

Catalogue of the papers and correspondence of

**Peter Howard Fowler FRS**

(1923-1996)

By Caroline Thibaud and Timothy E. Powell

NCUACS catalogue no. 115/1/03

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## LIST OF CONTENTS

	Items	Page
GENERAL INTRODUCTION		5
SECTION A	BIOGRAPHICAL	A.1-A.96
		9
SECTION B	UNIVERSITY OF BRISTOL	B.1-B.164
		20
SECTION C	BALLOON FLIGHTS	C.1-C.55
		28
SECTION D	RESEARCH	D.1-D.74
		35
SECTION E	DRAFTS AND PUBLICATIONS	E.1-E.68
		43
SECTION F	LECTURES	F.1-F.60
		54
SECTION G	VISITS AND CONFERENCES	G.1-G.32
		61
SECTION H	SOCIETIES AND ORGANISATIONS	H.1-H.346
		66
SECTION J	CORRESPONDENCE	J.1-J.108
		91
INDEX OF CORRESPONDENTS		100

## GENERAL INTRODUCTION

### PROVENANCE

The papers were received from Mrs Rosemary Fowler, widow of Professor Fowler, in 2000.

### OUTLINE OF THE CAREER OF PETER HOWARD FOWLER

Peter Howard Fowler was born in Cambridge on 27 February 1923, the son of the leading theoretical physicist Ralph Howard Fowler the son-in-law of Lord Rutherford, the discoverer of the atomic nucleus. Fowler attended Winchester College between 1936 and 1940 and entered the University of Bristol to study for a B.Sc. in Physics. The Second World War put a temporary halt to his studies but gave him the opportunity to develop knowledge of radar techniques as a signals officer in the RAF between 1942 and 1946. His most remarkable achievement was the detection of German signals jamming the navigation systems of RAF bombers and identifying the signal station responsible which was then destroyed. However, he had been able while at Bristol to assist C.F. Powell as a project assistant before his entering the RAF, and this work led to a *Nature* paper published in 1947 after the conclusions had been confirmed by other researchers at Liverpool.

In 1946 he was able to resume his undergraduate studies. He graduated in June 1948 and quickly established himself as a leading member of C.F. Powell's cosmic rays research group at Bristol. Fowler was appointed Assistant Lecturer in Physics in 1948, Lecturer in 1951 and Reader in 1961. He spent a year at the University of Minnesota in Minneapolis as a Visiting Professor in 1956-1957 and in 1958 he accepted the post of Professor of Physics at the same university. However the American Embassy refused to grant him an immigrant's visa on medical grounds and consequently he remained at the University of Bristol for the rest of his career. Fowler was elected a Fellow of the Royal Society in 1964 (Rutherford Lecturer 1971, Hughes Medal 1974) and later that year appointed a Royal Society Research Professor in Physics, holding this post until his retirement in 1988.

In collaboration with Powell, Fowler's research concentrated on the study of elementary particles created naturally by interactions of cosmic rays in the upper atmosphere of the earth. High altitude balloons, and later VC10 aircraft, were used to carry nuclear emulsion films that recorded cosmic ray activity, launching from sites worldwide. After Powell's death in 1969, Fowler continued this research and by the early 1980s had extended it through the use of solid-state detectors and gas scintillator detectors flown on the UK satellite Ariel 6. His measurements of super heavy nuclei proved an important step in the understanding of the supernova mechanism. One of Fowler's notable early achievements with Powell's group was the identification in 1949 of the first of a new type of

elementary particle called the tau-meson (now called the K-meson). Among Fowler's co-workers was Rosemary Brown, whom he later married.

Fowler's research on cosmic rays in the earth's atmosphere and beyond had a number of practical applications. In 1961 he was asked by the Air Registration Board to investigate whether radiation levels due to solar flares in high altitude flights in Concorde were hazardous for flight crew members. His report concluded they were no more dangerous than in subsonic aircraft. Also in the early 1960s he suggested the use of pi-mesons in cancer treatment. His ideas still contribute to modern targeted radiotherapy practice and his lecture in 1964 on 'Pi mesons vs Cancer' gives an account of this work and formed the basis of his Royal Society Rutherford Memorial Lecture delivered in New Zealand in 1971. As a consultant for Rolls Royce between 1987 and 1993 Fowler devised a method to measure the temperature of the turbine blades of running engines using epithermal neutrons non-invasively. Following the Lockerbie aircraft bombing in 1988 he helped develop a method of screening for explosives in passengers' luggage in airports using thermal neutrons. Fowler continued research after retirement until his death. He served as a director of a private company called Track Analysis Systems Ltd that developed and supplied neutron dosimeters, TASTRAK plastic and radon detectors to local authorities, laboratories and householders.

Meteorology was one of Fowler's life long interests and he served as a member of the Meteorological Committee of the Meteorological Office (1983-1993). He was also chairman of the MRC/NRPB Committee on Radiological Protection from 1983 to 1992, Vice-President of the Royal Astronomical Society 1984, a member of the SERC Neutron Facilities Review Panel and Trustee of the Nehru Memorial Trust 1985-1996. Other commitments included service as a governor of King's School in Bruton, Somerset from 1982 and Chairman of the Herschel House Trust in Bath from 1988, both until his death.

Fowler had three daughters with his wife Rosemary. He died in Bristol on 8 November 1996.

For further information on the life and career of Fowler see A.W. Wolfendale, 'Peter Howard Fowler 27 February 1923-8 November 1996', *Biographical Memoirs of Fellows of the Royal Society*, Vol. 44 (1998).

## DESCRIPTION OF THE COLLECTION

The collection is presented in the order given in the list of contents. It covers the period from 1940 to 2002. Throughout this catalogue titles in inverted commas indicate the original typescript or manuscript titles of Fowler's folders.

Section A, Biographical, includes Fowler's personal file from the Department of Physics at the University of Bristol and other documents relating to his career, honours and awards including his Royal Society Fellowship and Research Professorship. There is also historical material relating to C.F. Powell. The bulk of this section, however, is lecture notes taken by Fowler and Rosemary Brown as undergraduate students in the Bristol Physics Department in the 1940s.

Section B, University of Bristol, includes correspondence, agendas, minutes and reports relating to University committees such as the Cancer Research Committee, the Radiological Protection Committee and the University Space Club of which Fowler was a member. The bulk of the documents, however, are records of the many microscope observers, scanners, balloon makers and technicians employed by the H.H. Wills Laboratory in cosmic ray research. There is also a little general Department of Physics material.

Section C, Balloon Flights, is arranged in chronological order. Nearly all the material dates from the 1960s and covers various balloon flight launches worldwide including Palestine, Texas in the USA (1960, 1966-1969), Fort Churchill in Canada (1965) and Hyderabad in India (1965). There is correspondence and papers *re* arrangements for flights, balloon technical specifications, flight plans, proposals and analysis of results.

Section D, Research, though not extensive, includes draft papers, correspondence and figures covering a wide range of research interests other than the use of balloons for cosmic ray studies. Topics include pi-mesons in cancer treatment, magnetic monopoles and the heavy primary cosmic ray detector for the Ariel 6 satellite. Fowler was also involved in the assessment of the radioactive fallout from the Ukrainian nuclear plant Chernobyl, both immediately after the disaster and subsequently ten years after its explosion.

Section E, Drafts and publications, arranged in chronological order from 1947 to c.1996 and principally comprises off prints of Fowler's works. There are also some drafts, figures and correspondence.

Section F, Lectures, is divided into three. There are university lectures presenting some of Fowler's physics teaching at Bristol in the 1950s and 1960s, a sequence of invitations to lectures, and public and invitation lectures, which form the bulk of the section. This material comprises drafts, notes and correspondence, 1964-1996, principally lectures on cosmic rays.

Section G, Visits and conferences, is a small section arranged in chronological order from 1956 to 1993. Principal visits covered are Fowler's Visiting Professorship at the University of Minnesota in 1956-1957 and his possible move to Minnesota as Full Professor in 1958, the Royal Society of New

1956-1957 and his possible move to Minnesota as Full Professor in 1958, the Royal Society of New Zealand Rutherford Memorial Lecture Tour in 1971 and International Union of Pure and Applied Physics International Cosmic Rays Conferences.

Section H, Societies and organisations, forms the largest section of the collection and documents Fowler's involvement with seventeen UK and international organisations, mainly relating to physics but also to meteorology and radiological protection. Organisations particularly well represented in the papers include the International Union of Pure and Applied Physics for which Fowler was a UK delegate to IUPAP conferences, the Joint MRC/NRPB Committee on Radiological Protection (Chairman 1983-1992), the Royal Astronomical Society, the Royal Society (documenting Fowler's service on various British National Committees) and the Science and Engineering Research Council (Chairman of the Neutron Facilities Review Panel). Non-scientific organisations he served were the Herschel House Trust, Bath (Chairman), King's School in Bruton, Somerset (Governor) and the Nehru Memorial Trust (Trustee). There is also documentation of Fowler's consultancy with Rolls-Royce plc and Track Analysis Systems, Ltd (TASL) of which he was a director.

Section J, Correspondence, is divided into two sequences; general correspondence and an alphabetical series following Fowler's original arrangement. Correspondents are mainly scientific colleagues and historians of science, although there are no extended exchanges.

