

The Annals of Irish Mathematics and  
Mathematicians presents  
Pioneering Women in Mathematics  
in Ireland

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[www.mathsireland.ie](http://www.mathsireland.ie)

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# Women in Maths—in and/or of Ireland



A panorama covering the last 150 years.



Dedicated to the memory and legacy of Ingenious Mary:

Mary Mulh vill (1959-2015)

Pioneering Irish herstorian of STEM heritage  
and champion of forgotten women of note.

## Special thanks to:

Tony O'Farrell, Sean Dineen, Richard Timoney, Ted Hurley, Tony Wickstead, Tom Laffey, Phil Boland, Des MacHale, Robin Harte, Martin Stynes, David Spearman, Maurice O'Reilly, Elizabeth Oldham and many others, who helped gather, evaluate and refine the information on which this talk is based.

The first Irish-born woman to get a PhD in pure mathematics in Ireland appears to have been Siobhán Vernon (*née* O'Shea) from Cork, in 1964.

In the century before that at least 95 women in Ireland earned degrees in maths or maths physics, and/or became engaged in mathematical work of some sort. Some of these were educated privately, and several were British women who'd been denied the opportunity of being awarded university degrees closer to home.

Very few of these pioneering women had the chance to enter academia. Some of the early ones ended up as astronomers, many more as teachers. Even those who started relevant careers generally had them cut short if they married.

We'll highlight the more notable ones, from Cork, Kerry, Dublin, Belfast, Galway, and elsewhere.

This is based in part on information buried in The Annals of Irish Mathematics & Mathematicians (AIMM) at [www.mathsireland.ie](http://www.mathsireland.ie).

AIMM is a freely available online resource which tracks the academic profiles of over 2500 scholars, mostly from the last two centuries.

Its reach is broad, embracing people engaged in mathematical physics, statistics, actuarial science and mathematics education as well as pure maths, and it lists anyone whose doctoral advisor was Irish, whether the degree was earned here or overseas.

For over half of those featured, a photograph is included, and a special effort has been made to document as many women as possible.

It includes micro-biographies of over 250 people, whether they originally hailed from Antrim, Louth, Westmeath, Kerry, Glasgow, London, Germany, Cuba or Pakistan, and regardless of what corner of the world they practiced their profession in.

Over 700 relevant books are also listed in detail.

In association with Maths Week, Irish Mathematics Calendars have been produced (2016 & 2017).

Disclaimer: *What follows is just the perspective of one amateur historian.*



## Reality check

Needless to say, it is original research—be it solo or collaborative—and the dissemination of results via talks and journal articles, that are at the core of mathematical life in academia.

Those endeavours, and lecturing.

However, trying to account all of that in the Irish context would be a task of considerable magnitude.

Our goals are more modest.

## Who was the ...

First Irish non-male with bachelor's/master's/doctorate/honorary degree in maths or related area and had career in academia?

Who was a TCD Scholar or Fellow? Or NUI Travelling Studentship holder?

Who published a research article, a text or a monograph?

Who supervised postgraduate or postdoctoral students?

Who held office in the Irish Maths Soc?

Who won Rose of Tralee or Field's Medal?

## Why do so few women pursue maths?

other hand, only three Pass degrees in Classics were gained by women—all students of Queen's College, Belfast. However, the first place in Mathematics fell this year to a woman, Marjorie Long, formerly a student of Victoria College, Belfast, now of Girton College.

It is to be regretted that the study of classics and mathematics is not taken up earlier and pursued more thoroughly in girls' schools and colleges, for, whatever may be said for the superior utility of modern literature for the average woman student, it does not offer exactly the same kind of discipline as the former studies; nor can there be any doubt that it is often the lack of facilities for good instruction in classics or mathematics, rather than inclination or any bias of the feminine mind towards modern languages, which leads women to take up the latter in their University course.

