

JAMES CLERK MAXWELL FOUNDATION

ANNUAL REPORT AND SUMMARY ACCOUNTS

Year ended 31 December 2019

JAMES CLERK MAXWELL FOUNDATION

(Scottish Charity Number SC015003)

Trustees' Annual Report and Accounts for the year ended 31 December 2019

HONORARY PATRON

Professor Peter Higgs CH FRS FRSE

HONORARY PRESIDENT

Professor David S. Ritchie, MA FRMetS FRSE

TRUSTEES

Professor David S. Ritchie, MA FRMetS FRSE (until October 2019)

Professor T. Alastair Gillespie, BA PhD HonDSc FRSE (Chairman)

David O. Forfar, MA FFA MMath DipStats FSS FIMA CMath FRSE (Past Chair and visit coordinator)

Professor Peter M. Grant, OBE PhD Hon Dr h.c. HonDEng HonDEng LFIEEE FREng FRSE (Secretary)

Dr John W. Arthur, BSc PhD FInstP FIET FREng FRSE (Property and Curator)

Professor Dugald B. Duncan, BSc PhD FIMA (WWW Master)

Mrs Catherine M. Booth, MA PgDip DipMolSci (from April 2019)

Professor J. Chris Eilbeck, BA PhD FRSE (until April 2019)

Sir Michael Atiyah, OM HonDSc HonFREng HonFMedSci HonFFA PastPresident RS (until January 2019)

Dr Richard C. Dougal, BSc PhD CPhys FInstP

Dr Isobel Falconer, MA PhD

Dr Iain A. B. Lindsay, BSc PhD

Professor Malcolm S. Longair, CBE BSc MA PhD HonLLD FRS FRSE

Dr A. David Milne, OBE PhD HonDEng HonDSc FIET SMIEEE FREng FRSE (until August 2019)

Dr Susie P. Mitchell, BSc PhD (until August 2019)

Professor Roland A. Paxton, MBE MSc PhD HonDEng CEng FICE FRSE

Dr James C Rautio, BSEE MS PhD FIEEE

Dr John S. Reid, PhD FInstP CPhys MLitt FRAS FRMetS

Professor John F. Roulston, OBE DEng HonDSc FREng FRSE

Professor Alan C Shotter, BSc ARCS DPhil CPhys FInstP FRSE

Benjamin J. P. Thomson, CBE BSc FRSE

Dr Alan Walker, MBE Hon Dr hc FInstP ARCS (from August 2019)

Treasurer: Daniel O'Hara BSc, CA, IMC

Contact address

James Clerk Maxwell Foundation, 14 India Street, Edinburgh, EH3 6EZ.

Recruitment and appointment of Trustees

Trustees are selected from suitably qualified persons who have an interest in James Clerk Maxwell.

Governing document

Deed of Declaration of Trust (registered 11 February 1977).

Charitable purposes

As set out in Deed of Declaration of Trust, 4th Schedule.

Activities and achievements

See Trustees Report for the year ended 31 December 2019.

Reserves

At 31 December 2019 the Foundation had bank account funds of £41,482 plus investments valued at £60,881 giving a total reserve of £102,363.

Trustees' Report for the year ended 31 December 2019

TRUSTEES AND FRIENDS

The Foundation noted with sadness in January 2019 the death of Sir Michael Atiyah, the resignation as trustees during 2019 of Prof David Ritchie, Dr David Milne (former Chairman) and Dr Susie Mitchell. We welcomed Mrs Catherine Booth, and Dr Alan Walker appointments as a new trustees during the year.

Dr. Richard Snyder (RS Microwave founder and president) and Dr. Timo Antinnen from Finland have been appointed as Friends of the Foundation.

CHARITABLE GRANTS AWARDED

Edinburgh International Science Festival Maxwell lecture by Dr Isobel Falconer
Maxwell Prize (awarded with the Mackinnon/Macneill Trust) to Helen Taylor and Joshua Brumpton
outstanding University students in science/engineering from the West of Scotland.
University of Edinburgh PhD studentship support for Robert Lung.
Scottish Mathematics Council.
Scottish Mathematics Masterclass.
Dumfries Science Festival.
Edinburgh Academy Science Prize.
Young Writers' Prize (awarded jointly with Taylor and Francis)
ICIAM Maxwell Prize (awarded jointly with the Institute of Mathematics)

The Trustees noted, with immense pleasure, that David Flynn and David Jagger were awarded the 2019 IEEE/RSE James Clerk Maxwell Medal for "their contributions to the development of novel Reduced Instruction Set Computer (RISC) architectures as adopted in 100 billion+ microprocessor cores worldwide." David Flynn is employed by ARM in Cambridge and he presented the 2018 Edinburgh International Science Festival Maxwell lecture.

UPKEEP OF THE HOUSE

Redpath Bruce Ltd were appointed to act as our property maintenance factor and letting agent from the start of this year. Expenditure on the main house of £2,045 covered maintenance and repairs, which included a fire safety report, replacement of the immersion heater, minor electrical works and gas safety inspection. A further £3,336 was invested in the restoration of a valuable Ushak rug contemporary to the period of the building and £975 was spent on the restoration of Peter Guthrie Tait's School notebook. Following the departure in June of long-term tenants, an extensive renovation of our basement flat (14A India Street) proved necessary. At a cost of over £18,000 this has included significant damp-proofing work, a new boiler, stripping and re-panelling the bathroom, overhauling the sash windows, full redecoration, laying vinyl flooring in bathroom and carpeting two bedrooms, and a major clear-out of the garden. It is anticipated that the flat will be let out in January 2020 with a significant increase in the rent.