There is also an index of correspondents.

## ACKNOWLEDGEMENTS

Thanks are due to Mrs Rosemary Fowler for making the material available, her assistance in identifying and clarifying documents and for biographical information on Fowler.

Caroline F. Thibaud

Timothy E. Powell

Bath, 2003

<b>SECTION A</b>	<b>BIOGRAPHICAL, A.1-A.96</b>	<b>1943-2000</b>
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|-----------|--|
| A.1-A.4   | BIOGRAPHICAL AND<br>AUTOBIOGRAPHICAL         |
| A.5-A.24  | CAREER, HONOURS AND AWARDS                   |
| A.25-A.87 | UNDERGRADUATE LECTURE NOTES                  |
| A.88      | PHOTOGRAPHS                                  |
| A.89-A.92 | HISTORICAL MATERIAL ON CECIL<br>FRANK POWELL |
| A.93-A.96 | MISCELLANEOUS                                |

## Biographical

<b>A.1-A.4</b>	<b>BIOGRAPHICAL AND AUTOBIOGRAPHICAL</b>	<b>1962-1996</b>
A.1	Obituaries.	1996
A.1A	Photocopy of A.W. Wolfendale, 'Peter Howard Fowler', <i>Biographical Memoirs of Fellows of the Royal Society</i> , vol. 44 (1988).	
A2	Curricula vitae.	1962-c.1990
A.3	Research statement and database entry.  Fowler had a biographical entry in the European Research and Development database to work as a consultant.	1995, n.d.
A.4	Correspondence with Debrett's 'Distinguished People of Today'.	1988-1995
<b>A.5-A.24</b>	<b>CAREER, HONOURS AND AWARDS</b>	<b>1946-1997</b>
A.5	'Certified Statement of Service of Flying Officer Peter Howard Fowler'.	c.1946
A.6-A.12	Head of Physics Department's file on Fowler.  Correspondence <i>re</i> Fowler's appointment as Assistant Lecturer, Lecturer, Reader and Royal Society Research Professor. Also includes correspondence <i>re</i> Fowler's year as a Visiting Professor at the University of Minnesota, visits and balloon flight expeditions, NASA projects and grants.  This file, which was found with Fowler's papers, was kept by heads of department from A.M. Tyndall to C.F. Powell.  7 folders.	1946-1997

**Biographical**

A.13-A.15	<p>'P.H. Fowler Royal Soc. Fellowship application Nov. 1960 elected March 1964.'</p> <p>Correspondence <i>re</i> Fowler's candidature and election as FRS. Also includes a letter of congratulation and Royal Society brochure for Fellows.</p> <p>3 folders.</p>	1960-1964
A.16-A.20	<p>'P.H. Fowler Royal Society Research Fellowship [sic] appointed July (crossed out) 1964 from 1st Oct. 1964.'</p> <p>Fowler was appointed Royal Society Research Professor in the same year as his election to the Fellowship of the Royal Society.</p>	1962-1965
A.16, A.17	<p>Correspondence <i>re</i> appointment.</p> <p>2 folders.</p>	1962-1964
A.18	<p>Letters of congratulation.</p>	1964
A.19	<p>'Dinner for new Royal Society Professors. Dec. 7 1964'.</p> <p>Folder also inscribed '(E.F. rang Mrs Bradshaw Catering Office. She will send over some specimen menus). Ask P.H.F. verbally.'</p> <p>Contains correspondence <i>re</i> arrangements.</p>	1964
A.20	<p>'P.H. Fowler Administration of Royal Society Professorship money'.</p>	1965
A.21	<p>Ministry of Defence certificate of employment as Civilian Lecturer.</p>	1965
A.22	<p>Award of the Royal Society Hughes Medal.</p> <p>Letter of congratulation and correspondence <i>re</i> announcement of the award.</p>	1974

**Biographical**

A.23	Application for the position of Head of the Cavendish Laboratory, Cambridge.  Correspondence, position details and Fowler's covering letter.	1983
A.24	Letter of appointment as Emeritus Professor of Physics at the University of Bristol.	1988
<b>A.25-A.87</b>	<b>UNDERGRADUATE LECTURE NOTES</b>  Sequences of undergraduate notes of Fowler and fellow Bristol Physics student Rosemary Brown whom Fowler married in 1949.	<b>1943-1947, c. 2000</b>
<b>A.25-A.41</b>	<b>Fowler's undergraduate lecture notes.</b>  Most are undated. Fowler graduated B.Sc. in 1948.	<b>N.d., 1947, c. 2000</b>
A.25	Note on Fowler's undergraduate studies.  This note was written by Rosemary Fowler as an introduction to Fowler's undergraduate lecture notes.	c. 2000
A.26, A.27	'Elastic Theory, Nuclear Physics (crossed out), Statistical Mechanics, Acoustics.'  2 folders.	N.d.
A.28, A.29	'P.H. Fowler Nuclear Physics, E. M. Theory (Wylie), Theoretical Physics (Mott), Electronics (Gibbs), Magnetism (Potter).'	N.d.
A.30-A.35	Manuscript notes found together.	N.d.

**Biographical**

A.30	'E. M.Theory.'	N.d.
A.31	'Spectral Theory.'	N.d.
A.32	'Solid State.'	N.d.
A.33	'Crystallography.'	N.d.
A.34	'Low temperature Physics.'	N.d.
A.35	1 letter and manuscript notes.	N.d.
A.36-A.41	Manuscript notes found together. Names in titles refer to lecturers.	N.d, 1947
A.36	'X-Rays, Mitchell 29 Apr.'	N.d.
A.37	'Dr Jackson, Thermodynamics.'	N.d.
A.38	'3rd law of T Dynamics.'	N.d.
A.39	'Dr Mitchell Optics.'	1947
A.40	'Dr. Powell, Prof. Tyndall. 20 Jan. Contact Potential in Frank and [? Finspern]'. '	N.d
A.41	'Dr Devonshire.'	N.d.

**Biographical**

<b>A.42-A.87</b>	<b>Rosemary Brown's undergraduate lecture notes.</b>	<b>1943-1947, c.2000</b>
A.42	Note on Rosemary Brown's undergraduate studies.  Rosemary Fowler wrote this note of introduction to her lecture notes and notebooks.	c. 2000
A.43-A.45	'General Physics.'  First page title reads: 'Intermediate Physics.'  3 folders.	1943
A.46-A.48	'Calculus.'  3 folders.	1944
A.49	'Geometry of Cosmic Sections'	1944
A.50-A.54	Manuscript notes found together.  5 folders.	1944-1946
A.50, A.51	'Measurement of Resistances.'  2 folders.	1944
A.52	'Lecturer Dr Potter Thermoelectricity.'	1944
A.53	'Atomic Physics.'	1945

**Biographical**

A.54	'Development of Richardson Law' and 'Units and Dimensions', 'Nuclear Physics', 'Atomic Physics', 'J.J Thomson.'	1946
A.55-A.58	<p>Notebooks</p> <p>Four hard cover notebooks used for results of numbered experiments with graphs, drawings, calculations and tables. The notebook at A.58 is also inscribed '(Part II)'. A notebook inscribed 'Part I' was not found.</p>	1944-1946
A.55	Book I	1944-1945
A.56	Book II	1945
A.57	Book III	c.1946
A.58	Book IV (Part II)	1946-1947
A.59, A.60	<p>'Radio, April 1945.'</p> <p>2 folders.</p>	1945
A.61-A.63	<p>'Lecturer Miss Crawford, Applied Maths, October 8 1945.'</p> <p>3 folders.</p>	1945
A.64, A.65	<p>'Lecturer Mr Vint, Statics, 9 October 1945.'</p> <p>2 folders.</p>	1945
A.66	'Lecturer Prof. Mott, Theoretical Physics, October 10th 1945.'	1945
A.67	'X-rays, October 15th 1945.'	1945

**Biographical**

A.68-A.70	'Chemistry.'	1943-1946
	Material found together under the above title.	
A.68, A.69	Lecture notes.	1945-1946
	Manuscript notes on statics and dynamics.	
	2 folders.	
A.70	Mechanics papers.	1943-1944
	Copies of papers given in previous years used for exam preparation.	
A.71	'Vector Analysis Spring term 1946.'	1946
A.72-A.80	Various lecture notes.	1946-1947
	Material found together and including manuscript notes on: crystallography, physics, spectroscopy, statistical theory and electrodynamics.	
A.72	'April 1946, X-Rays and X-Ray Crystallography, R.H. Brown.'	1946
A.73	'Superconductivity' and 'Dr Jackson Low Temperature Physics, October 7th 1946.'	1946
A.74	'Dr Mitchell, Spectroscopy, October 9th 1946.'	1946
A.75	'Prof. Mott, Statistical theory, October 15th 1946' and other lectures.	1946
	Also includes manuscript notes entitled 'Probability of Hitting a Target, November 15th 1946' and 'Prof. Mott, Theoretical Nuclear Physics, May 1947'.	

