The Ulster connection

Raymond Flood
Department for Continuing Education, University of Oxford, Oxford OX1 2JA
England

E-mail: raymond.flood@continuing-education.oxford.ac.uk

Abstract. This article will include an account of Kelvin’s father, James Thomson, whose first job was as a farm labourer near Belfast, Northern Ireland where Kelvin was born. James went on to be Head of Mathematics at Belfast Academical Institution, and then Professor of Mathematics at Glasgow University. He played an enormously influential role in the development of Kelvin’s religious, scientific and political views, as well as being central to Kelvin also obtaining a Chair at Glasgow. The talk will also include an account of Kelvin’s personal interaction with his elder brother, also called James, who was an engineer and returned to work in Belfast in 1851, being Professor of Engineering at Queen’s University, Belfast, from 1854 until he moved to join Kelvin in Glasgow in 1873. Kelvin’s sisters also returned to live in Belfast, and he was himself a frequent visitor, always concerned with Belfast and Irish affairs. December 2007 marks the centenary of Kelvin’s death and this is an appropriate point to review the Irish dimension of his life so frequently overlooked.

1. Introduction
On the 23rd of December 1907 William Thomson, Baron Kelvin of Largs was buried in Westminster Abbey beside the nation’s most venerated scientist, Sir Isaac Newton. In his lifetime Thomson was seen as the most important natural philosopher of the Victorian age, but the waxing and waning of the twentieth century and the supplanting of classical physics have eroded his reputation, so that for many scientists he is remembered as little more than a unit of temperature.

This article draws on the book Kelvin: Life, Labours and Legacy edited by myself, Mark McCartney, and Andrew Whitaker [1]. It is a book of essays that seeks to re-evaluate and rehabilitate Lord Kelvin, setting both the man and his work in historical and scientific context. It is not of course the first book to do so but the centenary of his death seems an appropriate to revisit his life, labours and legacy. This talk draws particularly on the chapters by Mark McCartney, Peter Bowler, Alex Craik, Andrew Whitaker and myself.

It was a family joke that William Thomson had two birthdays, and once while signing his name in a birthday book, as William Thomson on the 25th June, and Kelvin on the 26th he quipped “It is convenient to have two birthdays when you have two names!” It is not quite clear how the confusion arose, and though in childhood his birthday was celebrated on the 25th we have it on the authority of his father that William Thomson was born on the 26th June 1824 at 5 a.m.

Due to the influence and attitude of their father, Dr James Thomson, William and his brothers and sisters enjoyed a happy childhood, in a supportive and learning environment. His father was born in 1786 in a farmhouse outside Ballynahinch, County Down and he was the youngest – by 10 years - of five
children. The family was descended from seventeenth-century Scottish settlers. Retaining their Presbyterian religion, this large contingent of immigrants, sometimes known as “Ulster Scots”, formed a distinct strand of Irish society. Few were rich, and many later emigrated to the United States of America. His two older sisters taught him to read and he taught himself arithmetic from a copy of John Bonnycastle’s *The Scholar’s Guide to Arithmetic*. He went on to study at Glasgow University, and by 1815 he was Professor of Mathematics at the newly opened Belfast Academical Institution (today a school, but in the early days of its existence a school and college combined, with the college functioning like a small Scottish university).

He was a successful writer of textbooks - on topics such as arithmetic, calculus, trigonometry and geography (rising at 4am in the morning to work on them). Note (figure 1) that the treatise on Arithmetic went to at least 72 editions. In fact this was the last edition and was revised by his sons, James and William. The first edition was in 1819 so it had 72 editions over a sixty year period.

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**Figure 1.** The 72nd, and final, edition of Dr James Thomson’s Treatise on Arithmetic, edited by his sons James and William.
James Thomson described his aim in the preface as “to present a full and regular course of whatever is useful in arithmetic.”

The book uses three different sizes of type to distinguish between important definitions and rules compared to principal illustrations, with the less important illustrations in the smallest type. Using different sizes of type was a technique that his son William also used with P.G. Tait in their influential “Treatise on Natural Philosophy”.

James Thomson senior also chose practical examples to illustrate the subject. As he wrote

“Of the Examples and Exercises, some are proposed in purely abstract terms, being intended merely to afford practice to the learner in the rules and modes of calculation. To these are subjoined, in those parts of the work in which it could be conveniently done, other questions, which will not only afford the pupil farther exercise on the rules which precede them, but will also furnish him with many important facts in Commerce, Geography, Astronomy, Chronology, Chemistry, and other departments of knowledge…. The information contained in these questions has been all derived from authentic sources…” [2]

This emphasis on practical matters and applications was characteristic of James Thomson’s approach and influenced his sons, James and William.

