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The Lion, the Witch, and the Maths Graduate

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Queen's College, Belfast (today, Queen's University) admitted its first female students in 1882. Founded in 1845, Queen's, along with its sister Colleges in Cork and Galway, taught students, but they did not award degrees. These were examined and awarded, initially by the Queen's University of Ireland, and then from the early 1880s by its revamped and expanded replacement, the Royal University of Ireland (RUI).

As far back as 1870 there had been a proposal to admit women to Queen's, but matters had come to a head at the end of September 1882 when the Belfast Ladies Institute, a Committee that worked for improvements in women's rights, wrote a letter to the College Council pointing out that since the new RUI permitted women to sit examinations and take degrees, it would be really rather helpful if Queen's would admit ladies to enable them to prepare for such examinations.

A previous barrier to the admission of women, in the form of opposition from the College Vice President and chemist, Thomas Andrews, had evaporated when he retired in 1879. Thus, in October 1882 the College Council noted that it was 'disposed to sanction the admission of women to certain classes in the College, if arrangements of a satisfactory character can be made and if it is found a sufficient number of women are desirous of availing themselves of the privilege'.¹

The ladies of Belfast were indeed eager to avail themselves of the privilege and no less than 12 of them enrolled in 1882-3 to study at the College. To put that in context, during the 1880s Queen's had an average total enrolment of 470 students.

One of the ladies in that first group was Florence, or Flora, Augusta Hamilton. Born in 1862 in Queenstown (now Cobh), County Cork. Her father, Thomas Robert Hamilton, was a Church of Ireland cleric who in 1874 had moved with his family to Belfast to become the first rector of Saint Mark's, Dundela in the east of the town.

Florence's initial enrolment at Queen's was unusual: She took only one class, mathematics, and she enrolled very late, on the 24th of April 1883, i.e. well into the third term. There is no evidence that she took any examinations. Nevertheless, she still had to pay the full class fee for the year of £2. She spent the next academic year not at Queen's, but at a neighbouring school, Methodist College, where she prepared for the RUI first-year examinations.

Methodist College was one of a number of schools in Belfast and across Ireland that had 'university' or 'college' departments whose job it was to prepare students for the RUI papers. Methodist College prepared Flora well. She passed her RUI first-year exams and in particular, she sat the honours paper in mathematics and was placed in the second class.

In the autumn of 1884 she returned to Queen's, and enrolled on courses in Latin, logic, mathematics, and mathematical physics. In taking four courses she was dutifully enrolling on the number of courses recommended by the College. What put the cat amongst the pigeons was the fact that on her matriculation form she proposed to compete for a scholarship in mathematics. Nor was she the only one. Alice Everett, daughter of the professor of natural philosophy, and one Frances Helena Gray also proposed to take scholarship examinations.

The College was perplexed: The question of what was to be done if any of the ladies got a scholarship moved from the College Council; to the College law officers; all the way to the Attorney General in Dublin Castle. The Attorney General responded in December 1884 stating that he had come to the conclusion that women were *not* eligible for scholarships. The logic was that women were not formally eligible to become students of the Queen's College, Belfast, and therefore could not hold a College Scholarship. To resolve the matter would require a change in the Statutes, a change which the President repeatedly requested in his annual reports between 1884-95. The reports were formally addressed to the Monarch, but it seems Victoria was not in a rush, and it wasn't until 1896 that the Statutes were finally modified. Over the intervening years, the College had to add an apologetic footnote to its scholarship lists noting that,

'The ladies whose names appear in the above lists obtained the places assigned to them but by the decision of the Law Officers of the Crown were declared ineligible to hold the scholarships.'²

When the scholarship list was published for the 1884-85 session both Alice Everitt and Flora found their names. Flora was listed as a Junior Scholar.

In September of 1885, Flora sat her second-year RUI papers. In that year she was one of 19 women out of a total of 293 who entered for examinations from across the whole of Ireland. Of those 293, 22 of them either didn't turn up, or 'retired' early from the process. A further 77 were 'rejected' (i.e. failed). Flora's performance was strong: She came first in the first class for logic out of a total of 12 awarded honours and fourth in the second class for mathematics, again out of 12 people who were awarded honours. The report for that year doesn't give the proportion of candidates obtaining honours across all subjects, but for neighbouring years it was about 25%.

In 1885-6 Flora enrolled for her final year, taking the honours courses in mathematics and mathematical physics and re-taking the second-year maths course. This combination allowed her to sit for a BA honours in mathematics and mathematical physics. The Honours mathematics course covered the theory of equations, analytic geometry, calculus and differential equations. In mathematical physics, the syllabus covered statics, dynamics, rigid bodies, hydrostatics, optics and astronomy. This all made for a fairly standard 19th-century curriculum.

Flora would have been able to sit her first and second-year examinations in Belfast, but in July 1886 she was required to travel to Dublin to sit her final papers; three in mathematics and two in mathematical physics. All papers were three hours, each with 12 questions and no rubrics regarding how many to attempt. That year there were 201 people from across the island entered for the BA examinations. Of the 183 who completed the papers, 35% of them failed and 23% obtained honours. On Saturday the 31st of July when the results were published in Dublin, Flora's name wasn't on the honours list. It appeared only on the pass list.