### Biographical

A.76	'Crystallography, January 1947.'	1947
A.77	'Solid State, January 1947.'	1947
A.78	'Dr Frolich [sic], Special Theory of Relativity, January 1947' and other lectures.  Also includes notes on 'Statistical Mechanics of Thermodynamics.'	1947
A.79	'Dr Frolich [sic], Electro-Dynamics, October 10th.'	c. 1947
A.80	'Superconductivity- Schoenberg [sic].'	N.d.
A.81	'Optics' and other lectures.  Also includes notes entitled 'Supplementary Notes, Spectroscopy, August 1946.'	N.d., 1946
A.82	'Mr Gibbs, Electronics, October 8th 1946.'	1946
A.83	'Atomic Physics.'  Folder includes manuscript notes on 'The Historical Development of the Wave Theory of Light from Huyghens to Born and Jordan', 'The Measurement of Time', 'Applied Optics', 'Polarisation and Photons Dual Quantum Mechanics' and miscellaneous notes and graph.	1946-1947
A.84	'Dr. Devonshire, Differential Equations' and other lectures.  Also includes manuscript notes on 'Solution of Differential Equations' and 'Radio Maths'.	1947

## Biographical

A.85	<p>'Dr. Mitchell, Applied Optics, February 5 1947' and other lectures.</p> <p>Also includes manuscript notes on 'Spectral Lines and the Structure of Atoms Containing more than one Electron.'</p>	1947.
A.86	<p>'Wave Mechanics' and other lectures.</p> <p>Also includes manuscript notes on 'Magnetism' taught by Professor Mott and 'Experimental Work on Gyromagnetic Effect, Dr Potter.'</p>	N.d., 1947
A.87	'Sound' and miscellaneous notes.	N.d.
A.88	<p><b>PHOTOGRAPHS</b></p> <p>2 colour photocopies of photographs of Fowler and his research team, with a separate sheet listing the members photographed, 1976, 1981.</p> <p>Also includes a later covering letter from Rosemary Fowler with the photographs.</p>	1976, 1981, 2002
A.89-A.92	<b>HISTORICAL MATERIAL ON CECIL FRANK POWELL</b>	1950-1996
A.89	<p>Correspondence arising from request for photographs of Powell and illustrations of his research on physics for exhibition and publication.</p> <p>Includes a black and white photograph of a balloon.</p>	1994-1995
A.90	<p>Nobel prize etc.</p> <p>Copy of Powell's Nobel Prize Lecture and speech at the Banquet of Nobel Laureates, copy of Powell's 'The Aims and Role of Science in our Time,' list of Powell's honorary degree awards and a newspaper cutting.</p>	1950, 1969, 1996

### Biographical

A.91	<p>List of 'Publications from 4th Floor-Correspondence, Powell.'</p> <p>Also includes three papers by members of the H.H. Wills Physics Laboratory.</p> <p>4th Floor refers to the H.H. Wills Physics Laboratory where Powell, Fowler and his team worked.</p>	
A.92	<p>Photographs</p> <p>Black and white photographs and negative originals of the Nobel Prize ceremony. Also includes a photograph of Powell and Goku Menon at the H.H. Wills Laboratory.</p>	c.1950
<b>A.93-A.96</b>	<b>MISCELLANEOUS</b>	<b>c.1950, 1984, n.d.</b>
A.93	<p>Personal address book.</p>	N.d.
A.94	<p>Office address book.</p>	N.d.
A.95	<p>Fowler's vaccination certificate.</p>	c.1950
A.96	<p>Typescript notes on silver cleaning.</p> <p>This describes a method of cleaning silver developed by the Fowlers.</p>	N.d.

**SECTION B**

**UNIVERSITY OF BRISTOL, B.1-B.164**

**1952-1995**

B.1-B.29      UNIVERSITY COMMITTEES AND  
CLUBS

B.30-B.153    DEPARTMENT OF PHYSICS COSMIC  
RAYS RESEARCH GROUP

B.154-B.164   GENERAL DEPARTMENT OF PHYSICS  
PAPERS

**University of Bristol**

<b>B.1-B.29</b>	<b>UNIVERSITY COMMITTEES AND CLUBS</b>	<b>1964-1987</b>
	Includes correspondence, agenda and minutes, reports and memoranda, codes of practice and regulations on the University of Bristol Cancer Research Committee, the Radiation Protection Committee and the University Space Club.	
<b>B.1-B.14</b>	<b>Cancer Research Committee</b>	<b>1965-1972</b>
	Correspondence, agenda and minutes, annual reports and financial statements.	
	Fowler was a member of the Committee.	
B.1, B.2	Correspondence <i>re</i> apologies for absence and grant application.	1966-1970
	2 folders.	
B.3-B.6	Agendas of meetings of the Committee.	1966-1971
	4 folders.	
B.7-B.9	Minutes of the Committee meetings.	1966-1971
	3 folders.	
B.10-B.12	Annual reports.	1965-1969
	3 folders.	
B.13	Financial statements and grant application material.	1965-1988
	Financial statements for 1966 can be found at B.3.	
B.14	Miscellaneous.	1968, N.d.
	Includes graphs and list of purchased equipment.	

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<b>B.15-B.28</b>	<b>Radiation Protection Committee</b>	<b>1964-1971</b>
	<p>Correspondence, minutes, reports to the University and the Senate, codes of practice.</p> <p>Fowler was a member of the Radiation Protection Committee.</p>	
<b>B.15-B.18</b>	<p>Circulars and agendas.</p> <p>Also includes correspondence <i>re</i> attendance, memorandum and reports.</p> <p>4 folders.</p>	<b>1965-1971</b>
<b>B.19-B.22</b>	<p>Minutes.</p> <p>4 folders.</p> <p>For 1965 minutes see B.15.</p>	<b>1966-1971</b>
<b>B.23, B.24</b>	<p>'Reports of the University Radiation Protection Officer.'</p> <p>2 folders.</p>	<b>1966-1969</b>
<b>B.25</b>	<p>'Draft Report to Senate of Radiation Protection Committee.'</p> <p>Also includes 1 page final report for 1967.</p>	<b>1966-1967</b>
<b>B.26, B.27</b>	<p>National codes of practice and University of Bristol safety regulations.</p> <p>2 folders.</p>	<b>1964-1966</b>
<b>B.28</b>	<p>Copy of an article entitled 'Radiological Protection in Research and Teaching' and copy of 'Checked list of "Sealed Sources."'</p>	<b>1967, 1970</b>

**University of Bristol**

<b>B.29</b>	<b>The University Space Club</b>	<b>1987</b>
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Correspondence and final draft for submission to the House of Lords entitled 'Summary and Conclusions' on Britain's participation in Space activities.

<b>B.30-B.153</b>	<b>DEPARTMENT OF PHYSICS COSMIC RAYS RESEARCH GROUP</b>	<b>1952-1989</b>
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<b>B.30-B.138</b>	<b>Personnel files</b>	<b>1952-1989</b>
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Correspondence *re* employment and training of microscope observers, scanners, technicians, balloon workers and laboratory assistants.

Arranged in alphabetical order.

<b>B.30, B.31</b>	<b>A</b>	<b>1960-1964</b>
	2 folders.	

<b>B.32-B.48</b>	<b>B</b>	<b>1954-1970</b>
	17 folders.	

<b>B.49-B.56</b>	<b>C-D</b>	<b>1955-1965</b>
	8 folders.	

<b>B.57-B.63</b>	<b>E-F</b>	<b>1955-1962</b>
	7 folders.	

<b>B.64-B.80</b>	<b>G-H</b>	<b>1955-1989</b>
	17 folders.	

**University of Bristol**

B.81-B.86	K-L 6 folders.	1957-1965
B.87-B.96	M-N 10 folders.	1952-1963
B.97-B.113	P-R 17 folders.	1954-1965
B.114-B.126	S-T 13 folders.	1954-1965
B.127-B.138	W 12 folders.	1957-1974
<b>B.139-B.153</b>	<b>Employment and training</b>  Further correspondence and papers relating to the employment and training of scanners, microscope observers and balloon makers.	<b>1954-1986</b>
B.139-B.147	'Microscope Scanners and Balloon Staff, General File.'	1954-1966
B.139-B.141	Staff management.	1954-1966
B.139	Correspondence <i>re</i> employment, training, salaries and working hours.	1955-1966
B.140	Correspondence regarding Fowler's staff.	1954-1959

**University of Bristol**

B.141	Correspondence <i>re</i> exchange programme for scanners.  The exchange programme was organised with the University Institute for Theoretical Physics in Copenhagen, Denmark.	1961-1962
B.142-B.145	'Salary proposal 1960 recommendations [...] file (correspondence).'  4 folders.	1955-1962
B.142-B.144	Correspondence and papers <i>re</i> salary scales for microscope observers at other universities in the UK and arrangement for pay rise at the University of Bristol.  Also includes salary scale tables.  A salary upgrade was implemented after it was recognised that it was more and more difficult to attract and retain microscope observers and scanners at the University of Bristol.  3 folders.	1955-1962
B.145	Miscellaneous and typescript notes.	1955-1960
B.146	List of balloon makers and scanners, Junior and Adult.	1957-1965
B.147	Physics Department working regulations on holiday, sickness and working hours.  Typescript, manuscript notes and drafts.	1960-1961
B.148-B.152	'Microscope Scanners, Balloon Staff, Advertisement Applications.'  Includes correspondence, job advertisement drafts and manuscript notes.  5 folders.	1959-1972

**University of Bristol**

B.153                      List of staff members and graduate students.                      1986

**B.154-B.164                      GENERAL DEPARTMENT OF PHYSICS PAPERS                      1956-1995**

Includes correspondence, memorandum, copies of budgets, lists of urgent needs and architectural plans. Topics covered are building extension, visits to the H.H. Wills Laboratory, external examination and grants.