## The source of that quote

THE  
**JOURNAL OF EDUCATION**

A Monthly Record and Review.

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JANUARY TO DECEMBER, 1908.

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A few years earlier

# JOURNAL OF EDUCATION

A Monthly Record and Review.

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JANUARY TO DECEMBER, 1904.

## A few years earlier

In addition to the great success in the High School, there were eight exhibitions awarded at the Degree and other examinations of the Royal University to students entering direct from Victoria College during the past year ; and there were fourteen students in the Honour and pass list of the B.A. degree in 1903. At Matriculation, Grace I. Acheson was awarded the First Exhibition, which placed her at the head of the men and women of her year.

This year, 1904, there were 971 candidates, men and women, for Matriculation in the Royal University Examinations, the results of which have just been declared. Nine First Class Exhibitions of £24 each were awarded—James Maxwell Henry, of Campbell College, Belfast, takes the first place, and Marjorie Long, of Victoria College, Belfast, the second. Miss Long received a First Class in each of her five subjects—Latin, German, English, Mathematics, and Natural Philosophy. While still considerably under age, Miss Long had previously been first in each of the four grades of the Irish Intermediate Examinations.

## Even earlier



Alexandra School, Portadown, Antrim. Circa 1895.

Photo courtesy of Faris family and Portadown Museum Services.



Mary Boole (*née* Everest, 1832-1916)

Born in Gloucestershire. Grew up in France and England, and was educated privately.

Married George Boole, who had tutored her and was already settled in Cork as first professor of maths at Queen's College.

Helped him assemble some of his landmark books, and had five daughters with him.



Less than a decade after arriving in Ireland, she became a widow.

She moved to London and developed innovative ideas about the use of physical manipulations in strengthening “the unconscious understanding of materials learned in a classroom setting” (e.g., curve stitching).

Published a lot in diverse areas.

Authored the book *Philosophy and Fun of Algebra* (1909).



Mary Clerke (1842-1907)

Born in Skibbreen, Cork. She was educated privately, studying mathematics, physics and astronomy in Dublin, London, and Italy.

Settling in London, she published extensively, wrote numerous popular books on the history of astronomy, and contributed to the *Encyclopaedia Britannica* on both astronomy and mathematics.



Sophie Willock (later Bryant, 1850-1922)

Born in Dublin, she grew up mostly in Ballymoney (Antrim) and Cleenish (Fermanagh). Her father was a graduate and Fellow of TCD and taught maths there. When she was 13, he became Chair of Geometry at the University of London.

She attended Bedford College from 1866 on, excelling in maths. She married in 1869, but was widowed in 1870.

When the University of London opened its doors to women in 1878, she seized the opportunity, and by 1881 had completed her BSc degree with first class honours in mental and moral science, and second class honours in mathematics.

In 1884 she was awarded a DSc (in mental and moral science), probably the first woman in England to be awarded this degree.

That same year, she became the first woman to have a paper published in the *Proceedings of the London Mathematical Society*.

It was called “The ideal geometrical form of natural cell structure.”

It showed how Kepler's observation that elongated rhombic semi-dodecahedra is the form of honeycomb cells could be deduced mathematically from a reasonable assumption about bee behaviour.

In addition to teaching in several schools, she wrote many articles and books on topics such as Irish history, religion, education, women's rights, and philosophy.

She was head of the North London Collegiate School from 1895 to 1918, and was a firm supporter of Irish Home Rule.

In 1904, TCD awarded her a LittD, of which she was especially proud.

She used to row in the Thames for exercise, cycle around Ireland in the summers, and she climbed the Matterhorn twice.



Alice Boole (later Stott, 1860-1940)

Born in Cork, grew up there and in London. Daughter of George & Mary Boole. Largely self-educated.

She never attended university or held an academic position, but she was a pioneer in the visualisation of 4-dimensional shapes. She published several papers, and rediscovered that there are six regular 4D polytopes.

