

OBITUARY



DANIEL MARTIN
(1915–2006)

Daniel Martin B.Sc., M.A., Ph.D., F.R.S.E. was born in Carluke on 16 April 1915, the only child of William and Rose Martin (née Macpherson). The family home in which he was born, Cygnetbank in Clyde Street, had been remodelled and extended by his father, and it was to be Dan's home all his life. His father, who was a carpenter and joiner, had a business based in School Lane, but died as a result of a tragic accident when Dan was only six. Thereafter Dan was brought up single handedly by his mother.

After attending primary school in Carluke from 1920 to 1927, Dan entered the High School of Glasgow. It was during his third year there that he started studying calculus on his own. He became so enthused by the subject that he set his sights on a career teaching mathematics, at university if at all possible. On leaving school in 1932, he embarked on the M.A. honours course in Mathematics and Natural Philosophy at the University of Glasgow. At that time the Mathematics Department was under the leadership of Professor Thomas MacRobert; the honours course in Mathematics consisted mainly of geometry, calculus and analysis, and the combined honours M.A. with Natural Philosophy was the standard course for mathematicians. A highlight of his first session at university was attending a lecture on the origins of the general theory of relativity, given on 20th June 1933 by Albert Einstein. This was the first of a series of occasional lectures on the history of mathematics funded by the George A. Gibson Foundation which had been set up in memory of the previous head of the Mathematics Department. From then on, relativity was to be one of Dan's great interests, lasting a

lifetime; indeed, on holiday in Iona the year before he died, Dan's choice of holiday reading included three of Einstein's papers.

Dan graduated M.A. in 1936 with a first class honours degree. Out of a class of 33 students only 5 obtained a first class award – somewhat different from current practice. During his final year Dan was *proxime accessit* in the essay competition for the Thomson Prize in Mathematics, the topic that year being 'Colin Maclaurin: his life and work'. This prize was offered every three years, and was in memory of James Thomson, the father of Lord Kelvin, who had been Professor of Mathematics from 1832 until his death in the cholera epidemic of 1849.

After obtaining his M.A., Dan spent a further year at university, graduating with an ordinary B.Sc. degree in 1937. This double-degree progression was quite common pre-WW2, especially for those considering school teaching, the idea being that degrees in both arts and science would improve promotion prospects. Dan then went to Jordanhill Teacher Training College to obtain the necessary qualifications for school teaching, although all along he hoped for a university post. As it turned out, Dan did not fully complete his training, for, to his great delight, he was appointed in 1938 as an assistant lecturer in mathematics at the Royal Technical College (later to become the University of Strathclyde). The department was small, his appointment increasing the number of staff from 4 to 5, but it was led most effectively by Professor Reginald Street who had worked for a time in the Cavendish Laboratory under Professor J.J. Thomson.

It was during his early years there that Dan was introduced by Street to Professor E.T. Whittaker of Edinburgh University, who was giving a postgraduate course of lectures on spinors following the recent publication of a book on that topic by Cartan. In his obituary of Whittaker, Dan later commented on Whittaker's remarkable ability to absorb, digest and then present new material; and at the end of his 1943 Proc.E.M.S. paper (written in 1941) Dan thanked him for introducing him to the subject of spinors. Another person who made a big impression on Dan at that time was the German physicist Max Born, who in 1936 had been appointed Tait Professor of Natural Philosophy at Edinburgh, and whose postgraduate lectures Dan regularly attended.

From 1941 until 1945, Dan served as a Scientific Officer at the Royal Aircraft Establishment at Farnborough, Hampshire, in the Air Navigation section of the Instruments Division. This group was given the task of devising a semi-automatic method of air navigation, as the methods used by the navy were too slow. I recall Dan explaining to me some years ago how the focal properties of hyperbolae could be used, and showing me charts with families of intersecting hyperbolae. Dan was the only mathematician in the group; he used to remark that it was his attendance at the Astronomy ordinary class in his B.Sc. year that made his membership possible! He also delighted in recounting that, as all staff had to be given an air force rank while working there, he was given the rather unlikely title of Squadron Leader.