James’s hard work and ambition paid off and opposite the Academical Institution he built two houses, one to raise his family in, and one to rent out. Elizabeth (born 1818) was the first of James and his wife Margaret’s 7 children – William was the middle child. In her reminiscences Elizabeth describes a happy and affectionate childhood in Belfast

James’s brother Robert, who still farmed the land outside Ballynahinch wrote to his sister of their Belfast nephews and nieces that they were

“wonderfully apt in learning; but I don’t think it strange, as both father and mother are drilling them.” [3]

In 1830 the family suffered the blow of their mother’s death. Two years after this, the family moved to Glasgow, where James Thomson had been appointed Professor of Mathematics at the university.

Joining Professor Thomson in his Junior Mathematics class in the 1832-33 academic year were his two elder boys James and William. It can be confusing as there were two James, James the father and James the brother.

They attended the class, but were not formally enrolled, and did not take examinations. However, in the 1834-35 session, with James now aged 12 and William 10, they did enroll. This is remarkable, but not quite as remarkable as it might first appear, as the usual minimum age for matriculation at Glasgow was 14. They took prizes in a range of classes throughout their time there. However most consistent was their performance in the mathematics and natural philosophy classes, where William regularly took first prize and James second.

Dr James Thomson’s hard work paid off financially, and by 1839 he was wealthy enough to take the family to the continent for two months during the summer. As part of their journey they traveled from Glasgow to Liverpool by boat and from Liverpool to London by train – “Going at a tremendous rate- no less than thirty-six miles an hour!” - reports his sister, Elizabeth [4]. The family spent two weeks in Paris together and then James left the boys in Paris with the family servant to have daily lessons in French. While there William went to the Bibliothèque Royale to read Laplace’s Mécanique Céleste in preparation...
for an 85 page and mathematically sophisticated essay *On the Figure of the Earth* which won him a University medal in his next academic year.

The next year it was Germany. In spite of his father’s instruction to concentrate on learning German, Thomson, by now just 16, had packed a little French reading: Fourier’s *Théorie Analytique de la Chaleur*. William Thomson continues the story:

> “Going that summer to Germany with my father and my brothers and sisters, I took Fourier with me. My father took us to Germany and insisted that all work should be left behind, so that the whole of our time could be given to learning German. We went to Frankfort, where my father took a house for two months… Now just two days before leaving Glasgow I had got Kelland’s book (Theory of Heat, 1837), and was shocked to be told that Fourier was mostly wrong. So I put Fourier in my box, and used in Frankfort to go down to the cellar surreptitiously every day to read a bit of Fourier. When my father discovered it he was not very severe upon me.” [5]

Not a typical concern of a father to stop a child doing homework! As a result of his studies William claimed that Philip Kelland, the Professor of Mathematics at Edinburgh was wrong in his criticisms of Fourier. Although initially incredulous of his son’s claims, a closer examination showed that they were accurate, and Thomson wrote the matter up in what was to be his first published paper appearing in May 1841 in the Cambridge Mathematical Journal, with the author simply designated as “P.Q.R.”

2. Cambridge
Thomson’s strength in mathematics was obvious, and the clear place for him to study after finishing Glasgow was Cambridge. October 1841 saw William Thomson, aged 17, enter St Peter’s College (Peterhouse) Cambridge as a pensioner i.e. a student who paid his own way. During his time there the Cambridge Mathematical Journal published a further 10 papers from William Thomson - all using pseudonyms, with all but one under that of P.Q.R. Indeed, Thomson was being tipped as Senior Wrangler virtually as soon as he arrived in Cambridge.

At Cambridge there was regular and frequent correspondence with his family. His father, who was footing the considerable bills wrote to him of the wise use of time and money and care in the friendships he cultivated: “Recollect my invaluable maxim never to quarrel with a man (but to waive the subject) about religion.” [6] And “Use all economy consistent with respectability. Be most circumspect about your conduct and about what acquaintance you form. You are young: take care you be not led to what is wrong.” [7]

Dr James Thomson’s worries were not unreasonable. Apparently many a young man came to Cambridge and filled his time with nothing but boating and wine parties. Thomson began his career at Cambridge with whole-hearted promises to his father: He had given no wine parties, and he had not joined the rowing club.