FINANCIAL POSITION

The statement of accounts for the year ended 31 December 2019 shows an overall income of £33,003 (predominately rental) including donations totalling £1,287. Our total expenditure of £56,582, included the above charitable donations totalling £9,469, but was dominated by major expenditure of £24,215 predominantly to upgrade the basement flat between tenancies. Further foundation development and outreach activities (such as displays, newsletter production and distribution) was £2,894, plus professional fees of £12,019 gave a major negative balance of £23,579. The value of our investments at the year end increased to £60,881. In summary the balance of our reserves, over 2019, reduced from £112,947 to £102,363.

NEWSLETTER

We published two Newsletters again during the year. Spring 2019: Electroweak Interaction by Sheldon Glashow, Metcalf Professor of Physics, Boston University and visit to CERN by David Forfar, Foundation Trustee. Summer 2019: Saturn's Rings after Cassini by Carl Murray, Professor of Mathematics and Astronomy, Queen Mary University of London and visit to Einstein's House by David Forfar. Some 200 emails go to interested persons advising that a new Newsletter is on our website and some 50 hard copies are mailed to interested parties such as the Royal Society of Edinburgh, key University Depts etc. It is appreciated by the Foundation that the printing of the Newsletters (which are also available on our website) was undertaken, pro bono, by LEONARDO, Crewe Toll Edinburgh.

In conjunction with the Carla Fendi Higgs Fund the Foundation financially supported a mailshot to the Principal Teachers of Physics at all Scottish Secondary schools. The mailshot contained copies of three James Clerk Maxwell Newsletters along with details of the *Secondary Schools Poster Competition* to highlight the contributions of five Scottish-based physicists (Maxwell, Kelvin, Tait, Wilson and Higgs).

MUSEUM

This year saw the completion of the restoration and conservation work on P G Tait's school notebook, an autograph poem of James Clerk Maxwell, together with the implementation of measures recommended for their preservation.

We have done further work on the refurbished Wimshurst spark generator (the gift of Sir Michael Atiyah) to demonstrate to visitors the practical generation of electromagnetic waves.

HIGGS PRIZE GIVING CEREMONY

On the 17th September, 12 individuals attended the Scottish Minister for Further Education, Higher Education and Science, Richard Lochhead, and Prof. Peter Higgs (our Patron) presenting in 14 India Street the Higgs Prize to the two (male and female) students who received the highest marks in Advanced Higher Physics.

RECOGNITION

Professor Peter Grant, one of our trustees, successfully bid to the IEEE History Society for a prestigious IEEE Historical Milestone Plaque to commemorate the UK activities on "Standardisation of the Unit of Electrical Resistance". In September 2019 a commemorative bronze plaque was unveiled in the Hunterian Museum at the University of Glasgow. A duplicate of this has been mounted in the foyer at 14 India Street alongside our existing IEEE Milestone plaque for Maxwell's equations, with both events publicised on our WWW site. Professor Grant subsequently published a paper in the November 2019 issue of the Proceedings of the IEEE outlining the contributions of Maxwell, Kelvin, Jenkin, Siemens and others to this significant standards development in the 1860s. In addition part 1 of a two part article was published in "Transmitting" the Museum of Communications Newsletter, No. 89 in 2019.

OUTREACH

We hosted over 250 visitors on Doors Open Day in September 2019.

SCHOOL VISITS

We have invited more local secondary schools to arrange to visit our museum.

TRUSTEE PRESENTATIONS

- Wigton Science Festival, Scotland, 10 March 2019, delivered by Prof Malcolm Longair
- NEMO conference, Cambridge, MA, May 2019, to 80 attendees delivered by Dr James Rautio
- APCAP conference, Korea, August 2019, to 150 attendees delivered by Dr James Rautio
- IEEE HISTELCON Conference, Glasgow, September 2019 to 50 attendees keynote by Prof Peter Grant
- NORTHRUP GRUMMAN, Los Angeles, October to 30 attendees, delivered by Dr James Rautio
- CLASSTECH conference in Los Angeles, November 2019, to 100 attendees by Dr James Rautio

VISITOR GROUP PRESENTATIONS

Presentations on James Clerk Maxwell were made to some 100 group visitors who came to visit the museum. Major hosted group visits were:

19 March	Cambridge Alumni Group
25 March.	Institute of Physics Group
1 July	Korean Student Group
23 July	U.S. Student Group
3 October	Finnish Alumni Group
11 October	Swiss Student Group
4 November	3 rd AGE History Society
5 November	Edinburgh Festival Guides
4 December	10 Biology students from Napier University

We further hosted, in the Museum meeting room, scientific meetings on these dates:

23 October	Historical Engineering lecture
25 November	Historical Engineering AGM

INDIVIDUAL VISITS

To make better use of the limited Trustee time available to host our museum visits we moved to offering to open by appointment on either a Tuesday or Wednesday afternoon each week.

Following India Street and Glenlair visit by Profs Sefano Selleri and Giuseppe Pelosi they published their report in the URSI Radio Science Bulletin, No. 370, pp 67-69, September 2019.

The number of individual visitors to the birthplace exceeded 180. The trustees hosted over 65 individually guided visits, for which the visitor profile was: 40% from the UK; 25% from USA; 25% from EU; 5% from Asia; and 5% from the rest of the world.