B.154-B.157                      'Urgent Needs'                      1956-1964

'Urgent needs' referred to the Physics Laboratory's needs in terms of staff and material.

B.154                      Correspondence *re* request of additional members of staff and 'Urgent Needs' meetings.                      1956-1963

Also includes draft list of urgent needs.

B.155                      'Urgent Needs' lists and documentation.                      1958-1968

Copy of a memorandum on the future development of the Science Faculty, list of estimates and drafts and final 'urgent needs' lists.

B.156                      Room Alteration on the Fourth Floor.                      1956-1957

Lists of alterations, copy of 'Preliminary plans for internal rearrangements' and 'Suggested Use of Rooms Vacated by Mathematics Department, Summer 1958.'

B.157                      Curricula vitae of members of the H.H. Wills Laboratory.                      1964

B.158, B.159                      '4th Floor Extension.'                      1964-1965

Correspondence, typescript proposals and architectural plans for the extension of the 4th floor of the Physics Department building.

2 folders.

**University of Bristol**

B.160	<p>'Visitors to the Laboratory.'</p> <p>Correspondence with British and foreign colleagues <i>re</i> arrangement of short or long-term visits to H.H. Wills Laboratory.</p>	1964-1967
B.161	<p>External examination.</p> <p>Correspondence <i>re</i> thesis submission and examination.</p> <p>Fowler acted as external examiner for the University of Dublin, the University of London, the University of Durham, the University of Sydney and the University of Bombay.</p>	1963-1995
B.162	<p>List of Physics Department grants.</p>	1978
B.163	<p>Risks to British students in the USSR after the Chernobyl accident.</p> <p>Correspondence, reports and RLUSC newsletter.</p> <p>Fowler was consulted by the British government to assess the risks to British visiting students in USSR at the time of the Ukrainian nuclear plant reactor explosion.</p>	1986
B.164	<p>Fowler's draft speech for his secretary's 60th birthday party.</p>	1995

<b>SECTION C</b>	<b>BALLOON FLIGHTS, C.1-C.55</b>	<b>1960-1993</b>
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Fowler joined C.F. Powell's research team at Bristol in 1948 and they worked closely together in cosmic rays research. This included the organisation of balloon flight expeditions, from travel arrangements, technical specifications, to budgets etc, and analysis of data therefrom.

This section documents balloon flights from 1960 to 1993. These flights were mainly launched from the USA or Canada. There is correspondence, notes, lists of material, drawings and photographs, balloon flight summaries and data, reports, invoices and videotapes.

In chronological order.

C.1-C.4	'American Flights, Balloon Experiments, USA, March 1960'	1960
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Folder inscribed inside: 'ONR (Office of Naval Research), c/o American Embassy, Grosvenor 9000. Correspondence, invoices, list of material and typescript lecture notes.

Balloons were launched from the US Air Force base at San Angelo in Texas between April and June 1960. The flights were carried out for the University of Bristol by a private company from Minnesota called G.T. Schjedahl. The aim of the flight was to investigate the flux of high energy Gamma rays.

C.1-C.3	Correspondence <i>re</i> arrangements including shipping of material and preparation of flights and flight results.	1960
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3 folders.

C.4	Invoice, list of package contents, typescript notes on 'Magnetic Moment of a free Electron.'	1960, N.d.
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C.5	'Balloons apparatus found, rewards, etc.'	1960-1961
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Correspondence *re* the return of balloon pieces lost in flights and rewards given to those who found them.

### Balloon flights

C.6	Proposal for flights in Minnesota for spring 1961.  Typescript pages with budget.  There is no evidence this flight was carried out.	1960
C.7	'Balloon in Space Research.'  Folder so inscribed. Copy of typescript notes entitled 'Raison d'etre for balloon centre'.	1965
C.8	'Balloon borne 1965 experiments [questionnaire].'  Folder so inscribed. Correspondence <i>re</i> a 'survey of the extent of demands from University Research Groups for space on balloon vehicles.'	1965
C.9-C.19	Balloon Flight, India, 1965.  Correspondence, list of shipped material, drawings, photographs, material specification, manuscript notes and list of expenses.  A balloon flight was planned in Hyderabad for December 1962 but was cancelled due to the unsettled local political situation. In June 1964 the University of Bristol and the Tata Institute in Bombay resumed talks for a tungsten flight for 1965, in association with the International Quiet Sun Year balloon expedition in India.	1962-1966
C.9-C.14	Correspondence <i>re</i> arrangements including financial matters, shipping of material, technical requirements and processing of exposed stacks.  6 folders.	1962-1966
C.15-C.17	'India 1965', technical material.	1964-1965
C.15	Correspondence <i>re</i> crate, parachutes and bellows.	1964-1965
C.16	List of material used for the balloon expedition.	c.1964

### Balloon flights

C.17	Miscellaneous notes, drawings and black and white photographs of balloon launch in India.	c. 1964
C.18	Technical drawing and material specifications.	1964-1965
C.19	Notes on travel arrangement and list of expenses and other miscellaneous notes.	1965
C.20-C.22	<p>'Flights in Fort Churchill, Canada, 1965.'</p> <p>Balloon flights were organised in August 1965 as part of the Skyhook programme (see C.23-C.27 below) in Fort Churchill, Manitoba.</p> <p>The purpose of these flights was to study biological hazards to passengers and crew members on supersonic transport. However the flights performed were not of the required altitude and it was decided to do additional ones in 1966.</p> <p>Other flights were organised in September 1965 in Minnesota to make up for the lack of good quality data from the Fort Churchill flights.</p>	1965
C.20, C.21	<p>Correspondence <i>re</i> arrangements and flight reports.</p> <p>2 folders.</p>	1965
C.22	Brochure on Fort Churchill and graph.	c.1965
C.23-C.27	<p>'Balloon Flights+ Skyhook 1966.'</p> <p>Correspondence, flight summary, balloon flight questionnaire, Skyhook services request form, etc.</p> <p>This flight took place at the National Center for Atmospheric Research Scientific Balloon Flight Station in Palestine, Texas, USA in September 1966. The Skyhook programme was set up by the Office of Naval Research (ONR), USA for cosmic rays investigators working under the joint programme of the ONR, the Atomic Energy Commission and the ONR nuclear physics contracts. This programme provided flights arranged by various private companies under contract with the ONR.</p>	1966-1967

### Balloon flights

While in the USA Fowler also visited colleagues at the University of Washington in Seattle, Washington University in St Louis, Missouri and the University of Minnesota. He gave a talk on ultra high energy interaction at the University of Washington.

- |           |   |           |
|-----------|---|-----------|
| C.23-C.26 | Correspondence <i>re</i> flight arrangements and visits to colleagues.<br><br>4 folders.  | 1966-1967 |
| C.27      | Copy of a National Center for Atmospheric Research questionnaire on technical requirements<br><br>Also includes copy of the Skyhook services request form and honorarium record, the 6 October 1966 flight summary.   | 1966      |
| C.28-C.32 | 'Palestine, Texas, April/May 1967.'<br><br>Correspondence, balloon flight summary, invoices and copies of insurance records, list of costs, drawing and graph, miscellaneous manuscript notes.<br><br>The flight was performed at the National Center for Atmospheric Research Scientific Balloon Flight Station in Palestine, Texas, USA in April and May 1967. Fowler had planned to attend the 10th International Conference on Cosmic Rays in Calgary (June 19-30) but cancelled. | 1967      |
| C.28-C.30 | Correspondence <i>re</i> flight arrangements.<br><br>Also <i>re</i> liaison with the National Center for Atmospheric Research, technical requirements and purchase, financial matters and travel arrangements.<br><br>3 folders.  | 1967      |
| C.31      | Copy of the 17 May 1967 flight summary,<br><br>Also includes a draft letter, estimated costs table, invoices, drawing entitled 'Stressed band Reinforcement' and a graph entitled 'Load Vs Altitude'.   | 1967      |

### Balloon flights

- |            |  |           |
|------------|--|-----------|
| C.32       | Typescript notes and copy of article entitled 'Solar Expedition in Hawaii.'  | c.1967    |
| <br>       |  |           |
| C.33, C.34 | <p>'Proposal for the Observation of (...) Cosmic Rays (...) exposed on an Apollo Applications Programme Workshop.'</p> <p>Correspondence and papers <i>re</i> preliminary visit to NASA and outcome of discussions. Includes copy of the proposal and 'Messungen der Protonendosis der Gemini-Astronauten mit Kernemulsionen' by H.J. Schaefer</p> <p>Fowler was one of the co-investigators who submitted this proposal to the NASA Particles and Fields Subcommittee. The aim was to send plastic and photo-emulsion detectors on an Apollo space vehicle to capture cosmic ray traces. The proposal was submitted prematurely and lacked budget provision. NASA advised the proposers to withdraw it and re-submit it later (by August 1968).</p> <p>See also C.37, C.38.</p> <p>2 folders.</p> | 1968      |
| <br>       |  |           |
| C.35-C.48  | <p>September '1968 balloon flight.'</p> <p>The flight took place at the National Center for Atmospheric Research in Palestine, Texas, USA in September 1968.</p> <p>While in the USA Fowler gave a talk on 'Cosmic Ray Primary Charge Spectrum at very High Value of Charge' at the 5th Air Force Cambridge Research Laboratories Scientific Balloon Symposium, Wentworth-by-the-Sea, New Hampshire, 17-19 June 1968.</p>  | 1967-1969 |
| <br>       |  |           |
| C.35-C.40  | <p>Correspondence <i>re</i> flight arrangements etc.</p> <p>Topics also include research, technical requirements, scanning results and grant allocation. The proposal to use pre-Apollo flights to expose plastic sheets to cosmic rays is also discussed in terms of collaboration between the University of Washington, Seattle, General Electric and the University of Bristol.</p> <p>See also C.33, C.34.</p> <p>6 folders.</p>   | 1967-1969 |