It was she who coined the term “polytope” for these and higher dimensional analogues of polyhedra.

She then produced three-dimensional central cross-sections of the six regular polytopes by purely Euclidean constructions and synthetic methods.

She made cardboard models of these sections, which survive at the University of Toronto, thanks to her 1930s work with Coxeter.

Got an an honorary doctorate in 1914 from the University of Groningen.



Alice Everett (1865-1949)

Born in Glasgow, and brought up in Belfast, where her father was professor of natural philosophy at Queen's College. She studied maths there, and at Girton College, Cambridge, but her BA and MA degrees were awarded by the Royal University of Ireland.

She worked at the Royal Observatory in Greenwich, and later did research in optics and the engineering of early television.





Annie Russell (later Maunder, 1868-1947)

Born in Strabane, Tyrone, educated Belfast. In 1889 she was the highest ranked mathematics student at the BA examinations at Girton College, Cambridge, but as a woman was denied a degree.

She pursued solar research at Greenwich Royal Observatory for decades, often publishing her findings under her husband's name.



Annie McElderry (later Megaw, 1874-1968)

Born in Ballymoney, Antrim. She earned her BA and MA in mathematics from Queen's College, Belfast, before the turn of the century, and then taught at Rutland School in Dublin, where she rose to the rank of principal.

Her daughter Helen Megaw was a celebrated crystallographer.



Mildred Barwell (1873-1978)

Born in London, educated at Girton, Cambridge (1895).

*Ad eundem* MA from TCD (1905).

Taught at Alexandra College (Dublin, 1902-1919).



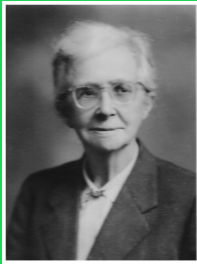
Hilda Hudson (1881-1965)

Born in Cambridge, educated at Girton (1903). *Ad eundem* MA from TCD (1906).

Taught at Newnham / Bryn Mawr / West Ham.

Books: *Ruler and Compasses* (1916); *Cremona Transformations in Plane and Space* (1927).

ScD from TCD (1913).



Grace Isabel Acheson (later Faris, 1885-1973)

Born in Portadown, Armagh. BA & MA from Queen's, Belfast.

She taught maths, English and classics, at Victoria College (1909-1912 and 1925-1951). Rose to the rank of headmistress.

Her son John Faris was a logician at QUB.



The Acheson family in 1903. Grace sitting, second from left.  
Photo courtesy of Faris family. Molly standing, second from left.

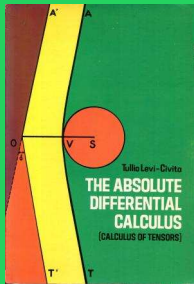


Mary Frances Acheson (later Faris, 1880-1958)

Born in Portadown, Armagh. Educated at Girton (1904).

*Ad eundem* MA from TCD (1907).

Taught, presumably at Victoria College (1904?-1919?).



Marjorie Long (1886-?)

Born in Belfast (?). Educated at Girton & Belfast (1908 degree).

Teacher (London) and translator of Tullio Levi-Civita.

Is she the most well read Irish woman mathematician to date?





Eithne Donnelly (1900-1989)

“Ethne Donnelly, daughter of Thomas Donnelly and Mary Fallon of 14 Rutland Sq, was born on 27 March 1900. Baptised at St Mary’s Pro-Cathedral, Marlborough Street, Dublin, on 10 April 1900.”

BSc in maths from UCD in 1921. Later MA in history.

PhD from TCD in 1943, in economics (“Social services in Éire”).



Muriel Kennett (brought up as Wales, 1913-2009)

Born in Belfast. Grew up in Vancouver, BC. Educated at the Univ of BC and the Univ of Toronto, where she earned MA and PhD degrees, respectively, for research in algebra. Her 1941 PhD was on "Theory of Algebraic Functions Based on the Use of Cycles."

