

**JAMES CLERK
MAXWELL
FOUNDATION**

JAMES CLERK MAXWELL FOUNDATION

ANNUAL REPORT

Year ended 31 December 2022

JAMES CLERK MAXWELL FOUNDATION

(Scottish Charity Number SC 015003)

Trustees' Annual Report and Accounts for the year ended 31 December 2022

HONORARY PATRON

Professor Peter Higgs CH FRS FRSE (until March 2022)

TRUSTEES

Dr Alan Walker, MBE Hon Dhc FInstP ARCS (Chair; Member of Property and Outreach Committees)

Mrs Catherine M. Booth, MA DipLib DipMolSci (Secretary; Property Committee Member; Visits Coordinator from July 2022)

Professor Dugald B. Duncan, BSc PhD FIMA (Webmaster; Chair of IT Committee)

Dr Susan P. Hezlet, BSc BA DPhil (Treasurer from April 2022 until April 2023)

David O. Forfar, MA FFA MMath DipStats FSS FIMA CMath FRSE (Visit Coordinator until July 2022)

Dr Isobel Falconer, MBE MA PhD (IT Committee Member)

Dr Howie Firth, MBE (from April 2022 until April 2023) (Chair of Outreach Committee May 2022 until April 2023)

Professor Peter M. Grant, OBE PhD Hon Dhc HonDEng HonDEng LFIEEE FEng FRSE (Trustee and Chair of Property Committee until December 2022)

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

Dr David Kerridge, MBE BSc MA PhD FIUGG (from January 2022) (Property Committee Member)

Dr James C. Rautio, BSEE MS PhD FIEEE (Chair of Outreach Committee until May 2022)

Professor J. Thomas M. Stevenson BSc MSc PhD (until March 2022) (Outreach Committee Member until March 2022)

Treasurer: Daniel O'Hara BSc, CA, IMC (until April 2022)

Acting Treasurer: Dr Alan Walker (from April 2023)

Bookkeeper: Mrs Jemma Brown (from January 2022)

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 Deed of Declaration of Trust, 4th Schedule.

Activities and achievements

See Trustees' Report for the year ended 31 December 2022.

Reserves

At 31 December 2022 the Foundation had bank account funds of **£23,971** plus investments valued at **£57,190** giving a total reserve of **£81,161**.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2022

PATRON

The Foundation was sad to accept the resignation in March 2022 of our much respected Patron, Professor Peter Higgs. As yet, we have not appointed a new Patron.

TRUSTEES

The Foundation also in March 2022 regretted the resignation of Trustee, Dr Tom Stevenson.

Having given the Foundation many years of invaluable service, Professor Peter Grant stepped down as Trustee in December 2022, having completed his period of office. We are very pleased that he is now a Fellow, and continues to support the Foundation as a member of the Property Committee, as a presenter of talks, and as a regular tour guide.

We welcomed as new Trustee appointments in 2022: Dr David Kerridge and Dr Howie Firth.

We congratulate Dr Isobel Falconer, who was appointed an MBE in the Queen's Birthday Honours list in June 2022 for services to the history of mathematics and science.

FELLOWS, FRIENDS, AMBASSADORS AND VOLUNTEERS

We value the support and enthusiasm that all our Fellows, Friends and Ambassadors contribute to the Foundation, and are very grateful for the help volunteers have given us.

Dr John Arthur, both Fellow and our Curator, continues to be an invaluable consultant and source of advice for enquiries received by the Foundation. Fellows, Professors Alastair Gillespie and Alan Shotter, regularly lead tours and talk to visitors, giving, from their own experience, insight and background into the house and its exhibits.

Volunteers have provided assistance with IT projects, and student volunteers have helped with events such as Doors Open Days.