After the war Dan returned to the Royal Technical College where he continued to work with Professor Street; but he was there for only two more years. In 1947 he was appointed as a lecturer at his *alma mater*, where his seven colleagues included six of those who had been on the staff when Dan completed his M.A. eleven years earlier. (It should be pointed out that, in the tradition of Scottish universities at that time, the lecturers were supported by a small number of assistants.) All of the six (Thomas MacRobert, Neil McArthur, William Arthur, Richard Robb, Robert Gillespie and Thomas Graham) were, like Dan, Glasgow graduates.

The following year Dan was awarded the degree of Ph.D. for his thesis entitled *Some problems on fluid motion, with special reference to the flow of compressible*

fluids, and with additional papers. The work on fluids, under Street's supervision, was mainly concerned with the two-dimensional flow of a compressible fluid at high speed, including the effect of a shock wave on the drag of a body moving through a compressible fluid. There then followed several 'additional papers', the first of which related to his work at Farnborough. The aim of this paper was to provide a rigorous basis for an electromagnetic principle, known as the Fluxgate principle, which was behind the development of certain types of accurate magnetometers and aircraft compasses. This work had been started at Farnborough and completed on Dan's return to Glasgow. The thesis was then completed by the inclusion of offprints of papers [1,2,3]; of these, [2] also grew out of his Farnborough days, as curves of constant bearing arise in the study of naval and aircraft navigation.

Dan was to spend the rest of his professional life at the University of Glasgow, first as a lecturer until 1959, and then as a senior lecturer until his retirement in 1980. Much of his teaching and administrative duties related to courses taught to engineering students; this included attending engineering examination boards where he had to learn how to deal with requests for extra marks which would then allow an unworthy student to be given a pass by increasing his mark yet further through the compensation scheme operated by the Engineering Faculty. Dan also taught courses such as the honours complex variable course, where his examples on contour integration caused the tutors considerable difficulty. He had a particularly individual style of lecturing, combining clarity of exposition with an inexhaustible supply of anecdotes concerning Kelvin, Stokes, Weierstrass, Hilbert and many others, some shedding light on mathematical issues, others entirely tangential, such as his description of Kelvin's role in causing the West Highland Railway to terminate at Mallaig. During his career he gave some marvellous lectures to the undergraduate Maclaurin Society when time seemed to stand still as he proceeded from one anecdote to another. Examples of his topics were: The beginning and end of the world (1974), Black and white holes (1984), Why the world is 3-dimensional (1988), and David Hilbert – the spaceman of mathematics (1991). It is a great pity that none of these was recorded.

Dan was a kindly man, interested in his students. He did his best to maintain standards, but perhaps had unrealistic expectations of what students could cope with in examinations. His honours questions were usually on the hard side; one averaging half marks was too easy. At a time when exemption from degree examinations in first and second year could be obtained by a good performance in class exams, he used to respond to students who had just missed out on exemption and were hoping to persuade Dan to change his mind, by asking them if they were certain they would pass the degree examination. If the answer was "Yes", then Dan replied that they had nothing to worry about. If the reply was "No", then Dan's reply was "Well, then, you don't deserve exemption, do you?".

Much of Dan's service to the department was given under the leadership of Robert Rankin, Head of Department from 1954, and Ian Sneddon, the first holder of the Simson chair. Dan did not write many research papers but contributed to the department through his scholarship and his support of his colleagues. It was fortunate for him that he lived at a time when universities appreciated such contributions, and valued scholarship as well as the outpouring of research publications. One of his major contributions to the department was the series of postgraduate lectures he gave to mathematicians and theoretical physicists on subjects such as spinors, relativity, gravitational radiation, manifold theory and, most popular of all, black holes, which were of particular interest in the 1970s. To enable him to continue such

courses after his retirement in 1980, the university appointed him as an honorary lecturer.

Dan was particularly interested in the history and development of mathematical physics in the nineteenth and twentieth centuries. He had a great respect for, and a deep knowledge of, James Clerk Maxwell who, Dan always thought, had never received the recognition due to him. His interest in Einstein and the theory of relativity has already been mentioned. It was fitting that a lecture in honour of Dan's 80th birthday was given by Jeremy Gray, the Open University mathematical historian. Gray took as his theme 'Four glimpses of Poincaré'.

