLIAM MCCALLUM of the University of Arizona, KENT ORR of Indiana University in Bloomington, and RAFAEL DE LA LLAVE of the University of Texas at Austin.

### **William McCallum**

William McCallum received his Ph.D. in 1984 from Harvard University under the direction of Barry Mazur. After spending two years as a visiting lecturer at the University of California, Berkeley, followed by a year at the Mathematical Sciences Research Institute in Berkeley, he joined the University of Arizona as an assistant professor in 1987 and was promoted to associate professor there in 1990. He

spent the 1993–1994 academic year on sabbatical at the Institut des Hautes Études Scientifiques in France.

McCallum's research is in arithmetic algebraic geometry. Recently he has focused on using Galois cohomological descent and the  $p$ -adic analytic method of Coleman and Chabauty to bound rational points on curves.

### **Kent Orr**

Kent Orr received his Ph.D. in 1985 from Rutgers University under the supervision of Julius L. Shaneson. He was an L. E. Dickson Instructor and later an assistant professor at the University of Chicago. He received a National Science Foundation Postdoctoral Fellowship in 1986. In 1989, he came to Indiana University as an associate professor of mathematics.

Orr's research is in geometric topology, with an emphasis on knots and links. In recent years, he has enjoyed extensive and fruitful collaboration with T. D. Cochran.

## Rafael de la Llave

Rafael de la Llave received his Ph. D. in Mathematics in 1983 from Princeton University under the direction of Arthur S. Wightman. After a year at Institut des Hautes Études Scientifiques (Paris) as a postdoc of Oscar E. Lanford III, he came to Princeton as an assistant professor and, in 1989, he moved to the University of Texas at Austin as an associate professor. He was promoted to full professor in 1994.

De la Llave's research has been mainly in dynamical systems—small divisors and hyperbolic theory—but he has also worked in computer assisted estimates and in quantum mechanics. More recent research interests are fluid dynamics and pattern formation. He was awarded a President's Associates Teaching Fellowship at the University of Texas in 1993–1994.

*Information about the competition for the 1996–1997 AMS Centennial Fellowships will be published in the Mathematics Opportunities section of an upcoming issue of the Notices.*

—Allyn Jackson

## NAS Prizes Awarded

In January, the National Academy of Sciences (NAS) announced the selection of sixteen individuals to receive awards honoring their outstanding contributions to science. The awards were presented in April at a ceremony in Washington, DC, during the 132nd annual meeting of the Academy.

Three mathematical scientists received prizes from the NAS. JULIAN D. COLE and JOSEPH B. KELLER shared the National Academy of Sciences Prize in Applied Mathematics of \$10,000 per year for three years. ROBION C. KIRBY received the \$5,000 National Academy of Sciences Award for Scientific Reviewing.

Cole is the Margaret Darrin Professor of Applied Mathematics in the Department of Mathematics at Rensselaer Polytechnic Institute. The citation says he received the prize “for his original and fundamental contributions to applied mathematics and numerical analysis. His work is characterized by its deep physical and mathematical insights.” Cole received his bachelor's degree in mechanical engineering from Cornell University and his doctorate from the California Institute of Technology, where he later became a professor of aeronautics and applied mathematics. He was a professor at both Harvard University and the University of California, Los Angeles, where he chaired the Mechanics and Structures Department. Cole is a member of the American Academy of Arts and Sciences, the National Academy of Engineering, and the NAS.

Cole's contributions to applied mathematics include the solution of important problems and the development of new mathematical methods, both analytical and numerical. In his 1949 doctoral thesis, Cole introduced what is now known as the Cole-Hopf transformation, which transforms the Burger's equation into the heat equation, thus leading to a solution. His work in this area led to the

idea of viscosity solutions. Bernard J. Matkowsky of Northwestern University calls Cole “a master of singular perturbation methods.” After Cole systematized the ideas of limit process expansions, overlap regions, and matching, these methods were applied to a host of problems, including both low and high Reynolds number flows in fluid mechanics. He also introduced and developed the method of multi-variable asymptotic expansions. His books in this area “have served as bibles for generations of applied mathematicians working on all sorts of problems,” notes Matkowsky. In addition, Cole used Lie group theory to uncover new similarity solutions of the heat equation. He also developed a new and efficient computational method for solutions with shock waves in the transonic flow regime, a method that stimulated enormous growth in aerodynamic computations.