Spent most of 1940s in atomic energy, in Toronto and Montreal.

(Thanks to Marge Murray of Iowa State Univ for the tipoff here.)



Sheila Power (later Tinney, 1918-2010)

Born in Galway. Father was professor of maths at UCG. Educated at UCD (1938 & 1939) and the University of Edinburgh (1941).

The first Irish born-and-raised woman to get doctorate in maths science, thesis "The stability of crystal lattices" (with Max Born).

She worked at DIAS and UCD, introducing generations of Irish students to quantum physics.



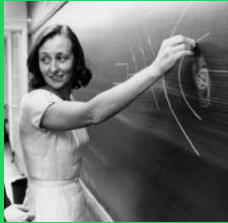
Barbara Yates (1919-1998)

Born in Dublin, into a mathematical family. TCD grad, 1942.

Completed “A difference-differential equation” PhD at Aberdeen in 1952, under E. M. Wright (of Hardy & Wright book fame).

Spent her whole career at Royal Holloway.

First Irish born-and-raised woman to get doctorate in pure maths?



Cathleen Synge (later Morawetz, 1923- )

Born in Toronto, father was distinguished Dublin mathematician and mathematical physicist J. L. Synge. Lived in Dublin from age 2 to 7. BSc (1945) from Toronto and MSc (1946) from MIT.

PhD ("Contracting Spherical Shocks Treated by a Perturbation Method," 1951) from NYU, under Kurt Friedrichs.

Career at Courant Institute (director in 1980s). President of AMS.



Siobhán O'Shea (later Vernon, 1932-2002)

Born in Macroom, Cork. BSc (1952) and MSc (1954) from UCC.

She taught at UCC 1957-1988, earning her PhD ("Some results in classical analysis") there in 1964. Her thesis was a compilation of previously published papers.

She is believed to hold the first Irish doctorate in pure maths earned by an Irish born-and-bred woman.



Joyce Alexander (*née* ?)

Born Belfast? BSc (1954?) and MSc (1955) from QUB.

PhD (“An Analysis of Conflict in Northern Ireland”) in Operations Research from University of Pennsylvania (with Tom Saaty), 1976.

Most of career spent at Caldwell College (NJ) and Immaculata College (PA) where she served as dept chair.



Nóra Ní Chuív

Born in Dublin. BSc (1964) and MSc (1967) from UCD.

PhD on “On the Closure of Modules on a Compact Set in a Stein Manifold” from Univ of Washington (1973) with Lutz Bungart.

Taught at Univ of New Brunswick 1973-2007. She also published in probability and software reliability testing.

Her grandfather once applied for a job in Cork. He didn't get it.





Sara McMurry

Born in Bedford, England. BA 1964 (Bedford College). PhD on “Some problems in the theory of nuclear interactions” with I. J. R. Aitchison at Oxford in 1967.

Worked at TCD for four decades, writing a book on quantum mechanics and another entitled “Mathematics As a Language - Understanding and Using Maths.”

More recently she has brought maths to young children in India.



Elizabeth Oldham

Born in Sheffield, England, to Irish parents.

BA (1965) and MA (1968) from TCD. Most of her career spent in School of Education there.

Her work relates to mathematics curriculum and to teaching and learning mathematics. Numerous theses supervised.



Charlotte Huang

Born in Malaysia. BA (1969) from TCD, MSc (1971) and PhD (1974, "On Some Classes of Balanced Graph Designs") from McMaster.

Career at CEGEP (Ottawa-Hull), research affiliation Carlton University.



Aoileann Nic Gearailt (*née* Ni Éigearthaigh)

Born in Dublin. BA (1970) from TCD.

Career mostly teaching maths and CS at IT Tralee (1979-2010).

Currently deputy Principal at Mean Scoil Nua An Leith Triúig (Castlegregory, Kerry).

Has had a parallel career as a writer.



