# BOOK REVIEWS

## Creators of Mathematics: The Irish Connection

EDITED BY KEN HOUSTON

University College Dublin Press,
Dublin, 2000, 150 pages, illustrations

reviewed by Judy Grabiner, Flora Sanborn Pitzer Professor of Mathematics, Pitzer College, Claremont, CA 91711, USA, jgrabiner@pitzer.edu.

On the front cover of this book is a collage of photographs including likenesses of Lord Kelvin (from the statue in the Botanic Gardens in Belfast), George Boole, William Rowan Hamilton, and G. G. Stokes: distinguished company indeed, and a nice preview of the contents of the volume. Various authors have contributed short biographical-mathematical sketches of eighteen men who were Irish in origin or who worked and lived in Ireland. Although some of these men have been viewed, from far outside the British Isles, simply as part of the English-speaking mathematical community, and many of them went to school or taught in England or Scotland, the book shows the Irish Connection to have been crucial for many of their careers, whether through the support of family or local communities or Irish universities and academies.

What will the reader find in this short volume? The biographies are chronologically arranged, almost all from the nineteenth and twentieth centuries. Some authors are experts on the mathematician in question; others are mathematicians or colleagues with an interest in the particular individual. Fine portraits accompany most of the chapters. Readers will find a number of fascinating personal glimpses. Some of my own favourites are G. G. Stokes's reference, in his mathematical analysis of waves, to the turbulent west coast of Ireland; F. Y. Edgeworth's testing a statistical hypothesis by observing the traffic rates to and from a wasps nest in Edgeworthstown;

Andrew Young's achievement, when horse racing was banned in the mid-1960s because of foot-and-mouth disease, in developing a computer simulation for the sports pages of the Daily Express, donating the royalties as prizes for students at Ulster and Liverpool; and P. B. Kennedy's response to a hotel register's query 'Nationality'; with the words, 'Irish, thank God'.

First in the list of biographees is Thomas Harriot (1560–1621), one of the most important mathematicians of his time. Harriot got into this book because he lived at Molanna Abbey in County Cork for a while near the end of the 16th century. Best known as associate of Sir Walter Raleigh and as author of A Briefe and True Report of the New Found Land of Virginia, Harriot contributed to the theory of equations, navigation, telescopic observation, and physics, being an independent discoverer of Snel's law of refraction.

Moving to more modern times, we encounter some more familiar figures. Sir William Rowan Hamilton (1805–1865) was born in Dublin, studied at Trinity College, Dublin, held the Andrews Chair there and was also Astronomer Royal of Ireland, and was president of the Royal Irish Academy. The chapter includes a photograph of Brougham Bridge, Dublin, although all that remains is a plaque (ironically marred with graffiti) rather than Hamiltons original carving of the formula he discovered walking on the bridge. Robert Murphy (1806–1843), best known for his work on the theory of linear operations, was born in County Cork, and owes his admission to Gonville and Caius College, Cambridge, in spite of his lack of formal education, to a Mr McCarthy of Cork who was a junior fellow of that college. The logician George Boole (1815–64), though born in England and largely self-taught, became the first mathematics professor in what is now University College Cork. George Gabriel Stokes (1819–1903) was born in County Sligo and was educated there and in Dublin before attending Cambridge. George Salmon (1819–1904), best known for his textbook on the Conic Sections, was brought up in the city of Cork, matriculated at Trinity College Dublin, and was a tutor and lecturer there. John Casey (1820–1891), a self-taught mathematician specializing in the modern geometry of the triangle and circle, was born in the parish of Kilbeheny, was a student at Trinity College Dublin, and then was Professor of Mathematics at the Catholic University, later University College Dublin.

William Thomson, Lord Kelvin (1824–1907), though usually identified with Glasgow, was born in Belfast, son of a professor at the

Royal Belfast Academical Institution, and, in a speech of 1883, said he spoke as an Irishman on the Irish Question. H. J. S. Smith (1826–1883), best known as a number theorist and as Savilian Professor of Mathematics at Oxford, was born in Dublin. Osborne Reynolds (1842–1912), whose work on turbulent flow includes the Reynolds number, was born in Belfast. Francis Ysidro Edgeworth (1845–1926), the statistician, was born to a prominent family in Edgeworthstown, County Longford; his aunt was the famous Irish novelist Maria Edgeworth. He went to Trinity College, Dublin, before entering Oxford. George Francis Fitzgerald (1851–1901), a theoretical physicist whose name is immortalized in the Lorenz-Fitzgerald contraction, was tutored as a youth by George Booles sister, graduated from Trinity College, Dublin, and then was Erasmus Smith Professor there. E. T. Whittaker (1873–1956), perhaps best known for the book in analysis published in collaboration with his student G. N. Watson (often called Whittaker and Watson), taught for about six years at the University of Dublin; one of his students there was Eamon de Valera, who continued to be advised by Whittaker in developing the School of Theoretical Physics in Dublin.

W. S. Gosset (1876–1937), best known as the Student of Student's t-test, developed that test while working for Guinness Breweries in Dublin. The Society of Actuaries in Ireland has a 't' in its crest in recognition both of the importance of this test in actuarial science and of its Irish significance. Walter Heitler (1904–1981), best known for his contributions to the Heitler-London theory of the covalent chemical bond and to quantum electrodynamics, was of Jewish origin and therefore had to flee from Nazi Germany; he found refuge from 1941 to 1949 at the Dublin Institute for Advanced Studies and became an Irish citizen. David Robert Bates (1916–1994) was born in Omagh, studied at the Queens University of Belfast and later built up an internationally-renowned school in theoretical physics there. He was also a founding member of the Alliance Party and supported the APNIs non-sectarian policies, abhorring violence. Andrew Young (1919–1992), a numerical analyst of English origin, spent the last third of his life in Ireland, being the first Professor of Mathematics at the New University of Ulster in Coleraine until it merged with Ulster Polytechnic. Patrick Brendan Kennedy (1929–1966), perhaps best known for his role in Hayman and Kennedy's Subharmonic Functions, was Professor of Mathematics at University College, Cork, from 1956 to 1963.

Historians of mathematics will find that the scholarship in this work ranges from highly informed to anecdotal to closely following secondary sources. There are a few oversimplifications or minor errors. Some chapters explain the subjects mathematical work in detail with footnotes, while others treat it only briefly. Thus this book is not the place to go for a systematic introduction to its subjects or for in-depth biography, although lists of sources follow about half of the chapters. Nonetheless, this is a worthwhile volume. Taken together, the biographies give a good feeling for the development and influence of the mathematical community in Ireland, help identify Ireland's role in the careers of some major figures in mathematics and physics, and give a good first introduction to the lives of a number of important mathematical scientists.