CHARITABLE GRANTS AWARDED

This year, we had to undertake and pay for major maintenance work in the house, so our funds for disbursement were limited to:

- Support for the Edinburgh Science Festival (pledged in 2021)
- Maxwell Prize (awarded with the Mackinnon Macneill Trust) to Helen Taylor, an outstanding science/engineering student from Plockton
- Support for the Scottish Mathematical Challenge competition (to be paid in early 2023)
- Edinburgh Academy Maxwell Physics Prize, a cheque and book, to Fionn Smith

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2022

PUBLIC ACTIVITIES IN 2022

Doors Open Days

In September 2022, the building was open to the public for two afternoons, when we welcomed over 250 visitors, many of whom left glowing comments in our Visitors' Book

New Scientist Travel Tour

A visit to 14 India Street was included as one of the attractions in a programme of scientific travel organised by the *New Scientist* magazine. We had approximately 25 attendees, and provided them with a talk and tours of the house and contents.

Weiglhofer Mathematics Symposium

We provided accommodation for this Symposium over two days in July 2022 for 34 delegates, many from overseas, and tour guides attended to show them around the house during their reception and lunch breaks. It was rewarding to witness how excited these visitors were to have Maxwell's birthplace as a venue for their meeting.

Postgraduate Student groups

Students from both Dundee (22 participants) and Edinburgh (35 participants) had a visit to the house, which included a presentation on Maxwell's life and work, and a tour of the exhibits. A donation is usually given for events such as these.

MUSEUM VISITS

Over 2022, as well as the group visits noted above, we welcomed around 135 people, either as individuals or in small groups, for regular one-hour tours of the house. Invariably the feedback was positive. We are always intrigued that visitors from overseas, many of whom contact us in advance to arrange a tour during a planned brief stay in Edinburgh, know far more about Maxwell and his work than people of his home nation.

UPKEEP OF THE HOUSE

Our new tenants in 14 India St are now researchers associated with the International Centre for Mathematical Sciences (ICMS), who occupy the second floor offices. We feel it very fitting that Maxwell's birthplace acts as a research hub for these visiting mathematicians or scientists.

Major work carried out on the premises during 2022 included:

- A new flat roof, with new storeroom skylight, at a total cost of around £26,000
- Several repairs to our two central heating boilers which were constantly breaking down, although we recognise they are reaching the end of their life

Preparation was carried out for the imminent replacement of fluorescent with LED lighting in the display cases, and replacement of the deteriorating lining of these cases.

Plans are being made to upgrade the present lecture room to make it more suitable for letting out for events. These include the installation of WiFi, and improved projection facilities, likely to be implemented in 2023.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2022

FINANCIAL POSITION

Priority had to be given to urgent roof repairs.

The statement of accounts for the year ended 31 December 2022 shows an overall income of **£60,671**. Our total expenditure of **£48,641** included the above charitable donations totalling **£2,570**. Foundation development and outreach of **£1,322** for the newsletter production, mailing and web hosting was also included here.

The value of our investments at the year end was **£57,190**.

In summary the balance of our reserves over 2022 was **£81,161**.

