

JAMES CLERK MAXWELL FOUNDATION

ANNUAL REPORT

Year ended 31 December 2021

JAMES CLERK MAXWELL FOUNDATION

(Scottish Charity Number SC 015003)

Trustees' Annual Report and Accounts for the year ended 31 December 2021

HONORARY PATRON

Professor Peter Higgs CH FRS FRSE

TRUSTEES

Dr Alan Walker, MBE Hon Dhc FInstP ARCS (Chairman & Property Committee Member)

Mrs Catherine M. Booth, MA DipLib DipMolSci (Secretary & Property Committee Member)

Professor Dugald B. Duncan, BSc PhD FIMA (Website Master & Chair of IT Committee)

David O. Forfar, MA FFA MMath DipStats FSS FIMA CMath FRSE (Visit Coordinator)

Dr John W. Arthur, BSc PhD FInstP FIET FEng FRSE (to April 2021) (Curator)

Dr Isobel Falconer, MA PhD (IT Committee Member)

Professor T. Alastair Gillespie, BA PhD HonDSc FRSE (to April 2021)

Professor Peter M. Grant, OBE PhD Hon Dhc HonDEng LFIEEE FEng FRSE (Property Committee Member)

Professor Martin A. Hendry, MBE PhD FInstP FRSE (from August 2021) (Outreach Committee Member)

Dr Susan P. Hezlet, BSc BA DPhil (from April 2021)

Professor Roland A. Paxton, MBE MSc PhD HonDEng CEng FICE FRSE (to April 2021)

Dr James C. Rautio, BSEE MS PhD FIEEE (Chair of Outreach Committee)

Professor Alan C. Shotter, BSc ARCS DPhil CPhys FInstP FRSE (to April 2021)

Professor J. Thomas M. Stevenson BSc MSc PhD (from April 2021) (Outreach Committee Member)

Benjamin J. P. Thomson, CBE BSc FRSE (to April 2021)

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 the works of James Clerk Maxwell.

Governing document

Revised Deed of Declaration of Trust (2021).

Charitable purposes

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

Activities and achievements

See Trustees' Report for the year ended 31 December 2021.

Reserves

At 31 December 2021 the Foundation had bank account funds of £11,941 plus investments valued at £100,960 giving a total reserve of £112,901

Trustees' Report for the year ended 31 December 2021

TRUSTEES

The Foundation noted the resignation as Trustee during 2021 of Dr John W. Arthur, Professor T. Alastair Gillespie, Professor Roland A. Paxton, Professor Alan C. Shotter and Benjamin J. P. Thomson. We welcomed as new Trustee appointments in 2021: Professor Martin A. Hendry, Dr Susan P. Hezlet and Professor J. Thomas M. Stevenson. It was with much sadness that we noted the death of Dr John Reid, a longstanding former Trustee, who had maintained our link with Aberdeen.

Our US Trustee, Professor J C Rautio, was elected as a Corresponding Fellow of the Royal Society of Edinburgh.

FELLOWS, FRIENDS AND AMBASSADORS

Recently retired Trustees - Dr John Arthur, Dr Richard Dougal, Professor Chris Eilbeck, Professor Alastair Gillespie, Professor Malcolm Longair, Professor Roland Paxton, and Professor Alan Shotter - were all elected as Fellows of the Foundation. In addition, during 2021, Professor Catherine Heymans, Professor Keith Moffatt, Sir Roger Penrose, Professor Michael Kosterlitz and Dr Howie Firth were also elected as Fellows, and Dr Catherine Dunn and Dr Kate Ward were elected as Ambassadors.

Dr John Arthur has now become Curator of the Foundation Library and Museum collections. Professors Alastair Gillespie and Alan Shotter continue to help with hosting visits and talking to guests about Maxwell and the house at 14 India Street.

We value the continuing involvement of our ex-Trustees, along with the support and enthusiasm that all our Fellows, Friends and Ambassadors contribute to the Foundation.