Keller is the Lewis M. Terman Professor of Mathematics and Mechanical Engineering at Stanford University and an honorary professor of mathematical sciences at the University of Cambridge. He was awarded the prize “for his seminal contributions to applied mathematics, with special reference to his geometrical theory of diffraction and his work on water-wave propagation.” Keller received his doctorate in 1948 from New York University, where he remained as a professor until moving to Stanford in 1979. He is a foreign member of the Royal Society of London and a member of the NAS and the American Academy of Arts and Sciences. Keller has received the National Medal of Science, the Timoshenko Medal of the American Society of Mechanical Engineers, the Lester R. Ford Award of the Mathematical Association of America, the Eringen Medal of the Society of Engineering Science, and the von Karman Medal of the Society for Industrial and Applied Mathematics (SIAM). He was SIAM's von Neumann Lecturer and also delivered the AMS Gibbs Lecture.

Keller's contributions to mathematics, science, and engineering stem from his profound understanding and use of perturbation methods for ordinary and partial differential equations arising in a wide variety of applications. He has worked on diffraction theory in optics, scattering of radar signals, antenna design, design and detection of ship hulls, and buckling of mechanical structures. He has also worked on applications in the life sciences, such as the collapse of blood vessels, descriptions of age profiles of bacterial populations, and mathematical models of carcinogenesis. He did pioneering work in singular perturbation theory and bifurcation theory that finds wide application in engineering and the sciences, as well as in other areas of mathematics. Keller's well-known seminars in electromagnetic theory, wave propagation, and applied mathematics ran for two decades at NYU, and he has continued this tradition at Stanford. “His knowledge, personality, and exceptional communication skills are major factors in the success of these seminars,” says Frank Hoppensteadt of Michigan State University. “[Keller] is unexcelled as a teacher of mathematical methods, and he has devoted a major part of his career to the training of young people. He is a model for all of us.”

Kirby is a professor of mathematics at the University of California, Berkeley. The citation says that he received the

prize “for his list of problems in low-dimensional topology and his tireless maintenance of it. Several generations have been greatly influenced by Kirby’s list.” Kirby received his bachelor’s (1959), master’s (1960), and doctoral (1965) degrees from the University of Chicago. He was on the faculty of the University of California, Los Angeles, until 1971, when he took a position as professor at Berkeley. He has held visiting positions at universities and mathematics institutes around the world. He was a Guggenheim Fellow (1974–1975) and was elected Fellow of the American Association for the Advancement of Science (1982). In 1971, he was awarded the AMS Oswald Veblen Prize in Geometry. From 1985 to 1987, he served as Deputy Director of the Mathematical Sciences Research Institute in Berkeley.

Kirby’s original problem list was published in 1978. Running some forty pages, it spanned the whole range of problems and conjectures then open in low-dimensional geometric topology, providing not just the questions themselves but also motivation, explanations, references, and partial answers. “This has been a gold mine for graduate students ever since, and it has been a starting point for so much research in the ensuing years,” notes W. B. R. Lickorish of Cambridge University. “This problem list has been a major factor in making geometric topology the dynamic progressive subject that it is today. ”Many of the original problems have been solved, particularly those concerning four-dimensional manifolds that were solved by Simon Donaldson and his coworkers. However, over the years, Kirby has worked hard to update the list, surveying what has been accomplished and adding new conjectures. Currently the problem list runs to about two hundred pages. “It is good to see an academic award being made for a genuine and much appreciated contribution to mathematical research other than the research itself,” Lickorish declares. “This prize recognizes leadership in research. The generals do occasionally deserve medals!”