TRUSTEE PRESENTATIONS AND PUBLICATIONS IN 2022

- Leeds Astronomical Society, online, 9 February. *Einstein and Hubble: Measuring the Expansion of the Universe with Gravitational Waves*. Delivered by Martin Hendry to approx. 25 attendees,
- Wigtown Book Festival, online, 10 March, *Scotland's Einstein*, by Martin Hendry and Catherine Heymans, 388 views to date.
- Edinburgh International Science Festival, 11 April, *Scotland's Einstein*, by Martin Hendry and Nisha Grewal, approx. 150 attendees.
- Education Scotland, 6 June, online teacher CPD talk on the James Webb Space Telescope, *A long time ago in a galaxy far, far away*. Delivered by Martin Hendry to approx. 30 attendees.
- Dark Space Planetarium, Kirkcudbright, 6 July, *Scotland's Einstein*. Delivered by Martin Hendry to approx. 30 attendees.
- Filming of James Clerk Maxwell segment for *Border Life* television programme, contributed by Martin Hendry, broadcast October 2022.
- Clydesdale Astronomical Society, online, 26 September. *Einstein and Hubble: Measuring the Expansion of the Universe with Gravitational Waves*. Delivered by Martin Hendry to approx. 20 attendees.
- Oman Science Festival, 13 October. *Listening to Einstein's Universe: the Dawn and Exciting Future of Gravitational-Wave Astronomy*. Delivered by Martin Hendry to approx. 200 attendees. (GW exhibition visited by approx. 100,000 people).
- Parton Kirk, 5 November, *Scotland's Einstein*. Delivered by Martin Hendry to approx. 20 people.
- Dark Space Planetarium, Kirkcudbright, 17 November, *Exploring the Dark Side of the Universe*. Delivered by Martin Hendry to approx. 40 attendees.
- Seminar for Antenna Test and Measurement Society, Central India Chapter, Indore, India. *How Maxwell created the Modern World*. Delivered remotely for one hour by Peter Grant, 16 March 2022.
- Teams Seminar for the School of Engineering, The University of Edinburgh. *How Maxwell created the Modern World*. Delivered by Peter Grant, 5 May 2022.
- New Scientist Autumn tour visit to 14 India Street. *Introduction to Maxwell birthplace in Edinburgh*. Delivered by Peter Grant to approx 25 attendees, 29 September 2022.
- National Trust East Lothian Centre *How Maxwell created the Modern World*. Delivered by Peter Grant in North Berwick, 5 November 2022.
- Parton Community Council. *Presentation on Maxwell, James Clerk Maxwell Foundation, and bicentenary of Maxwell's birth in 2031*. Delivered in Parton by David Kerridge and Catherine Booth, 25 July 2022.
- Dundee University Physics Department. *Introduction to Maxwell birthplace*. Delivered in India Street by David Kerridge to approx. 22 attendees, 16 November 2022.
- National Museums of Scotland. Higgs@10 celebration. *Maxwell to Higgs exhibition*, and *Particle physics exhibits*. Prepared and run by Alan Walker 4 July 2022.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2022

TRUSTEE PRESENTATIONS AND PUBLICATIONS IN 2022 (cont'd)

- Orkney International Science Festival 2022. *Cloud Chamber workshops* (8 events either at schools or for families). All were preceded by talks which included: *Peter Higgs' use of the legacy of Maxwell to predict the later discovered Higgs boson*. Presented by Alan Walker 1-2 September 2022.
- Dumfries Astronomical Society. *Cloud Chamber Workshop and talk*. Presented by Alan Walker 11 October 2022.
- Eastgate Theatre, Peebles. *From CTR Wilson to Higgs (via Maxwell)*. Delivered by Alan Walker 16 November 2022.
- Museum of Communication, Burntisland. Christmas Lecture. *Big idea: a thread across the ocean: contributions of Kelvin, Maxwell, Brunel and others in the laying of the first transatlantic submarine cables*. Delivered by Alan Walker 10 December 2022.

NEWSLETTERS

We published three Newsletters during the year.

- Newsletter 16, Part Two Spring 2022: *Homage to Heinrich Hertz*, part 2 by David Forfar (Trustee)
- Newsletter 17, Summer 2022: *Some Advances in Pure Mathematics made in the 19th century*, by Professor Dusa McDuff, Professor of Mathematics at Barnard College USA, and David Forfar (Trustee)
- Newsletter 18, Summer 2022: *An Introduction to Black Holes*, by Dr Naomi Robertson, Institute of Astronomy, Cambridge University

These articles are published, along with the full archive of Newsletters, on our website. The following articles were republished during 2022 by the IEEE Microwave Magazine: <https://ieeexplore.ieee.org/xpl/issues?punumber=6668&isnumber=10058747> :

Homage to Heinrich Hertz, parts 1 & 2. IEEE Microwave Magazine vol 23, nos. 2 & 7 (February & July 2022)

Some Advances in Pure Mathematics made in the 19th century. IEEE Microwave Magazine vol 23, no. 10 (October 2022)

To receive a new Newsletter, and/or occasional Foundation news by email, including Maxwell-related events, we ask interested persons to register (free) on our website: <https://membermojo.co.uk/jcmf/joinus>. Printed copies of Newsletters can be mailed on request. It is appreciated by the Foundation that printing of the Newsletters has been undertaken, pro bono, by LEONARDO, Crewe Toll Edinburgh.