### Balloon flights

C.41	Flight Summary forms and supporting material.  Includes flight summary for 22 and 26 September 1968, photocopy of 'Calculations for Jack Warren as [?] his memo of May 1968 by Frank Keitt' and 'Identification of Pu244 fission tracks and the cooling of the parent body of the toluca meteorite.'	1968
C.42, C.43	'Balloon Flights Summary' brochures.  3 brochures of flight numbers 432-P, 433-P and 434-P.  2 folders.	1968
C.44	Miscellaneous tables	1968, 1969
C.45	Graphs and drawings.	1969
C.46	Technical drawing, draft and photographs.	1967
C.47	Southern Hemisphere GHOST (Global Horizontal Sounding Technique) test programme.  Found with the material and for Fowler's information. Includes status reports, press release and circulars.  GHOST was a type of balloon.	1968
C.48	Miscellaneous.  Includes manuscript notes, experiment proposal from General Electric in Schenectady, New York and graphs.	c.1968
C.49-C.52	'1969 Balloon Flights.'  One flight took place at the National Center for Atmospheric Research in Palestine, Texas, USA in September 1969 and another in Sioux Falls, Minnesota, also in September.	1968-1970

### Balloon flights

C.49-C.51	Correspondence <i>re</i> flight arrangements, flight reports and plate analysis results.  3 folders.	1968-1970
C.52	Typescript messages, manuscript notes, tables and draft copy of 'Considerations for the Minnesota flight.'	c. 1969
C.53	Proposals and other documents.  Contents of Fowler's folder: copy of an article that appeared in <i>Illustrated London News</i> in 1950, draft of 'Status of balloon technology for cosmic rays experiments', 'An outline proposal for the development of a transatlantic balloon flight facility', correspondence and proposal <i>re</i> balloon launching station in Alice Springs, Australia, colour photograph of a balloon.	1950, 1973, 1982
C.54,C.55	'INCA balloon footage 16 MM print@ 18fps 9/12/93.'  Videotapes of a balloon flight.	1993
C.54	16 mm Betamax videotape.	
C.55	VHS videotape copy.  Made by NCUACS for ease of reference.	

**SECTION D**

**RESEARCH, D.1-D.74**

**1949-1997**

The bulk of this material relates to Fowler's work on cosmic rays from the late 1940s to the early 1990s. There is also significant material relating to his and colleagues' research on the use of Pi-mesons in cancer treatment.

This material includes graphs, calculations, tables, photographs, draft papers, off-prints, reports, correspondence and grant proposals arranged in chronological order.

D.1

Photographs.

1949

Four black and white photographs found together. Inscriptions on the back read:  
'Top, a fine Frether photo showing V degree creation'.  
'Tau meson disintegration Peter and Rosemary Fowler did the measurements and analysis, 1949'.  
'A picture of the top of the Pic-du-Midi in winter showing the observatory buildings',  
'18/0/49, Occhialini, Labardens, Ladorman, Blackett, Cosyns, Rosch and ? Labardens, Pic-du-Midi, etc..'

D.2, D.3

Research at the University of Minnesota.

1958

Three technical reports entitled: 'The Flux and Energy Spectrum of Cosmic Ray a-particles during Solar Maximum', 'The Lithium, Beryllium and Boron in the Primary Cosmic Radiation and 'Auroral X-rays, Cosmic Rays and Related Phenomena during the Storm of February 10-11 1958.'

Fowler worked at the University of Minnesota during his visiting professorship year in 1956-1957. The reports relate to his research.

2 folders.

D.4

Letter from S.F. Singer.

1957

Letter encloses set of footnotes to be added by Singer to draft of review article in response to Fowler's comments.

## Research

D.5-D.21	<p>Pi-meson research for cancer treatment.</p> <p>Fowler wrote two articles on the subject: 'The Possibility of therapeutic applications of beams of negative Pi-mesons', <i>Nature</i>, vol. 189 (1961) and 'Pi-Mesons versus Cancer?' (the 1964 Rutherford Memorial Lecture), <i>Proceedings of the Physical Society</i> (1965).</p> <p>See also E.11, E.14 and F.15-F.17.</p>	1961-1979
D.5-D.8	<p>Correspondence and papers <i>re</i> research and use of particle accelerator NIMROD for experiments, the Rutherford Memorial Lecture, drafts and publication.</p> <p>Includes paper 'Negative Pi Mesons for Radiotherapy' written following meeting on the topic at the Bristol Physics Department, 'draft proposal for experiment at Rutherford Laboratories-January 1965, to Evaluate the Negative Pi-Meson Beam for Cancer Treatment', and drawing of 'Experimental Equipment around X2 Target'.</p> <p>4 folders.</p>	1965-1970
D.9	<p>Series of draft proposals to study the therapeutic qualities of Pi-meson beams using NIMROD.</p>	1965-1966
D.10	<p>Graphs and miscellaneous notes.</p>	1965
D.11, D.12	<p>Plans of radiation facilities entitled 'Proposed layout of beam lines for 1967' and 'Analog of Medical pi - beam for visible light.'</p> <p>2 folders.</p>	1967
D.13, D.14	<p>Typescript and printed papers (not by Fowler) on use of radiation in cancer treatment.</p> <p>Include 'High energy beams from a 300 Bev synchrotron', 'The effect of oxygen on impairment of the proliferative capacity of human cells in culture by ionizing radiations of different LET', 'Radiobiological research with fast neutrons and the implications for radiotherapy' and 'Design of a bio-medical negative Pi-meson line [...] at the Rutherford Laboratory.'</p> <p>2 folders.</p>	1961-1979

**Research**

D.15	Black and white photographs of graph and equipment.	N.d
D.16	Off-prints of Fowler's published papers on Pi-meson treatment.	1961, 1965
D.17-D.19	<p>'The use of pi-mesons in radiotherapy'.</p> <p>Draft paper, correspondence, graphs and tables.</p> <p>This untitled paper was written by 'Valerie', possibly a colleague or a student. In her correspondence she asked Fowler to comment on it.</p> <p>3 folders.</p>	N.d.
D.20	<p>Bound typescript report written by Vitaliana Longone.</p> <p>This report is based on Fowler's work on pi-meson therapeutic use. Longone explains in the foreword that her report gives an overview of Fowler's and V. Maye's research.</p>	1963-1964
D.21	Miscellaneous material.	1967
D.22	<p>'Cosmic Radiation and Solar Particles at Aircraft Altitudes.'</p> <p>Typescript report.</p> <p>This report was compiled by Fowler and D.H. Perkins for the Air Registration Board's Supersonic Aeroplane Airworthiness Committee.</p>	1962
D.23	<p>Discovery of the Element 103 Lawrencium.</p> <p>Newspaper cutting, press release, and brochure entitled 'Element 103 of the Periodic System', translated from Russian.</p> <p>Fowler had suggested the presence of an element 103 in cosmic rays. American and Russian scientists engaged in a 'race' to try to prove its existence.</p>	1969

### Research

D.24	<p>'The charge spectrum of very heavy Cosmic Ray particles.'</p> <p>This report on current and prospective research formed the basis of a grant proposal.</p>	c. 1973
D.25-D.33	<p>Magnetic Monopoles</p> <p>An article entitled 'The sceptics hit out at the monopole claim', containing quotes from Fowler, appeared in the <i>New Scientist</i> in September 1975. The <i>New Scientist</i> reported that Fowler had suggested a piece of equipment was unreliable and that as a result Fowler's paper 'Have we seen the track of a magnetic monopole?' had been withdrawn from the Munich Cosmic Rays conference.</p> <p>See E.36 for the paper 'Have we seen the track of a magnetic monopole?'</p>	1969, 1975-1976
D.25	<p>Correspondence <i>re</i> the article and Fowler's paper on the magnetic monopole.</p>	1975
D.26-D.29	<p>Graphs and miscellaneous calculations.</p> <p>4 folders.</p>	1969, N.d.
D.30-D.32	<p>Papers by colleagues on the magnetic monopole.</p> <p>Includes 'Evidence for Detection of a Moving Monopole' by P.B. Price et al; 'A proposed search for anti iron cosmic rays' by L.W. Alvarez; 'Probabilities for an alternative explanation of the moving magnetic monopole' by R.L. Fleischer and R.M. Walker, 'The monopole candidate' by P. B. Price et al and 'Status of searches for magnetic monopoles' by P. Eberhard.</p> <p>3 folders.</p>	1975
D.33	<p>Colour photograph of equipment; monochrome research photograph inscribed on verso 'Do one by 2 Mag, Ground P from 2 or 3 degs.'</p>	N.d.