Initially he claimed that the college was divided between rowing men and reading men and that “rowing for the races is too hard work for getting on well with reading” [8], but by February 1842 he had bought a secondhand boat - a bargain at £7, and, he claimed, much cheaper than renting a boat. His father was unimpressed, but sent money to cover the bill. In spring of the next year his diary records late nights with a wide circle of friends, bathing, skating, walking, reading and serious rowing. He was also one of the founding members of the Cambridge University Musical Society.

Letters to his father are affectionate and confident in their relationship: “My Dear Father, I have again to write to you on the same pleasant business that I had to write to you so lately, which is to say that my money is again all gone.” [9]
To soften his father up when asking for more money he would sometimes include a mathematical problem for use in the exams at Glasgow, or mention the receipt of another scholarship or prize (of which he received over a dozen during his student days at St Peter’s). Over the three years from autumn 1841 to autumn 1844 Thomson’s education had cost over £770. On sending his son a letter containing a summary of this cost Dr Thomson writes, with exasperation, “How is this to be accounted for? Have you lost money or been defrauded of it?... you must exercise the strictest economy… not spending a penny unnecessarily” [10]. To put this in context an upper middle class income at this period would have been around £900 – 1000 per annum.

William, however was working hard under the sharp eye of his private tutor William Hopkins. Hopkins’ reputation as ‘the senior wrangler maker’ was well earned. By 1849 he had coached some 200 wranglers – a fifth of whom had landed one of the top three places.

Those in the top class were called Wranglers in an echo of the old system of disputation. The candidates were listed in order of marks with the top candidate being ‘Senior Wrangler’ the next ‘Second Wrangler’ and so on.

He was an excellent teacher, and a hard task master. The Mathematical Tripos was the most grueling academic race course in the country, and Hopkins trained and honed his candidates well. Thomson’s examinations commenced on New Year’s Day 1845, and finished on the 7th of January. There were 12 papers, with morning papers being two and a half hours long, and afternoon papers three hours long. There was a high proportion of ‘bookwork’ based questions and the papers required fluent recall, a good knowledge of mathematical tricks and shortcuts, and fast penmanship.

To universal surprise when the results were read out Thomson came second, with one Stephen Parkinson, a student at St. John’s coming first. One explanation for Parkinson’s victory is that, quite simply, he wrote much faster than Thomson. Indeed one of the examiners commented that if he had not seen Parkinson’s speed in the examination hall he would have struggled to believe that the sheer volume of material could have been written by him in the time limit. However, when it came to the Smith’s Prize examinations later in January Thomson easily took first place. These papers were more heavily weighted towards problem solving, and Thomson convincingly outperformed Parkinson.

William Thomson’s failure to be senior wrangler has generated at least two, possibly apocryphal, stories. The first, which has at least the provenance of being told by Joseph Larmor and being recorded in the official biography by Silvanus P. Thompson is that in the Smith’s Prize papers the two top candidates presented solutions to a question which were so similar that the matter was investigated further. When questioned, the senior wrangler, Parkinson, said that the solution he had given came from a paper he had read in the Cambridge Mathematical Journal. The paper, which had been published some years earlier, had been authored by someone who signed himself simply as “P.Q.R.” – which, of course, was Thomson’s pseudonym.

The second anecdote is that on the day the results of the Tripos were to be announced at the Senate House William dispatched his college servant with the words “Oh, just run down to the Senate House, will you, and see who is Second Wrangler.” The servant returned and announced “You sir!” This seems unfair as Thomson does not seem to have been conceited.

Thomson’s undergraduate success brought an election to a Fellowship of Peterhouse in June 1845 – he had just turned 21.

3. Glasgow

While Thomson was still a Cambridge undergraduate, events were unfolding at Glasgow which would determine his future career. William Meikleham had been the Professor of Natural Philosophy at Glasgow University since 1803, and during the academic session of 1838-39 his health became poor and his classes were subsequently covered by colleagues. By 1841 it was realized that Meikleham was unlikely ever to
return to his classes and Dr James Thomson’s thoughts turned to his colleague’s eventual replacement. He wanted academic excellence, of the Cambridge calibre – a member of the intellectual elite, but not an elitist. The new member of staff needed to be in sympathy with the broad and non-hierarchical Scottish university education system and above all he had to be a good teacher.