We do not know for sure whether Flora sat the honours papers. In theory, she could have reconsidered during the year and entered for the pass-level papers, but this seems unlikely given her performance in previous years. Assuming she did attempt the honours papers, she must have been terribly disappointed. Nevertheless, despite any disappointment, she was the

first woman to graduate in mathematics from the Queen's College, Belfast. The next year Alice Everett became the first honours mathematics graduate (she obtained a second).

After Queen's, Flora leaves a limited historical imprint. In 1889 she was listed in the local press as a teacher at an educational establishment where 'Masters and Certified Teachers prepare for Examinations- University, Intermediate, Musical, Art etc.' And then from 1890-91 she was listed as a teacher at a local 'Ladies University School'. In 1894 there is a note in the press that she passed, with honours, Trinity College, London violin examinations. Thus, she taught for a few years and then, educationally, disappeared off the radar.

In August 1894 Flora married a local solicitor, Albert Lewis, and Albert and Flora went on to have two children. Warnie, born in 1895, became a soldier who fought in both World Wars; a published historian; and also, alas, an alcoholic. Their younger son was born in 1898 and aged about five began demanding that he be addressed not by his christened name but by the name of his choice: Jacksie, which later became Jack. And for the rest of his life, he was indeed known to his friends as Jack Lewis. But he is better known to the rest of us as CS Lewis. He is probably most famous as the author of the Narnia Chronicles (with the best known being *The Lion, the Witch and the Wardrobe*). But he was also a substantial medieval and renaissance scholar who spent his career as a don at Magdalen College, Oxford, and then as a professor at Magdalene College, Cambridge. He is also probably the most significant Christian apologist of the 20th century.

In 1908 Flora died of cancer. Writing in 1955 CS Lewis said 'With my mother's death all settled happiness, all that was tranquil and reliable disappeared from my life ... It was sea and islands now; the great continent had sunk like Atlantis'³. It was a trauma he carried into adult life. Flora almost certainly appears in the first Narnian Chronicle, *The Magician's Nephew*, where the mother of one of the children in the book is terminally ill. At the end of the story, that mother is healed by eating an apple brought back to Victorian London from the newly created Narnia.

CS Lewis did not inherit his mother's aptitude for, or indeed interest in, mathematics. He said 'I could never have gone far in any science, because on the path of every science the lion Mathematics lies in wait for you'⁴. Classics, however, was another matter, and by the end of 1916, aged 18, he had won a scholarship to study at University College, Oxford. But he still had to pass the University entrance examination. And that examination, Responsions, had a mathematics component: 'algebra (devil take it!)'⁵. He had already failed it once before he went off to fight in The Great War in France. But when he returned from the front, complete with shrapnel lodged in his chest, the University waived the need for ex-servicemen to pass Responsions. Lewis claims if it were not for this he would not have gotten into Oxford, as he would never have been able to pass in mathematics.

In 1933 Jack and Warnie had a stained-glass window installed in St Mark's Church, Dundela in memory of their parents. And on the brothers' gravestone outside Oxford is engraved a line from King Lear: '*Men must endure their going hence*'. It is the same quote that was on Flora's calendar on the day she died: 23rd of August, 1908.

Figure Captions:

Figure 1: Flora in 1895, after her time at Queen's (Courtesy of Marion E Wade Center, Wheaton College).



Figure 2: Flora (back right) and her sons in 1901. Extreme left Warnie, front right, Jack. The other two children are cousins (Courtesy of Marion E Wade Center, Wheaton College).



Boxed Material:

Examples of questions on Flora's RUI examination papers. In each case, the papers contained twelve questions and were three hours in duration.

From the first year Honours Mathematics paper, September, 1884:

1. Resolve $x^3 + y^3 + z^3 - 3xyz$ into the product of three simple factors.
2. Solve the equation $\tan^{-1} x^2 + \tan^{-1} x = \tan^{-1} \frac{1}{3}$.

From the second year Honours Mathematics paper, September, 1885:

1. A curve is given by the equations $x = a \cos^2 \phi \sin \phi$, $y = a \sin^2 \phi \cos \phi$: find its complete area.
2. Sum n terms of the series $\sin^3 \theta + \sin^3 2\theta + \sin^3 3\theta + \dots$

From the BA Honours papers, July, 1886:

1. If $\alpha, \beta, \gamma, \delta$ be the roots of a biquadratic equation $f(x) = 0$, which has the coefficient of x^4 unity, and α', β', γ' the roots of the first derived $f'(x) = 0$; prove $f'(\alpha)f'(\beta)f'(\gamma)f'(\delta) = 256f(\alpha')f(\beta')f(\gamma')$.
2. Integrate the equation $x^3 \frac{d^3 y}{dx^3} + 2x^2 \frac{d^2 y}{dx^2} - x \frac{dy}{dx} + y = ax^2 + bx^3$.

References

¹ Queen's College Council Minutes 21 October 1882, QUB Archive: QUB/1/3/1/2, p283

² The Report of the President of Queen's College, Belfast, for the session 1884-5, (Dublin: Alex Thom & Co., 1885), p31.

³ C.S. Lewis, *Surprised by Joy: The shape of my early life*, London: Geoffrey Bles, 1955, p.27.

⁴ Ibid. p.131.

⁵ Ibid, p.177.