TRUST DEED

During 2021 the Trustees, with the assistance of Adrian Bell of Morton Fraser LLP, finalised a more up to date Foundation Trust Deed to replace our original 1977 version. The new Trust Deed has revised Standing Orders covering the three Committees: Property, Information Technology, and Outreach. It also defines the requirements for appointment as Fellows, Friends, and Ambassadors. The Foundation agreed to update this Deed in collaboration with the Scottish Universities Summer School in Physics, who also required a new Trust Deed, with the legal costs shared for the benefit of both charities. Following OSCR approval to reorganise our charity, the Foundation Trustees unanimously approved the new Trust Deed at an Extraordinary General Meeting held on 1 February 2021. No further changes were requested in the following two-week OSCR public consultation period, and adoption went ahead.

CHARITABLE GRANTS AWARDED

This year, due to our reduced income, these were only:

- 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.
- Support for the Scottish Mathematics Council
- Edinburgh Academy Maxwell Science Prize, to Magnus Harkness
- Contribution to the Taylor Francis writer's – continuing sponsorship
- Edinburgh Science Festival - we pledged sponsorship for the Festival in 2021, but this will be paid in 2022

PUBLIC ACTIVITIES IN 2021

The Covid virus outbreak again resulted in much reduced museum visits in 2021. Our Outreach committee met on several occasions by Zoom to finalise our Charitable Grant awards. Professor Martin Hendry set up a Maxwell Foundation social media Twitter account, @JCMaxwellFound.

UPKEEP OF THE HOUSE

The main business in 2021 was to secure a new tenant for the second-floor offices. Negotiations were successfully concluded in November and the International Centre for Mathematical Sciences (ICMS) expanded from their Heriot Watt University headquarters to use India Street offices for research collaborations. Prior to securing the lease we had to redecorate, install new lighting and carpets in the offices, and make further upgrades. As part of the new tenancy agreement, a number of certificates such as legionella and energy performance had to be updated, and we had to interview for and arrange to provide a commercial cleaner. This resulted in our incurring £13,429 of property costs. Considerable additional cost was incurred with our Solicitor in agreeing the finalised lease terms, and together with the charge for the letting agent, this totalled £9,309.

FINANCIAL POSITION

The statement of accounts for the year ended 31 December 2021 shows a reduced overall income of £14,503 (predominantly rental). Our total expenditure of £48,288 included the above charitable donations totalling £6,050, but was dominated by major expenditure (referenced to above) predominantly to maintain the property, and included the upgrade of the second floor rooms between tenancies. Foundation development and outreach of £469 for the newsletter production, mailing and web hosting was also included here. Further professional fees for arranging the lease and the letting of the 2nd floor offices (referenced above) gave an overall deficit of £33,785. The value of our investments at the year-end increased marginally to £100,960.

In summary the balance of our reserves, over 2021, has decreased from £142,825 to £112,901 due to the loss of the tenancy and the incurring of essential expenditure.

TRUSTEE PRESENTATIONS AND PUBLICATIONS

- Tweeddale Astronomical Society, online, 21 January 2021. “C T R Wilson: from droplets and bubbles to the Higgs boson”. Delivered by Alan Walker to about 30 attendees.
- East Lothian University of the 3rd Age Science group, Haddington, 27 September, to 20 attendees delivered by Prof Peter Grant
- “Maxwell’s Theory for Us Regular Folks”, provided an understanding without mathematics delivered to 40 attendees at a US Radio club by James Rautio. [Maxwell’s Theory For Us Regular Folk, Dr. James Rautio - YouTube](#)
- Webinar “How Maxwell created the modern world” recorded on 4 December by Prof Peter Grant for *IEEE UKRI Life Members section*, <https://www.ieee-ukandireland.org/watch-again-lmag-webinar-how-maxwell-created-the-modern-world-by-peter-grant-obe/>
- “Maxwell’s Light”, a virtual presentation, was given by Tom Stevenson at the Orkney Science Festival in September 2021 (see oisf.org, and the Orkney Science Festival’s YouTube channel).