There was a range of possible candidates, but by perhaps as early as Christmas 1842 James Thomson had realized that his son William, then only 18, could be in the running for the job. Certainly by March 1843 he was encouraging his son in a letter to cultivate particular friendships which could prove useful “in case of a certain event coming round”. [11]

The next month he was gently testing his ideas out and one colleague identified a potential weakness, William’s lack of experience in experimental work and William as a result attended lecture courses on experimental natural philosophy twice (once in 1843 & again in 1844), and in 1844 he attended lectures on practical astronomy and astronomical instruments. Also during the summer of 1843 he spent a month working in the chemistry labs at Glasgow.

Part of the maneuvering also included a four and a half month trip to Paris after graduation in 1845. In Paris he attended lectures on chemistry and physics at the Sorbonne. Through introductions provided by Scottish academics such as JD Forbes of Edinburgh and Sir David Brewster of St Andrews he met eminent men like Cauchy and Biot, and through Biot he was introduced to Victor Regnault, who was the professor of Natural Philosophy at the Collège de France. Regnault was happy for Thomson to assist in his laboratory. Thomson made use of the library and helped with experiments, observing what he described much later as Regnault’s “faultless technique, a love of precision in all things, and the highest virtue of the experimenter - patience.” [12]

Back in Glasgow Dr James Thomson was pleased to hear about his son’s progress and networking. Not everyone was necessarily looking forward to the prospect of William Thomson joining his father as a professor. James sought change at Glasgow, and that change wasn’t always welcomed by his colleagues. Appointing William might mean one more professorial vote in support of his agenda. In a remark to one of his children Dr James Thomson commented that at least one of his colleagues would rather see Satan appointed to the chair of Natural Philosophy than have William take the post.

Professor William Meikleham eventually died on 6th May 1846, and from that moment James Thomson’s covert maneuverings turned to overt action. He wrote immediately to his son “The enclosed notice [of Meikleham’s death] must put you into active and energetic motion without delay”. [13]

Less than three weeks later on the 26th May, William Thomson wrote letters to each of the electors announcing his wish to be a candidate for the post, and then a long list of testimonials were collected to swamp and impress the Glasgow professors. The list reads like a selection from a Who’s Who of 19th century science including George Boole, Arthur Cayley, James D. Forbes, Sir William Rowan Hamilton, Joseph Liouville, Agustus De Morgan, Victor Regnault, George Gabriel Stokes, James Joseph Sylvester and William Whewell.

When it came to the election itself none of Dr. James Thomson’s fears were realized – possible candidates whom James had fretted over, and who would have been genuine competitors to his son simply did not apply. On the 11th September 1846, William Thomson, then aged 22, was unanimously elected to the Chair of Natural Philosophy at Glasgow. He held the post until 1899, a period of 53 years, and could not be persuaded to leave even by the Cavendish chair at Cambridge, which was offered to him three times, on its creation in 1870, again on Maxwell’s death in 1879 and once more when Lord Rayleigh vacated it in 1884.

4. Collaboration between James and William
During the winter of 1848-49, Glasgow experienced an outbreak of cholera in which over 3500 people died. One of its victims was James Thomson senior, who died on January 12th, 1849 at the age of sixty-
two. He and William, his son, had been Glasgow colleagues for only two years. He did not live to enjoy William’s major successes. Also he did not live to see his eldest son, James, occupy the chairs of engineering at Queen’s College Belfast (1857-73) and then Glasgow University (1873-89).

Figure 2. William Thomson announces his ‘intention of becoming a candidate’ for the Chair of Natural Philosophy at Glasgow.

As Peter Bowler states

“What I want to suggest is that the two brothers, William and James, stand at opposite ends of a spectrum of interests by which science interacted with technology in the nineteenth century. William was a physicist with a strong interest in engineering, and James was an engineer with a strong interest in physics.” [14]

William’s elder brother James was born, two years before William in 1822 and worked under engineers in various parts of the country, ending up at the Millwall shipbuilding works of William Fairburn, one of the leading figures in the construction of the new ocean-going iron steamships. His health then broke down and he moved back to Glasgow where he collaborated with William in his work on thermodynamics.
and began his career as an inventive engineer. In 1851 he moved to Belfast where he opened an office as a civil engineer and served as engineer to the Water Commissioners. He married Elizabeth Hancock in 1853. The following year he became acting Professor of Engineering at Queen's, being appointed to the chair of engineering three years later. Thomson replaced James Godwin, the first Professor of Engineering, who had worked mainly on railways. He lived for some time at No. 17 University Square where he redesigned the sewers. He remained at Queen's until moving to take up the chair of engineering at Glasgow in 1873. He died in May 1892, followed within a week by his wife and younger daughter, all succumbing to a “severe cold”, probably pneumonia.