### Research

D.34-D.36	<p>'Crash Protection for Balloon Payload.'</p> <p>Draft paper, graphs and tables. Also includes a paper entitled 'An ammonia, ballast system' found with the material.</p> <p>3 folders.</p>	c.1977
D.37-D.40	<p>'The University of Bristol Heavy Primary Cosmic Ray Detector for the Ariel 6 Satellite.'</p> <p>See also E.61.</p>	1979
D.37	Offprint.	1979
D.38	Miscellaneous notes, graphs and calculations.	c. 1979
D.39	Interim report entitled 'Scientific Results from Ariel 6.'	c.1979
D.40	<p>Photographs.</p> <p>Monochrome photograph of the Ariel 6 Satellite; two colour photographs of NASA team at the Wallop Flight Center.</p>	1979
D.41-D.43	<p>Solar Maximum Mission (SMM) Guest Investigators Group.</p> <p>Fowler was part of the SMM Guest Investigators Group in partnership with the University of New Hampshire to conduct SMM gamma ray experiments.</p>	1979
D.41	Correspondence <i>re</i> arrangements for research collaboration.	1979
D.42	Notes from Group meeting at the University of New Hampshire.	1979

**Research**

D.43	Copy of 'Rapporteur paper on outer heliosphere session SP-7' and 'Preliminary report and forecast of solar geophysical data.'	1979
D.44, D.45	Grant applications.  2 folders.	c. 1979
D.46, D.47	'Interim Report on Temperature Measurements by Epithermal Neutron Absorption.'  See also E.53, E.56, E.57 and H.216-H.218.  Drafts.  2 folders.	c.1984
D.48-D.50	Research on radiography.	c. 1985
D.48	Untitled draft paper.	N.d.
D.49	Background material.  Includes typescripts 'Resonance neutron radiography', 'A compact transportable superconducting cyclotron' and 'Uranium nuclear reactions at 900 MeV/nucleon.'	c. 1985
D.50	Manuscript notes and graphs.	N.d.
D.51	Correspondence <i>re</i> Neutron detector pixels research.	1988
D.52-D.56	Research on Chernobyl radioactive fallout	1991-1993
D.52	'Five years after Chernobyl: 1986-1991, A review.'	1991

### Research

D.53-D.56	'Peak fitting results report.'	1993
	Results from samples.	
	4 folders.	
D.57-D.60	Miscellaneous calculations and graphs.	1977-1992
	4 folders.	
D.61, D.62	'Consideration of the Effects of Random Coincidence in BUGS 4.'	N.d.
D.61	Draft papers.	N.d.
D.62	'The Use of Neon as an Additive in Gas Scintillation Systems Operating at ~ 1Atm' and other untitled paper.	c. 1974, 1977
D.63	'Assignment of Charge to Individual Heavy Nuclei.'	N.d.
	Draft, graphs and calculations.	
D.64	'Double-Difference Method to Improve the Resolution of an eV Neutron Spectrometer' by P.A. Seeger, A.D. Taylor and R.M. Brugger.	c.1984
D.65	'A Survey of Radiation in near Earth Orbit' by W.N. Hess.	N.d.
	Copy of the paper; colour photograph found therewith.	
D.66-D.68	'Publication lists, fourth floor.'	1954-1968
	Booklets and typescript lists of publications of the H.H. Wills Laboratory. Also includes list of 'Contributions from the H.H. Wills Laboratory to the Development of the photographic method of detecting nuclear particles.'	
	3 folders.	

### Research

D.69-D.73	'University of Bristol reprints requests, circulation lists, 4th floor.'	1958-1973
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Correspondence *re* mailing list registration and request for reprints of H.H. Wills Laboratory publications.

4 folders.

D.74	Photocopy typescript Note on later work of Fowler, sent to Rosemary Fowler by P.A.E. Stewart, July 1997.	1997
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This Note is two papers bound together that describe 'Nuclear Physics Techniques applied to Aero Gas Turbine Engineering' (4pp) and '[... projects jointly investigated by Peter Fowler and Peter Stewart 1984-1992' (17pp).

SECTION E	DRAFTS AND PUBLICATIONS, E.1-E.68	1947-1996
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E.1	Typescript list of Fowler's publications, 1947-1997.	
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E.2	'A study of the nuclear transmutations of light elements by the photographic method', with C.M.G. Lattes and P. Cser, <i>Proceedings of the Royal Society, A</i> vol 49, (1947), pp 883-900.  Off print.	1947
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E.3	'A new method of determining the charge and energy of heavy nuclei in the cosmic radiation', with A.D. Dainton and D.W. Kent, <i>Philosophical Magazine</i> , series 7 vol. 42 (1951), pp 317-32.  Off print.	1951
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E.4	'Measurement of ionization in nuclear emulsions', with D.H. Perkins, <i>Philosophical Magazine</i> , series 7, vol. 46 (1955), pp 587-610.  Off print.	1955
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E.5	'On the masses and modes of decay of heavy mesons produced by cosmic radiation (G-stack collaboration)', with J. Bøggild et al (36 authors), <i>Nuovo Cimento</i> , series 10, vol. 2 (1955), pp 1063-1103.  Off print.	1955
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E.6	'The energy distribution of cosmic ray particles over northern Italy', with C.J. Waddington, <i>Philosophical Magazine</i> , series 8, vol. 1 (1956), pp 637-50.  Off print.	1956
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E.7	'Ionization measurements', with D.H. Perkins, <i>Nuovo Cimento</i> , series 10, no 2 of supplement to vol. 4 (1956), pp 238-242.  Off print.	1956
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**Drafts and publications**

- |            |   |      |
|------------|---|------|
| E.8        | <p>'Decay of lithium-7 hypernucleus', <i>Philosophical Magazine</i>, vol. 3 (1958), pp 1460-1462.</p> <p>Off print.</p>   | 1958 |
| <br>       |   |      |
| E.9        | <p>'The primary alpha particle spectrum over North America and geomagnetic cut-off energies', with P.S. Freier and E.P. Ney, <i>Nuovo Cimento</i>, series 10, no 2 of supplement to vol. 8 (1958), pp 492-499.</p> <p>Off print.</p>  | 1958 |
| <br>       |   |      |
| E.10       | <p><i>The Study of Elementary Particles by the Photographic Method</i>, 1959, with C.F. Powell and D.H. Perkins, p 627, Pergamon Press.</p> <p>Correspondence <i>re</i> royalties from the book and copy of the memorandum of agreement.</p>  | 1959 |
| <br>       |   |      |
| E.11       | <p>'Therapeutic applications of beams of negative Pi-mesons', with D.H. Perkins, H.H. Wills Physics Laboratory, University of Bristol.</p> <p>13 pp typescript.</p>   | 1960 |
| <br>       |   |      |
| E.12, E.13 | <p>'The study of high energy gamma rays produced by cosmic radiation at 40 000 feet, Part 1 and Part 2', with J.G. Duthie, et al, <i>Philosophical Magazine</i>, vol. 6 (1961), pp 89-111.</p> <p>20 pp draft, table and figures; correspondence <i>re</i> summaries of the paper; off print.</p> <p>2 folders.</p> | 1961 |
| <br>       |   |      |
| E.14       | <p>'The possibility of therapeutic applications of beams of negative Pi-mesons', with D.H. Perkins, <i>Nature</i>, vol.189 (1961), pp 524-528.</p> <p>Copy of the article.</p> <p>See also D.16.</p>  | 1961 |

### Drafts and publications

- |      |  |      |
|------|--|------|
| E.15 | <p>'The flux of <math>\gamma</math>-rays at high altitudes, and comparison with the muon flux at sea-Level', with J. Duthie et al, <i>Nuovo Cimento</i>, series 10, vol. 24 (1962), pp 122-138.</p> <p>Incomplete typescript draft with figures; off print.</p>  | 1962 |
|      |  |      |
| E.16 | <p>'Some features of nuclear interactions of energy between <math>10^{12}</math> and <math>10^{15}</math> eV', with M.G. Bowler et al, <i>Journal of the Physics Society of Japan</i>, vol. 17 supplement A-3, (1962), p 423.</p> <p>This paper was presented at the Kyoto Cosmic Ray conference and published in its proceedings.</p> <p>1 p typescript draft with figures.</p> | 1962 |
|      |  |      |
| E.17 | <p>'A comparison of the production of pions and hyperons in nuclear interactions of very high energy', with M.G. Bowler and D.H. Perkins, <i>Nuovo Cimento</i>, series 10, vol. 26 (1962), pp 1182-96.</p> <p>14 pp typescript draft with appendixes and figures.</p>  | 1962 |
|      |  |      |
| E.18 | <p>'Neutrino fluxes at NIMROD', with D.H. Perkins, H.H. Wills Laboratory, University of Bristol.</p> <p>20 pp bound typescript.</p>  | 1963 |
|      |  |      |
| E.19 | <p><i>Particle Physics</i>, with D.H. Perkins, D. Van Nostrand Company, Ltd (1963).</p> <p>Correspondence <i>re</i> publication of the book and memorandum of agreement.</p>   | 1963 |
|      |  |      |
| E.20 | <p>'A study of the production of high energy <math>\gamma</math>-rays, part 2', with J. Boulton, M.G. Bowler and H.L. Hackforth, <i>Nuovo Cimento</i>, series 10, vol. 40A (1964), pp 385-423.</p> <p>18 pp bound typescript printed by the University of Bristol and inscribed 'Eventually to be published in Nuo.Cim.'</p>   | 1964 |