—Allyn Jackson

## Granville Receives Presidential Faculty Fellowship

Last summer, President Clinton named fifteen scientists and fifteen engineers as recipients of the 1994 Presidential Faculty Fellow (PFF) Awards. These annual awards recognize young faculty members who demonstrate excellence and promise both in research and teaching at U.S. colleges and universities. Each award carries a grant from the National Science Foundation of \$100,000 per year for up to five years.

Among the awardees was one in mathematics, ANDREW JAMES GRANVILLE. Granville, a number theorist, also received a Sloan Fellowship and was an Invited Lecturer at the International Congress of Mathematicians in Zürich in August 1994. He has been at the University of Georgia

since 1991. With more than half of the funds from the award, in addition to matching funds from the university, Granville will establish a postdoctoral program in the mathematics department. In the past, the department has been able to fill an occasional postdoctoral position on an ad hoc basis. With the new program, it will be able to fund four positions for at least the next five years.

In addition, Granville has committed much of the remainder of the funds to establishing the Number Theory Graduate Student Computing Research Laboratory. “Winning the fellowship is a great honor for [Granville] and the department,” noted Richard Bouldin, associate dean for the College of Arts and Sciences at the University of Georgia. “Andrew could have used his fellowship to travel to other mathematics departments around the country, but instead he’s chosen one of the most altruistic structurings I’ve seen.”

—from University of Georgia News Release

## Humboldt Awards Announced

The Peer Selection Review Committee of the Alexander von Humboldt Foundation in Bonn, Germany, recently made a number of Humboldt Research Awards for Foreign Scholars. Among the awardees were SVETLOZAR RACHEV of the University of California, Santa Barbara, who works in probability theory and statistics, and BERT TAYLOR of the University of Michigan, who works in mathematical analysis.

The Humboldt Foundation has a program by which outstanding young scientists receive fellowships for long-term collaborative research in Germany. For this fellowship, the Committee selected AMBAR SENGUPTA of Louisiana State University, who works in probability theory.

The Committee also approved funding for a German postdoctoral researcher under the Foundation’s Feodor-Lynen Fellowship program. JIMME D. LAWSON of Louisiana State University, who works in algebra, received this grant.

For information on international collaborative research opportunities supported by the Humboldt Foundation, see the Mathematics Opportunities section of this issue of the *Notices*.

—Humboldt Foundation

## Rosen Named to NCTM Post

LINDA P. ROSEN has been named executive director of the National Council of Teachers of Mathematics. She succeeds James D. Gates, who is retiring from the NCTM after thirty-two years in the post. Rosen, who is currently associate executive director and director of policy studies of the Mathematical Sciences Education Board (MSEB) at the National Research Council, will assume her new position in June 1995.

During her nine-year tenure at MSEB, Rosen contributed to the intellectual development and writing of such publications as *Measuring what counts: A conceptual guide for mathematics assessment*, *Reshaping school mathematics: A philosophy and framework for curriculum*, *On the shoulders of giants: New approaches to mathematical literacy*, and *Everybody counts: A report to the nation on the future of mathematics education*. Rosen is an adjunct professor at the University of Maryland and has taught mathematics at the secondary and collegiate levels. She holds a doctorate in mathematics education from the University of Maryland.

—NCTM News Release

## Deaths

**B. E. Gillam**, of Drake University, Des Moines, IA, died on November 22, 1994. Born on October 24, 1913, he was a member of the Society for 53 years.

**Peter A. Greenberg**, of the University of Grenoble, France, died on December 10, 1993. Born on January 24, 1956, he was a member of the Society for 16 years.

**Carole A. Kohanski**, of Providence, RI, died on February 5, 1995. Born on May 1, 1943, she was a staff member of the Society's Meetings and Conferences Department for 25 years, responsible for the planning and coordination of the Joint Summer Research Conferences and the Employment Register at Annual Meetings.

**Raphael M. Robinson**, Professor Emeritus of the University of California, Berkeley, died on December 11, 1994. Born on November 2, 1911, he was a member of the Society for 59 years.