James collaborated with William, for example in 1847 he predicted that the freezing point of water would be decreased if the pressure was increased which was shown experimentally by William in the following year. Another collaboration was to do with mechanical integration.

![Figure 3. Diagrams of James Thomson’s mechanical integrator](image)

In 1876 William was searching for a mechanical way of obtaining the Fourier coefficients of a function. In discussions with his brother, James told him that he had designed a mechanical integrator some years earlier but had never published the details.

As Charlie Care recounts “In a flash of inspiration Kelvin saw how the mechanical integrator could offer ‘a much simpler means of attaining my special object than anything I had been able to think of previously’.” [15]

From this revelation, William moved with rapid speed. Within days, four influential papers were prepared to be given before the Royal Society of London. The first was written by James and described his integrator in detail; the others were by William and discussed their uses. These papers testify to the significance of the mechanical integrator, broadcasting to the world of science that it was possible to integrate products, solve second order differential equations, and with a particular set-up, solve differential equations of an arbitrary order.

It was not long before Kelvin’s insight was incorporated into the harmonic analyser. In use, the harmonic analyzer derived the composite harmonics of tidal data and solved equations at the Meteorological Office. As a technology, it ushered in a new genre of calculating instrument - the continuous calculating machine.
A discussion of continuous calculating machines was also in an appendix of the highly influential Treatise on Natural Philosophy by Thomson and Tait in its second edition of 1879. The Treatise was first published in 1867 and in it they aimed to re-centre natural philosophy around the principle of conservation of energy and the principle of least action.

5. Thomson and Tait
On October 29, 1902, William Thomson, now Lord Kelvin since his ennoblement in 1892, unveiled a portrait in Peterhouse College, Cambridge of his friend and collaborator Peter Guthrie Tait who had died in July of the previous year aged seventy. Although they had both been students at Peterhouse their times there did not overlap, Thomson being the elder of the two by some six years. The Cambridge Chronicle reported Kelvin, in his address at the unveiling, describing their friendship as beginning about 1860, when Tait came to Scotland from Queen’s College, Belfast to succeed Forbes as Professor of Natural Philosophy at Edinburgh. The report said that Kelvin described their collaboration in these terms:

Figure 4. William Thomson’s tide predictor
... he [Tait] was always ready with delightful quotations, and these brightened their hours of work. For they did heavy mathematical work, stone breaking was not in it. A propos, perhaps, of the agonies (he did not mean pains, he meant struggles) of the mathematical problems which they had always with them. [16]

**Figure 5.** The work of ‘two northern wizards’, *The Treatise on Natural Philosophy* was a self conscious attempt to inherit the Newtonian crown.

Probably the most influential legacy of their collaboration on “heavy mathematical work” was the production in 1867 of *The Treatise on Natural Philosophy* by Thomson and Tait – still so called even after Kelvin’s ennoblement. They started collaborating on it in 1861 shortly after they met and although it fell far short in scope of the original intentions of its authors it was to be highly influential in identifying and placing conservation of energy at the heart of its approach.

The two men were of very different natures. Thomson frequently went travelling while Tait did not leave Scotland after 1875. Tait could also be argumentative with bitter disputes for example with Heaviside and Gibbs over the relative merits of the vector approach as compared to using quaternions. However it was Tait who drove the collaboration towards publication – in turn cajoling, coaxing and berating Thomson to try to get him to keep to deadlines and schedules. Tait’s frustration is illustrated in a letter he writes to Thomson in June 1864 about halfway through the collaboration where he says:
“I am getting quite sick of the great Book... if you send only scraps and these at rare intervals, what can I do? You have not given me even a hint as to what you want done in our present chapter about statics of liquids and gases! I have kinetics of a particle almost ready, nearly the whole of the next chapter, but I don’t see the fun of paying 30/- for sending the MSS to you [in Germany] for revision, when in all probability you won’t look at it till some indefinite period when you are in Arran, where it would be certain of reaching you — and for 8d. Now all this is very pitiable: I declare you did twice as much during the winter as you are doing now.” [17]

The treatise was universally known as T & T’ and Thomson and Tait used the abbreviations themselves in their extensive correspondence. One of the formulae in the treatise was \( dp/dt = jcm \) and as a result, their close friend James Clerk Maxwell became known as \( dp/dt \)! Maxwell and Tait had been friends since they first went to school at Edinburgh Academy at the age of 10, and from there to Edinburgh University and then onto Cambridge.
Figure 7. The Reid Portrait of Peter Guthrie Tait at Peterhouse College, Cambridge

