

H. S. M. Coxeter Celebrates 90th Birthday

George F. D. Duff

Born in London, England, on February 9, 1907, Harold Scott MacDonalD Coxeter took his Ph.D. at Cambridge University in 1931. He then became a Research Fellow of Trinity College, Cambridge, until 1936, with two intervals in Princeton as a Rockefeller Foundation Fellow in 1932–33 and a Procter Fellow in 1934–35. In 1936 he joined the Department of Mathematics at the University of Toronto, where he has remained since, with numerous visiting appointments at intervals. He has been professor emeritus since 1980, but continues to work, write, and publish actively.

Coxeter was recognized early as an outstanding geometer, his main interests centering on polyhedra, polytopes, finite groups, symmetry, and related topics. He is the author or coauthor of ten full-length books and several shorter well-known works, including his *Fifty-nine Icosahedra*, and 170 research papers. His *Non-Euclidean Geometry* (1942) will appear shortly in a fourth edition, with a new section on loxodromic sequences of circles and spheres. His monograph *Regular Polytopes* (1948) remains a definitive work that established his reputation as a leading expert in the subject. His textbook *The Real Projective Plane* (1949) has been used widely for many years. With W. O. J. Moser he wrote *Generators and Relations for Discrete Groups* (1957), and with S. L. Greitzer as coauthor, *Geometry Revisited* (1967). His *Introduction to Geometry* (1961) is a wide-ranging and far-reaching study of geometry that was translated into many other languages, has gone through several editions, and

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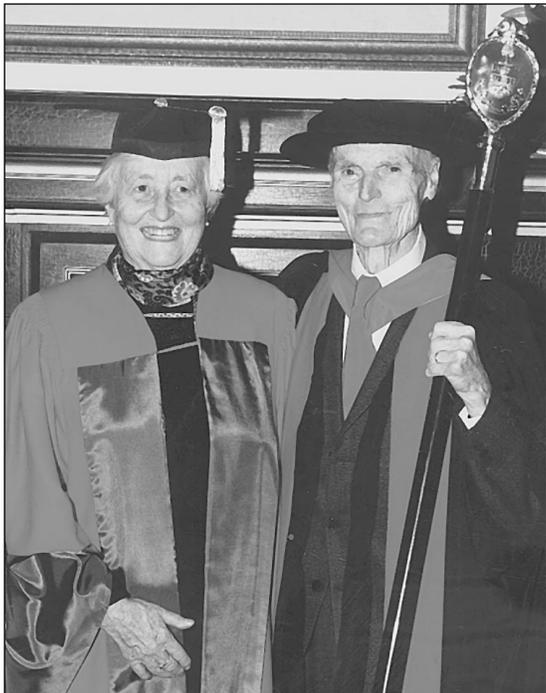
has been a Book-of-the-Month-Club selection. Coxeter himself regards his *Regular Complex Polytopes* (1974) as his favorite work, and a second edition appeared in 1991. Two volumes of collected papers have also been published—his *Twelve Geometric Essays* in 1968 and *Kaleidoscopes* in 1995. As well, Coxeter has revised and rewritten so many editions of *Mathematical Recreations and Essays*, originally published by W. W. Rouse Ball in 1887, that he is now regarded as the author of the thirteenth edition (1987). All of these books have been widely read and are still frequently consulted.

As a teacher Coxeter has become known to three generations of students of geometry at every level, from school to research institute, both throughout North America and abroad. His influence has been important in the career choices of many mathematicians, and he has been a remarkable reviving force in maintaining the popularity of several branches of geometry. The continuing influence of his work is itself a striking testimony to his fine aesthetic and artistic sense.

Coxeter is an acknowledged expert on the works of the artist Maurits Escher, who presented Coxeter with originals of certain of his most geometrical drawings. He was also well acquainted with the late Buckminster Fuller, after whom buckyballs, buckytubes, and other fullerene compounds of carbon have recently been named. Coxeter has served as president of the Canadian Mathematical Society (1962–63), as vice-president of the American Mathematical Society (1968), and as president of the Interna-

tional Congress of Mathematicians in Vancouver in 1974. He has received numerous academy memberships, as well as awards and prizes and honorary degrees.