### Drafts and publications

- |      |   |         |
|------|---|---------|
| E.21 | <p>'Nuclear interactions from 30 to 10 to the power of 6 GeV', with D.H. Perkins, <i>Proceedings of the Royal Society A</i>, vol. 278 (1964), pp 401-415.</p> <p>16 pp typescript.</p>  | 1964    |
|      |   |         |
| E.22 | <p>'A study of high energy interactions in graphite', with P.K. Maholtra et al, <i>Proceedings 9th International Cosmic Ray Conference</i>, London 1965, IPPS 2 (1966), pp 840-843.</p> <p>15 pp typescript with figures; 1 photograph.</p> | 1966    |
|      |   |         |
| E.23 | <p>'Cosmic ray dose rates at 37,000 feet', with P.J. Davison and N.R Nutt, University of Bristol.</p> <p>8 pp typescript draft with tables.</p>   | c. 1965 |
|      |   |         |
| E.24 | <p>'Energy spectrum of primary cosmic-rays', with P.K. Maholtra et al, <i>Nature</i>, vol. 209 (1966), pp 567-9.</p> <p>Off print.</p>  | 1966    |
|      |   |         |
| E.25 | <p>'The capture of Pi-mesons in oxygen and in other nuclei', with V.M. Mayes, <i>Proceedings of the Physical Society</i>, vol. 92 (1967), pp 377-89.</p> <p>Off print.</p>  | 1967    |
|      |   |         |
| E.26 | <p>'The charge spectrum of very heavy cosmic ray nuclei', with R.A. Adams, V.G. Cowen and J.M. Kidd, <i>Proceedings of the Royal Society A</i>, vol. 301 (1967) pp 39-45.</p> <p>Photocopy of off print.</p>                                | 1967    |
|      |   |         |
| E.27 | <p>'Science and the Moon Race', <i>New Scientist</i>, vol. 42 (1969).</p> <p>Fowler and other scientists gave their thoughts on the topic.</p>  | 1969    |

### Drafts and publications

- |      |   |         |
|------|---|---------|
| E.28 | <p>'Highly charged cosmic ray primaries', with J.M. Kidd and R.T. Moses, <i>Proceedings of the 11th International Conference on Cosmic Rays, Budapest</i> (1969).</p> <p>This paper was also published in <i>Acta Physica Scientiarum Hungaricae</i>, vol. 29, supplement 1 (1970), pp 399-410.</p> <p>Off print and 5 pp typescript draft.</p>                         | 1969    |
| <br> |   |         |
| E.29 | <p>'The charge spectrum of very heavy cosmic ray nuclei' with V.M. Clapham et al, <i>Proceedings of the Royal Society A</i>, vol. 318 (1970), pp 1-43.</p> <p>Off print.</p>  | 1970    |
| <br> |   |         |
| E.30 | <p>'Ultra heavy cosmic ray nuclei', with J. Kidd, E. Kobetich and R. Thorne, University of Bristol.</p> <p>8 pp typescript draft.</p>   | 1970    |
| <br> |   |         |
| E.31 | <p>'Heavy galactic particles', unpublished?</p> <p>4 pp typescript draft with tables and captions.</p>  | c. 1970 |
| <br> |   |         |
| E.32 | <p>'Track structure in photographic emulsion', University of Bristol.</p> <p>?Off print paginated 39-51</p>   | c.1970  |
| <br> |   |         |
| E.33 | <p>'Preliminary study of the charge spectrum of Ultra Heavy Cosmic Ray Primaries', with A. Jurak, R.T. Thorne, C. O. Ceallaigh, D. O'Sullivan, Y.V. Rao and A. Thompson.</p> <p>The paper was presented at the 8th International Conference on Nuclear Photography and Solid State Track Detectors, Bucharest July 10-15 1972.</p> <p>3 pp typescript with figures.</p> | 1972    |

### Drafts and publications

- |      |  |      |
|------|--|------|
| E.34 | <p>'A proposal for a satellite experiment to investigate the ultra-heavy cosmic ray primaries', with R.N.F. Walker et al, Department of Physics, University of Bristol.</p> <p>15 pp typescript draft.</p>                       | 1972 |
| <br> |  |      |
| E.35 | <p>'The charge and energy spectrum of ultra heavy cosmic ray primaries', with R.T. Thorne et al, <i>Proceedings of the 13th International Conference, Denver, (1973)</i>.</p> <p>4 pp photocopy typescript draft.</p>            | 1973 |
| <br> |  |      |
| E.36 | <p>'Have we seen the track of a magnetic monopole?', <i>Proceedings of the 14th International Cosmic Ray Conference, Munich</i>, vol. 12 (1975), pp 4049-4064.</p> <p>12 pp typescript.</p>                                      | 1975 |
| <br> |  |      |
| E.37 | <p>'Isotopic Composition of Cosmic Ray Nuclei in the Iron group', with V. M. Clapham et al, <i>Proceedings of the 14th International Cosmic Ray Conference, Munich</i>, vol.12 (1975), pp 4128-4131.</p> <p>2 pp typescript.</p> | 1975 |
| <br> |  |      |
| E.38 | <p>'Ultra heavy cosmic ray nuclei-analysis and results', <i>Nuclear Instruments and Methods</i>, vol. 147 (1976), pp 183-194.</p> <p>Off print.</p>  | 1976 |
| <br> |  |      |
| E.39 | <p>'High resolution study of nucleonic cosmic rays with z greater than or equal to 34', with C. Alexander, et al, <i>Nuclear Instruments and Methods</i> vol. 147 (1976), pp 195-199.</p> <p>7 pp typescript.</p>                | 1976 |

### Drafts and publications

- |            |   |      |
|------------|---|------|
| E.40       | <p>'A large area detector, for the measurements of the primary cosmic ray charge spectrum from <math>z \sim 10</math> upwards and energy spectrum from 1 gev/nucleon to 500 gev/nucleon', with R.M. Redfern, J.A. Clifford and S.P. Swordy, <i>Proceedings of the 15th International Cosmic Rays Conference, Plovdiv, Bulgaria</i>, vol. 11 (1977), pp 187-202.</p> <p>8 pp typescript.</p> | 1977 |
| E.41       | <p>'Measurement of the cosmic ray element abundances between <math>e=300</math> and 750 gev/nucleon in the region from nickel to krypton using lexan detectors, <i>Proceedings of the 15th International Cosmic Rays Conference, Plovdiv, Bulgaria</i>, vol. 11 (1977), pp 161-164.</p> <p>4 pp photocopy typescript.</p>   | 1977 |
| E.42, E.43 | <p>'Charge and energy spectra of ultra heavy cosmic ray nuclei' with C. Alexandre et al, <i>Proceedings of the 15th International Cosmic Rays Conference, Plovdiv, Bulgaria</i>, vol. 11 (1977), pp 165-73.</p> <p>5 pp photocopy typescript with appendixes; figures (paper and transparencies).</p>   | 1977 |
| E.44       | <p>'Ultra heavy cosmic ray abundance measurements with a large gas scintillation detector', with R.J. Edge et al, <i>Proceedings of the 15th International Cosmic Ray Conference, Plovdiv, Bulgaria</i>, vol. 11 (1977), pp 174-185.</p> <p>9 pp typescript draft.</p>  | 1977 |
| E.45       | <p>'Cosmic radiation, its significance and its origin', <i>Proceedings of the Royal Institution</i>, vol. 52 (1978)</p> <p>9 pp photocopy typescript; off print.</p>  | 1978 |
| E.46       | <p>'An experiment to investigate the anomalous component of low energy cosmic rays, an outline of an experiment for space shuttle exposure', with R.M. Redfern and S. P. Swordy, Department of Physics, University of Bristol.</p>  | 1979 |

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### Drafts and publications

- /... 30 pp bound typescript draft with figures and appendixes.
- E.47 'Track recording properties of the plastic cr-39 for non-relativistic ions in the charge range 6 smaller or equal to z smaller or equal to 29', with S. Amin, V.M. Clapham and D.L. Henshaw, *Proceedings of the 10th International Conference on Nuclear Track Detectors, Lyon, (1979)*, pp 239-44. 1979  
6 pp photocopy typescript.
- E.48 'Photodensitometry of tracks of highly ionizing particles in the cosmic rays', with P.B. Price et al, *Nuclear Instruments and Methods*, vol. 158 (1979), pp 429-34. 1979  
6 pp photocopy off print.
- E.49 'Track recording properties of the plastic CR-39', with V.M. Clapham, D.L. Henshaw and S. Amin, *Proceedings of the 16th International Cosmic Ray Conference, Kyoto*, vol. 1 (1979). Paper T3-16 (no page numbers given). 1979  
4 pp typescript with figures.
- E.50 'Ultra heavy comic ray nuclei from the first transatlantic balloon flight', with V.M. Clapham et al, *Proceedings of the 16th International Cosmic Ray Conference, Kyoto*, vol.1 (1979), pp 370-372. 1979  
3 pp typescript.
- E.51 'Ultra heavy cosmic rays', with M.R.W. Mashedier et al, *Proceedings of the 94th IUPAP-IAU Symposium, Bologna, (1980)*, pp 77-89. 1980  
Off print.
- E.52 'UH cosmic Rays from Ariel 6', with R.N.F. Walker et al, *Nature*, vol. 291 (1981), pp 45-47. 1981  
4 pp typescript; offprint.