Sally McClean

Born in Belfast. BA (1970) from Oxford, MA (1972) from Cardiff, and PhD (1976) on “Stochastic models of manpower planning applied to several British and Irish firms” from Coleraine.

Career mostly at Coleraine. She has supervised almost 40 PhD students in statistics and informatics, there and at Jordanstown, and has also co-authored an influential statistics book.

## Going back over a century

There are others of interest, including:

Mary Raymond (Blennerville, Kerry, 1865?-1926). Girton 1887, TCD 1906. Teacher: Brisbane / Perse School (Camb) / Howell's School (Llandaff) / James Allen's School (Dulwich)

Hannah Moylan (Galway, 1870-1944), educated Madame de Prins College, Limerick. RUI Dublin 1891 & UCG 1896. Teacher: Crosby (Lancashire).

Agnes Perry (Roscommon, 1882-1963?), Galway 1903 & 1905. Taught Queen's Galway 1903-1904.

## First degree 1960s and 1970s (26 people)

Marina Kok (later Smyth, Holland/Cork), Ann White (Galway), Nóra Ní Chuív (Dublin), Fran King (later Barry, Belfast), Sara McMurry (England), Elizabeth Oldham (England), Jocelyn Bell (later Burnell, Armagh), Jane Horgan (Cork), Heather Ruskin, Charlotte Huang (Malaysia), Aoileann Ni Eigearthaigh (later Nic Gearailt, Dublin), Jeanne Pe Ng (later Stynes, Philippines), Mary Hanley (Wexford), Sally McClean (Belfast), Barbara O'Brien (Cork), Olivia Fagan (later Bree, Westmeath), Norma Reid (later Birley, Londonderry), Gráinne O'Brien (Dublin), Mari Imaeda (Japan/Dublin), Marie Reilly (Westmeath), Gabrielle Kelly (Cork), Angela O'Mahony (later McAuliffe, Cork), Eimear Goggin (Dublin), Avril Reynolds (later Hegarty, Dublin), Anne Daly Walsh, Martina McKiernan (Belfast?)

## First degree 1980s (33 people)

Daphne Mansergh (later Gilbert, England), Anne Gaffey (Dublin), Ann MacDonough, Margaret O'Sullivan (later Pepe, Cork), Nuala Sheehan (Carlow), Clare Cunningham, Terry Maguire (Cork), Anne Sheehy, Susan Lazarus (USA), Catherine Hurley, Hilary McCartney, Anne Snel (Dublin), Catherine Comiskey (Dublin/Wexford), Cora Stack (Kerry), Annette Pilkington (Offaly), Pauline Mellon (Wicklow), Ann O'Shea (Cork), Aisling McCluskey (Belfast), Julie Matier (Down), Evelyn Crowley, Francesca O'Rourke (later Shearer), Julia McCann, Fiona Lawless, Gwyneth Mulholland, Eleanor Meehan (later Walsh, Waterford), Kathleen O'Sullivan, Catherine Duggan, Mary McAlinden, Áine Ní Shé (Cork), Detta Dickinson (England), Jean Byrne (Kerry), Sarah Morris, Catherine Scully



## First degree 1990 to 1993 (27 people)

Niamh O'Sullivan (Dublin), Fiona McCausland, Kathleen Bennett (England?), Catherine Ramsbottom, Carol Dunbar, Julie Harrison, Claire Lyons, Jacqueline Mallon, Fiona Murray, Trisha Matthews (later Eaton, Belfast), Jackie Hendron, Maeve McCarthy (Galway), Catherine O'Keeffe, Sandra Collins (Dublin), Ailish Hannigan, Maria Meehan (Donegal), Natalia Kopteva (Russia), Deirdre Black, Maryna Lishchynska (Ukraine), Catherine Gillan, Pamela Cowan, Rachel Quinlan (Galway), Sinéad Ryan (Cork), Eimear Byrne, Arlene Loughan, Irene Ritson, Madonna Herron, Dolores Corcoran, Adele Marshall (Fermanagh)