A highlight of Dan's career was a term spent during session 1975-6 as a Snell Visitor at Balliol College, Oxford. For many years staff at Glasgow have had the opportunity to visit Balliol to spend time pursuing their research interests. We can imagine Dan revelling in the college life, in particular the dinners at high table, and the accompanying conversation. During that term he also greatly appreciated the opportunity to sit in on some of Roger Penrose's tutorials on black holes.

Dan took an active interest in various mathematical societies. He was President of the Glasgow Mathematical Association 1958-9, President of the Edinburgh Mathematical Society 1960-1, and was elected a Fellow of the Royal Society of Edinburgh in 1962. In 1964 he became a Founding Fellow of the Institute of Mathematics and its Applications. Earlier in his career he had served as editor of the Edinburgh Mathematical Notes which were published by the E.M.S..

Dan was a lifelong member of the Church of Scotland. He served as an elder in Kirkton church in Carlisle from 1947, and was for fifty years secretary of his local branch of the National Bible Society of Scotland. He also served on several central committees of the Church of Scotland, including the Panel on Doctrine. Further service was as an assessor at the church's selection schools for candidates for the ministry, when he had to interview candidates of all backgrounds and theological persuasions. Dan strove to be fair and unprejudiced, even when the candidate did not appear to be suitable. Dan told of just one occasion on which he was unable to control himself. A particularly unimpressive candidate was proving difficult to converse with, and Dan was finding it impossible to find any topic on which the candidate was willing or able to say more than a couple of words. At last, Dan asked him what was his favourite subject at school, and when he replied "Maths" Dan brightened up and asked him which particular part of mathematics he had most enjoyed. A long awkward silence ensued as the candidate thought back over 30 years. Eventually, with an audible sigh of relief, he at last replied "Jimmy Ometry". Dan's whole body quivered and then shook as he tried unsuccessfully to control himself. The interview was over.

Dan read much on theology, in particular on the relationship between science and religion. Among his favourite authors on the subject were John Polkinghorne, the Anglican priest who is an F.R.S. and a winner of the Templeton Prize, and the theoretical physicist John D. Barrow, also an F.R.S. and Templeton Prizewinner, who gave the centenary Gifford Lectures in Glasgow in 1989. When Dan was invited to preach at the University chapel on 18th May 1980, shortly before he retired, he took as his theme 'Religion in a scientific age'.

As well as theology, Dan had many other interests. He was a competent organist, a lover of Bach; on occasions he played at services in the University chapel, and he played at over a hundred weddings in Kirkton church. He was a man of his time and clung to the older forms of worship, loving in particular the metrical psalms.

He did not have much time for the altering of words of established hymns for the sake of political correctness, nor for guitars or praise bands. He could be quite critical of church organists, and woe betide an applicant for the post of organist who did not perform satisfactorily with his feet!

Retirement brought no reduction in his activities. While his honorary lectureship enabled him to continue his postgraduate lectures, he also turned to the writing of two very different books. Earlier in his career he had written *Solving Problems in Complex Numbers* for a popular Oliver and Boyd series of textbooks (1968), and he had completely revised Bernard Hague's Methuen monograph *An Introduction to Vector Analysis* in 1970. Now in retirement he produced his major work, *Manifold Theory – an Introduction for Mathematical Physicists*, published by Ellis Horwood in 1991 when Dan was 76, and based on many of the postgraduate lectures that he had prepared so carefully. A reviewer of this book in the *Mathematical Gazette* commented on the “number of insightful remarks, clearly garnered over a long teaching career”, and the reviewer in *Mathematical Reviews* commented that the style was more encouraging than intimidating. A revised edition was published in 2003; this was truly a labour of love, for by then Dan's reading vision was so bad that he could see only a few symbols at a time, even with the aid of a magnifying glass.

The second book of his retirement was very different. Throughout his life Dan was an enthusiastic student of local history; he was acknowledged locally as an expert, and when the Carluke Parish Historical Society was founded in 1979 he became its honorary president. His meticulously researched guide to south Lanarkshire, *Upper Clydesdale; a History and a Guide*, was published by Tuckwell Press in 1999. The 84-year-old author was delighted with the interest shown in the book, which resulted in the local Rotary Club presenting him with the Carluke Citizen of the Year Award. It is characteristic of Dan that after the book's publication he continued to record updates which might be useful for a second edition.