To celebrate Coxeter's ninetieth birthday, a special occasion took place at The Fields Institute for Mathematical Sciences and the Department of Mathematics at the University of Toronto. A sculpture of a loxodromic sequence of eight spheres by the English sculptor J. Robinson was officially unveiled by Coxeter on February 9, 1997. This sculpture will stand in front of the building that houses The Fields Institute on the University of Toronto campus. The Department of Mathematics has also established a special Coxeter Scholarship Fund in Mathematics, for which an appeal is currently under way. A first list of contributors to date, inscribed in a presentation volume, was ceremonially presented to Coxeter on this occasion, in honor of his more than sixty years presence in the department. An ongoing Coxeter Society, with future membership based on the recipients of the Coxeter Scholarships, is being established to carry forward the influence of this much respected and admired mathematician. Further detailed information of this celebration is available at The Fields Institute and at the Department of Mathematics, University of Toronto.



On November 19, 1996, AMS President Cathleen S. Morawetz received the honorary degree of Doctor of Science from her alma mater, the University of Toronto. She was escorted to the convocation by her old family friend Professor H. S. M. Coxeter.

American Mathematical Society

ALGEBRA AND ALGEBRAIC GEOMETRY

Cogroups and Co-rings in Categories of Associative Rings

George M. Bergman, *University of California, Berkeley*, and Adam O. Hausknecht, *University of Massachusetts at Dartmouth*

This book studies representable functors among well-known varieties of algebras. All such functors from associative rings over a fixed ring R to each of the categories of abelian groups, associative rings, Lie rings, and to several others are determined. The book includes a "Symbol index", which serves as a glossary of symbols used and a list of the pages where the topics so symbolized are treated, and a "Word and phrase index". The authors have strived—and succeeded—in creating a volume that is very user-friendly.

Mathematical Surveys and Monographs, Volume 45; 1996; 388 pp.; Hardcover; ISBN 0-8218-0495-2; List \$79, Individual member \$47; Order code SURV/45NA



Enveloping Algebras

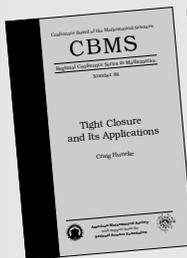
Jacques Dixmier, *Paris, France*

For the graduate student, this is a masterpiece of pedagogical writing, being succinct, wonderfully self-contained and of exceptional precision.

—*Mathematical Reviews*

The above citation is taken from the review of the first English edition of Dixmier's book. The book, which is the first systematic exposition of the algebraic approach to representations of Lie groups via representations of (or modules over) the corresponding universal enveloping algebras, turned out to be so well written that even today it remains one of the main textbooks and reference books on the subject. In 1992, Jacques Dixmier was awarded the Leroy P. Steele Prize for expository writing in mathematics. The Committee's citation mentioned *Enveloping Algebras* as one of Dixmier's "extraordinary books". For the 1996 printing the author updated the status of open problems and added some relevant references.

Graduate Studies in Mathematics, Volume 11, 1996; 379 pp.; Hardcover; ISBN 0-8218-0560-6; List \$59; All AMS members \$47; Order code GSM/11NA



Tight Closure and Its Applications

Craig Huneke, *Purdue University, West Lafayette, IN*

This monograph deals with the theory of tight closure and its applications. The contents are based on ten talks given at a CBMS conference held at North Dakota State University in June 1995.

Tight closure is a method to study rings of equicharacteristic by using reduction to positive characteristic. In this book, the basic properties of tight closure are covered, including various types of singularities, e.g. F -regular and F -rational singularities. Several applications of the theory are given. These include the existence of big Cohen-Macaulay algebras and various uniform Artin-Rees theorems.

CBMS Regional Conference Series in Mathematics, Number 88, 1996; 137 pp.; Softcover; ISBN 0-8218-0412-X; List \$29; All individuals \$23; Order code CBMS/88NA



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