In 1852 Tait had graduated as senior Wrangler and Maxwell in 1854 as second Wrangler. After a couple of years in Cambridge Tait obtained the chair of mathematics at the Queen’s College, Belfast where he worked closely with Thomas Andrews and William Thomson’s brother James. It was during this period that he discovered Hamilton’s work on quaternions for which he remained a lifelong enthusiast. Meanwhile Maxwell had become Professor of Natural Philosophy at Marischal College in Aberdeen but he had to leave as a result of the 1860 merger of Marischal with King’s College because he was junior in the ranking.

Meanwhile JD Forbes relinquished the Chair of Natural Philosophy at Edinburgh University in 1859 and Maxwell and Tait both applied. Tait had nineteen testimonials including ones from Andrews, Hamilton, Thomson, Boole, Todhunter, and Challis. The deciding factor seems to have been teaching
ability and on this basis Tait was appointed. Indeed the Edinburgh newspaper The Courant on reporting his election remarked

“… and we do not mean to dispute the decision of the curators, by saying, that in Professor Maxwell the curators would have had the opportunity of associating with the University one who is already acknowledged to be one of the remarkable men known to the scientific world. … But there is another power which is desirable in a professor of a University with a system like ours, and that is, the power of oral exposition proceeding upon the supposition of a previous imperfect knowledge, of even total ignorance, of the study on the part of pupils.” [18]

Tait was an enthusiastic, committed and lucid teacher – appreciated by colleagues and students alike. JM Barrie, more famous as the author of Peter Pan but previously an undergraduate at Edinburgh, paints a picture of Tait as a captivating and popular lecturer:

“The small twinkling eyes had a fascinating gleam in them; he could concentrate them until they held the object looked at; when they flashed round the room he seemed to have drawn a rapier. I have seen a man fall back in alarm under Tait’s eyes, though there were a dozen benches between them. These eyes could be merry as a boy’s, though, as when he turned a tube of water on students who would insist on crowding too near an experiment.” [19]

As I’ve mentioned Tait was an enthusiast for quaternions and first started corresponding with Hamilton while he was in Queen’s and David Wilkins of Trinity has gathered together some of the correspondence between them during 1858 and 1859 while Tait was at Queen’s and Hamilton at Trinity.

Towards the end of his life Kelvin was appointed Chancellor of Glasgow University and in his inaugural address on 29th November 1904 he reflects on his origins and influences:

“To be Chancellor of one of the Universities of our country is indeed a distinguished honour. For me, to be Chancellor of this, my beloved University of Glasgow, is more than an honour. I am a child of the University of Glasgow. I have lived in it 67 years. But my veneration for the ancient Scottish University, then practically the University for Ulster, began earlier than that happy part of my life. My father, born in County Down, was for four years (1810 to 1814) a student of the University of Glasgow; and in his Irish home as first Professor of Mathematics in the newly-founded Royal Belfast Academical Institution, his children were taught to venerate the University of Glasgow. One of my earliest memories of those old Belfast days is of 1829, when the joyful intelligence came that the Senate of the University of Glasgow had conferred the honorary degree of Doctor of Laws on my father. Two years later came the announcement that the Faculty of Glasgow College had elected him to the Professorship of Mathematics. My father's experiences as a Glasgow student are naturally of supreme interest to myself. May I briefly speak of them, not because your kindness to me tempts me to be egotistical, but because the difficulties overcome and the precious life-long benefits won, by the struggles of an Irish student of the University of Glasgow in the beginning of the nineteenth century, illustrate the vitality and efficiency of the University in that primitive time. There were no steamers, nor railways, nor motor cars in those days. Can young persons of the present time imagine life to be possible under such conditions? My father and his comrade students, chiefly aspirants for the ministry
of the Presbyterian Synod of Ulster and for the medical profession in the North of Ireland, had to cross the Channel twice a year in whatever sailing craft they could find to take them.” [20]

So we see that Kelvin’s view was that there was a close association between Ulster and Glasgow University which brought great advantages to both of them. His Ulster roots and family background informed his attitudes, personality and priorities and had laid a foundation for his subsequent life and labours at Glasgow.

Figure 8. The man of Empire. Lord and Lady Kelvin dressed for the coronation of King Edward VII on August 9th 1902.
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