Dan's 80th birthday was celebrated at the Royal Scottish Automobile Club in Blythswood Square, a club of which Dan had been a member for many years. His membership had nothing to do with automobiles, for he never owned a car – or indeed a television set. Contentment was attained throughout his life through mathematics, reading, music, the church, and frequent conversations with friends. Many eating places in the Carluke area regularly welcomed Dan and a group of friends for lunches which lasted well into the afternoon. Dan was a great conversationalist with an endless supply of anecdotes and memories which revealed a wide knowledge of his native land. He travelled regularly on holidays to the western isles. Skye and Iona were particular favourites, where he stayed at the same hotels year after year, but on at least one occasion he accompanied Professor Murdo Ewan MacDonald on a walking holiday in Lewis and Harris. This holiday provided Dan with a sufficient supply of anecdotes to last for years.

His 90th birthday was celebrated in April 2005 in the College Club of the University of Glasgow. Dan made all the plans himself, and indeed hosted the occasion. His preparations involved constructing two table plans, with guests moving to new places before coffee and speeches. He was delighted that the Chancellor of the University, Sir William Kerr Fraser, and his wife Lady Marion were able to attend. After the lunch Sir William spoke of how he had got to know Dan during his regular visits to Iona. Dan, in turn, in a typical speech laced with entertaining anecdotes and asides, described four ways in which he had been blessed in life: good health, a contented disposition, a host of valued friends, and happiness in his work.

There was something significant about the venue for this celebration. Dan had been a regular user of the club all his life, and he was saddened when, less than a year later, the club lost its premises due to other developments in the university. The club had provided Dan with the opportunity to meet with other academics and share insights with experts in other areas of study. The forces of economics and research grants, and the replacement of 'value' by 'cost', were transforming the fundamental idea of what a university should be. When Dan suffered a fall and broke his leg at the very end of 2005, an accident which led to the gradual deterioration of his health, and to his death almost nine months later on 15th September 2006, a golden age of university life was coming to an end.

On his retirement in 1980, Dan received a card from a colleague in Natural Philosophy, sent "with gratitude for your very beautiful lectures, which have given me more pleasure than I can say". Such feelings of affectionate gratitude will undoubtedly be shared by all who have had the privilege of knowing this scholarly, kind and generous man.

ACKNOWLEDGEMENTS. I am indebted to many people for their help and support. In particular I would like to thank Rev. Ronald Blakey and Dr. John Hickey for their advice and insights, and for their comments on an earlier version of this tribute.

Ian Anderson

Publications

Books

1. *Solving problems in complex numbers* (Oliver and Boyd, 1968).
2. *An introduction to vector analysis* (Revised version of Bernard Hague's book) (Methuen, 1970).
3. *Manifold theory – an introduction for mathematical physicists* (Ellis Horwood, 1991; revised 2003).
4. *Upper Clydesdale: a history and a guide* (Tuckwell Press, 1999).

Doctoral thesis

Some problems on fluid motion, with special reference to the flow of compressible fluids, and with additional papers (University of Glasgow, 1948).

Papers

1. On the methods of extending Dirac's equation of the electron to general relativity, *Proc. Edinburgh Math. Soc.* (2), **7** (1943), 39–50.
2. Some properties of the curve of constant bearing, *Edinburgh Math. Notes* **35** (1945), 4–9.
3. On the radial error in a Gaussian elliptic scatter, *Philos. Mag.* **37** (1946), 636–9.
4. Integrals of Lommel's type for confluent hypergeometric functions, *Proc. Glasgow Math. Assoc.* **1** (1952), 28–31.

5. On the integral in notes 83.15 and 83.63, *Math. Gazette* **84** (2000), 301–2.

Obituaries

Sir Edmund Whittaker F.R.S., *Proc. Edinburgh Math. Soc. (2)* **11** (1958), 1–9.

Robert Gillespie, *Proc. Edinburgh Math. Soc. (2)* **21** (1978), 189–90.

Elizabeth A. McHarg, *Glasgow Math. J.* **42** (2000), 487–8.

Professor Ian Sneddon, *The Scotsman*, 27 November 2000.

Professor Robert A. Rankin, *The Scotsman*, 4 February 2001.