IT DEVELOPMENTS IN 2023

Digitisation of Print Images

Our Curator, John Arthur, working with a volunteer, James Gentles, together photographed in high resolution 280 print images from our collections. Most of these are portraits of historical scientists, many of them engravings. We will be mounting low-resolution versions of these on our website, and will make high-resolution versions available to interested parties in due course. We are very grateful to both John Arthur and James Gentles for the considerable number of hours it took them to carry out this work.

TRUSTEES' REPORT FOR THE YEAR ENDED 31 DECEMBER 2022

IT DEVELOPMENTS IN 2023 (cont'd)

Virtual Tour of Maxwell-related Locations Across the UK

Another volunteer, Peter Burke, has created a second Virtual Tour on Google Earth, to complement the Edinburgh one he had previously created. The new one has 21 slides, moving around the UK to take in various locations associated with Maxwell, such as Glenlair (his childhood home), Aberdeen, London and Cambridge.

Both tours can be accessed by following the link from the Home page of the Foundation, <https://www.clerkmaxwellfoundation.org> with the title: **Tour Edinburgh and other UK locations**

EINSTEIN TREE

On 10 May 2022, we were very pleased to welcome Professor Dr. Susan Neiman, the Director of the Einstein Forum in Germany to plant the 'Einstein Tree' in the garden of 14 India St. Dr. Neiman was in Edinburgh having been invited by the four ancient Scottish Universities to give the prestigious Gifford Lectures. Einstein described Maxwell as 'the most profound and the most fruitful individual that physics has experienced since Newton'. Cuttings from an apple tree growing in Einstein's garden near his summerhouse were donated to the Foundation for the planting. The tree therefore symbolises the connection between the two important scientists. About 20 people were in attendance for the planting ceremony, and the tree meantime is thriving well.

To read more about the connection between Newton, Maxwell and Einstein, see the text of the poster from the wall in India St, reproduced on our website at: https://www.clerkmaxwellfoundation.org/Newton_Maxwell_Einstein_revC.pdf

PARTON KIRK

Maxwell's grave is a simple one in Parton Kirkyard, in Dumfries & Galloway. It happens that the church there is likely to be on the list for closure by the Church of Scotland. Parton Community Council have taken the initiative to explore the possibility for a community purchase of the building to develop a Maxwell Science and Visitor Centre. The Foundation, although unable to provide financial backing, is supporting this project with help in identifying sources of funding and influential contacts. Dr Howie Firth has taken a lead interest in this project.

BICENTENARY OF MAXWELL'S BIRTH, 2031

Preparations for this major anniversary are underway. The Scottish branch of the Institute of Physics (IOP Scotland) have initiated meetings, and Alan Walker and Martin Hendry have lead roles. The anniversary will be named: **ClerkMaxwell@200**

STATEMENT OF TRUSTEES' RESPONSIBILITIES

Under the Trust Deed, the Trustees are required to obtain an independent examination of the financial statements for each financial year which properly represents the state of affairs of the Foundation and of the excess of income over expenditure.

The Trustees have assumed responsibility for the preparation of the financial statements for examination.

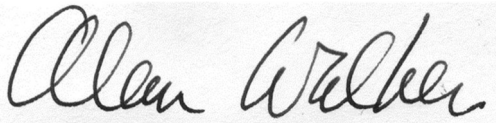
In preparing those financial statements the Trustees are required to:-

- Make judgements and estimates that are reasonable and prudent,
- State whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the accounts,
- Prepare financial statements on the going concern basis, unless it is inappropriate to presume that the Foundation will continue its activities.

The Trustees are required to act in accordance with the Trust Deed and within the framework of Trust Law. They are responsible for keeping accounting records which disclose with reasonable accuracy the financial position of the Foundation and to enable them to ensure that the financial statements comply with the Charities and Trustee Investment (Scotland) Act 2005 and with the Charities Accounts (Scotland) Regulations 2006 (as amended) ("the 2006 Regulations"). They are also responsible for safeguarding the assets of the Foundation and hence for taking reasonable steps for prevention of fraud and other irregularities.

The foregoing Report and Accounts were examined and approved by the Trustees,

Date :- 5/9/2023



Trustee:-
Alan Walker (Chair of James Clerk Maxwell Foundation)