The following Foundation Newsletter articles have been republished in the IEEE Microwave Theory and Techniques (MTT) Society Magazine. These receive circulation to their 10,000 members:

- M. J. Rees, "Is the Universe Teeming With Life, Or Is Life on Earth Unique? [Around The Globe], " in IEEE Microwave Magazine, vol. 21, no. 9, pp. 79-81, Sept. 2020.
- David O. Forfar, "Maxwell, Einstein, Newton, and Faraday," in IEEE Microwave Magazine, vol. 21, no. 11, pp. 72-74, Nov. 2020.
- David O. Forfar, "Maxwell on Physical Standards," in IEEE Microwave Magazine, vol. 22, no. 1, pp. 90-92, Jan. 2021.
- Tom G. Mackay, "New Electromagnetic Surface Waves," in IEEE Microwave Magazine, vol. 22, no. 6, pp. 96-98; 114, June 2021.

NEWSLETTERS

We published one Newsletter during the year.

- Newsletter 16, Summer 2021: "Homage to Heinrich Hertz" part 1 by David O. Forfar (Trustee).

This article is published on our website and is to be republished by the IEEE Microwave Magazine in early 2022. Other bodies have also expressed interest. "Homage to Heinrich Hertz" part 2 will appear in 2022.

Some 200 emails go to interested persons advising that a new Newsletter is on our website and some 30 hard copies are mailed to interested parties such as the Royal Society of Edinburgh, key University Departments 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.

IT DEVELOPMENTS: FOUNDATION WEBSITE: clerkmaxwellfoundation.org

Our Webmaster and IT Committee completely reviewed, restructured and relaunched our website in time for Maxwell's 190th birthday on 13 June 2021. The new pages are responsive, and suitable for tablets and mobile phones as well as desktops and laptops. There is now a search facility.

A wealth of material about Maxwell in Aberdeen, produced by our much-missed late Trustee, Dr John Reid, has now been preserved and incorporated into the website. A new volunteer with the Foundation has joined the IT Committee and is working on various additional features.

MAXWELL TORCH

We are delighted that the Maxwell Torch, designed for the International Year of Light in 2015 by Mike Stoane Lighting, has now found a new home in India St. It had resulted from a collaboration between Howie Firth, Tom Stevenson, Martin Hendry and Alan Walker, all of whom are now Trustees or Fellows of the Foundation. The Torch is accompanied by an iPad, which can be loaded with suitable content or presentations, and updated as required. It is available on request to lend to Science Festivals and related events.

STAR OF CALEDONIA PROJECT

This is intended to be a public arts sculpture to be erected near Gretna, inspired by the science of James Clerk Maxwell. In May, Alan Walker, our Chair, participated in a press photoshoot at which the Maxwell Torch was proudly held aloft. Prominent in the resulting photographs was Alasdair Houston, the man behind the project. Sadly, Alasdair Houston died only a few weeks later. The Project itself, however, is set to continue.

RELOCATION OF STATUE OF MAXWELL

Edinburgh Council have plans to relocate the statue of Maxwell from its current location in George St. The Foundation liaised with the Royal Society of Edinburgh on this matter, making it clear that a new location must allow for pedestrians to be able to view the plinth panels and inscriptions safely. It appears that the statue may eventually be placed in St Andrew Square.

MUSEUM UPGRADES

This year, the only major work carried out was the restoration and refurbishment of 5 period chairs. Limited further work on the exhibits was carried out, as Trustees' effort was concentrated on securing the required property refurbishment for the new tenant.

MUSEUM VISITS

Doors Open Day, Saturday 25 September

Because of Covid restrictions, tours had to be by appointment only. We had 12 half-hour slots with 6 tour guides, and all were all fully subscribed and successfully held, with many favourable comments in the Visitors' book. The Cockburn Association expressed appreciation that we had contributed to this event.

SCHEDULED VISITS

The Covid pandemic curtailed regular visitor tours, but 15 such tours, booked in advance, were able to go ahead at times when rules were relaxed.

SCHOOL VISITS

We have invited more local secondary schools to arrange to visit our museum, as and when Covid restrictions permit.