## First degree 1994 to 1998 (22 people)

Sinéad Breen (Wexford), Gloria Crispino (Italy), Rachel Gargan, Kristine Lally, Thérèse Dooley (Dublin), Claire Jordan, Fiona Mulhern (later Purtill), Catherine Tully, Dana Nicolau (later Mackey, Romania), Victoria Livingstone, Cliona Golden (Dublin), Milena Venkova (Bulgaria), Andreea Nicoara (Romania), Violeta Morari (Moldova), Ying-Fen Lin (Taiwan), Antara Mukherjee (India), Madeeha Khalid (Pakistan), Emma Holian (Galway), Katie O'Brien, Olivia Gill (later Fitzmaurice), Anca Mustata (Romania)

## First degree 1999 to 2001 (29 people)

Sinéad Mac Namara, Deirdre Kilbane, Sarah Mitchell (England), Amanda Cooper, Romina Gaburro (Italy), Anne-Marie Hayes, Jill McCarthy (later Tysse, Cork), Linda Daly, Caroline Lynch, Noreen Quinn, Angela Flynn, Mary Hall (Louth), Masha Vlasenko (Ukraine), Marianne Leitner (Germany), Eabhnat Ní Fhloinn (Dublin), Meghan Stephens, Emer O'Shea, Máire Lane, Maria Pickett, Susan MacDonald, Tugba Aysel (Turkey), Kirsten Wienand (later Pfeiffer, Germany)



Jane Horgan (Cork), statistics, long career at DCU.

Terry Maguire (Cork), maths education, founded *Maths Eyes* and now works for the National Forum for the Enhancement of Teaching & Learning in Higher Education.

Catherine Comiskey (Dublin & Wexford), statistics, Prof of Nursing at TCD.



Áine Ní Shé (Cork), algebra, head of department at CIT.

Sandra Collins (Dublin), fluid dynamics, DCU/ Ericsson/ SFI/  
RIA/ Director of National Library.

Rachel Quinlan (Galway), algebra, head of department at NUIG.



Sinéad Ryan (Cork), theoretical physics, TCD (former dept head).

Adele Marshall (Fermanagh), stats, long at QUB; Director of Research in Centre for Statistical Science & Operational Research.

Anca Mustata (Romania), algebraic geometry, long at UCC.

## Parting thoughts

Many of the pioneers highlighted lived past 80.

Follow @IrishMathsFacts on Twitter.

Read the monthly blogs at [www.mathsireland.ie](http://www.mathsireland.ie).

Take advantage of the MacTutor website. Read it and contribute (or suggest additions) to it.

Ensure that the Irish mathematicians are fully represented at the Mathematical Genealogy website.

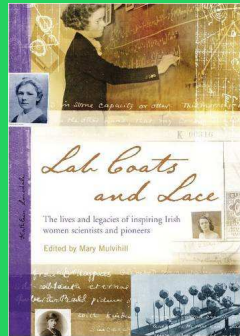
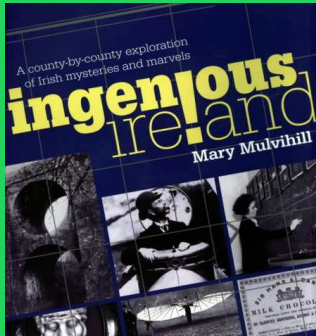
Use that and the Mary Mulvihill inspired *Atlas of Irish Maths* to identify Local Heroes and spread the word to every corner of Ireland—and beyond.

Children, adults, parents, grandparents, politicians, policy makers, sponsors and more all to know about the rich mathematical legacy and unbounded potential of Irish STEM.

We have a small population but half of it is female.

There is much work to be done.





Classic books by Mary Mulhivill.

Where is the equivalent for mathematical women?