### Drafts and publications

- |      |   |         |
|------|---|---------|
| E.53 | <p>'Application for support for a preliminary investigation into temperature measurement by neutrons, Department of Physics, University of Bristol.</p> <p>15 pp bound typescript.</p> <p>See also E.56, E.57, D.46, D.47 and H.216-H.218.</p>  | 1984    |
| <br> |   |         |
| E.54 | <p>'Ultra-heavy cosmic rays - Ariel 6 results, with M. R.W. Masheder, et al, <i>Proceedings of the 9th European Cosmic Ray Symposium, Kosice, Czechoslovakia</i>, (1984).</p> <p>7 pp bound typescript.</p>   | 1984    |
| <br> |   |         |
| E.55 | <p>'Ultra heavy cosmic rays', <i>Irish Astronomical Journal</i>, vol. 17 (1985), pp 112-127.</p> <p>Off print.</p>  | 1985    |
| <br> |   |         |
| E.56 | <p>'An initial programme for evaluation of temperature measurement using epithermal neutrons', Department of Physics, University of Bristol.</p> <p>Two 34 pp bound typescript drafts. Also includes a copy of 'Neutron Resonance Transmission Measurements at ISIS' found with the material.</p> <p>See also E.53, E.57, D.46, D.47 and H.216-H.218.</p> | 1986    |
| <br> |   |         |
| E.57 | <p>'Temperature imaging using epithermal neutrons', with A.D. Taylor, Neutron Resonance Radiography Workshop, Los Alamos National Laboratory, 27-29 July 1987.</p> <p>36 pp bound typescript.</p> <p>See also E.53, E.56, D.46-D.47 and H.216-H.218.</p>  | 1987    |
| <br> |   |         |
| E.58 | <p>'Possible Addition to NT's Draft on Lab'.</p> <p>3pp typescript with manuscript annotations.</p>   | c. 1987 |

**Drafts and publications**

- |      |  |        |
|------|--|--------|
| E.59 | <p>'The Pi Discovery', in <i>40 Years of Particle Physics: Proceedings of the international conference to celebrate the 40th anniversary of the discoveries of the Pi- and V-particles held at the University of Bristol, 22-24 July 1987</i>, ed. B. Foster and Fowler (Hilger, 1988), pp 35-50.</p> <p>Off print.</p>  | 1988   |
| E.60 | <p>'P.H. Fowler on Lockerbie Disaster', no evidence of publication</p> <p>1 pp typescript.</p>   | c.1988 |
| E.61 | <p>'Design and performance in orbit of the Bristol cosmic ray detector on the Ariel 6 Satellite', with A. M. Gay et al, <i>Nuclear Instruments and Methods in Physics Research</i> vol. A275 (1989), pp 175-183.</p> <p>Off print; 16 pp bound typescript.</p>   | 1989   |
| E.62 | <p>'Identified <math>\Lambda^-</math> hypernuclei and the hypothetical H particle', with R.H. Dalitz et al, <i>Proceedings of the Royal Society A</i>, vol. 426 (1989), pp 1-17.</p> <p>29 pp typescript draft.</p>  | 1989   |
| E.63 | <p>'Condensation in jet engine air intakes', consultancy report.</p> <p>10pp typescript + figures.</p>   | 1990   |
| E.64 | <p>'Iron fluxes from Ariel 6 Workshop ICRC', with M.R.W. Masheder, R.N.F. Walker and A. Worley, <i>Nuclear Instruments Radiations Measurements</i>, vol. 20 (1991), pp 423-425 and <i>International Journal of Radiation Applied Instruments</i>, Part D.</p> <p>This paper was presented at the Workshop ICRC in Dublin, August 1991, the proceedings of which were published in <i>Iron Fluxes from Ariel 6 in Galactic Cosmic Radiation: Constraints on Space Exploration</i>, ed. J.H. Adams Jr., US Navy/NRC No 209-4154, pp 41-48.</p> <p>Off print.</p> | 1991   |

**Drafts and publications**

- |      |   |        |
|------|---|--------|
| E.65 | Obituary of Isobel Powell, <i>The Independent</i> (November 1995).<br><br>1 p photocopy.  | 1995   |
| E.66 | 'A one-meter radius spherical electron drift chamber for the measurement of relativistic heavy nuclei' with J.J. Petruzzio III et al, no evidence of publication.<br><br>26 pp typescript with manuscript note. | c.1996 |
| E.67 | 'C rays'.<br><br>12 pp manuscript draft.  | N.d.   |
| E.68 | 'Neutron resonance radiography as a non-invasive temperature probe', with A.D. Taylor and P.A. Seeger, no evidence of publication.<br><br>5 pp typescript draft.  | N.d.   |

<b>SECTION F</b>	<b>LECTURES, F.1-F.60</b>	<b>1956-1996</b>
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F.1-F.11      UNIVERSITY TEACHING

F.12-F.14      INVITATIONS TO LECTURE

F.15-F.60      INVITATION AND PUBLIC LECTURES

<b>F.1-F.11</b>	<b>UNIVERSITY TEACHING</b>	<b>1956-1965</b>
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Typescript and manuscript lecture notes, graphs and correspondence.

F.1	Intermediate Magnetism and Electricity class topic outlines for 1956-1957.	1956
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2 typescript pages.

F.2-F.9	Typescript and manuscript lectures notes.	1963
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F.2-F.4	'Thermodynamics 1-5' and 'Particles Physics notes for postgraduate lectures, October 1963.'	1963
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3 folders.

F.5-F.9	'Postgraduate Notes E. M. Interaction.'	c. 1963
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Manuscript notes with graphs and figures.

5 folders.

F.10	Correspondence re postgraduate and 3rd year undergraduate lectures 1964-1965.	1964
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F.11	'Mechanics and properties of Matter.'	N.d.
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Typescript list of exercises for students.

**Lectures**

<b>F.12-F.14</b>	<b>INVITATIONS TO LECTURE</b>	<b>1957-1979</b>
	3 folders.	
<b>F.15-F.60</b>	<b>INVITATION AND PUBLIC LECTURES</b>	<b>1964-1986</b>
F.15-F.17	Rutherford Memorial Lecture 'Pi Mesons versus Cancer', 1964.  Two typescript drafts and figures.  3 folders.  See also D.5-D.21.	1964
F.18	'Cosmic Rays in Outer Space, Inaugural Professorship Lecture, University of Bristol, 17 February 1966.'  Drafts; copy of 'Chart of the Nuclides'.	1966
F.19	'Review Lecture: The Charge Spectrum of the Primary Cosmic Radiation', Royal Society, London, 9 February 1967.  Programme of Royal Society meetings January to March 1967; abstract of the lecture.	1967
F.20	'Highly Charged Cosmic Ray Primaries', (?) Budapest, Hungary, 1969.  Typescript draft with manuscript note reading: 'Probably lecture given in Budapest (R.H.F).'	1969
	See also E.28.	

**Lectures**

- |            |  |      |
|------------|--|------|
| F.21       | <p>'Nature and Fluxes of Radiation at High Altitudes',<br/>Society of Radiological Protection meeting at Imperial<br/>College, London, 10 October 1972.</p> <p>Photocopy typescript, with figures.</p>   | 1972 |
| F.22       | <p>'The Charge and Energy Spectrum of Ultra Heavy<br/>Cosmic Ray Primaries, 13th International Cosmic Ray<br/>Conference Denver, Colorado, USA, August 1973.</p> <p>Typescript draft; abstract of 'Ultra Heavy Cosmic Rays',<br/>rapporteur paper presented at the Conference.</p>   | 1973 |
| F.23       | <p>'Cosmic Ray Summary' and 'Current Programme in<br/>Europe', European Space Research Organisation<br/>Workshop, Frascati, Italy, 1975.</p> <p>Manuscript notes so entitled written in a notebook for the<br/>lectures whose full titles were 'Review of Present<br/>Knowledge of Cosmic Rays' and 'Current Cosmic ray<br/>Programme in Europe'.</p>  | 1975 |
| F.24, F.25 | <p>'Ultra Heavy Cosmic Ray Nuclei - Analysis and Results',<br/>9th International Conference on Solid State Nuclear<br/>Track Detectors, Munich, West Germany, 30<br/>September-6 October 1976.</p> <p>10pp photocopy typescript + figures.</p> <p>Also includes a paper entitled 'Details on Heavy Cosmic<br/>Ray Tracks from the University of Bristol, England and<br/>Dublin Institute for Advanced Studies'.</p> <p>2 folders.</p> <p>See also E.30.</p> | 1976 |
| F.26       | <p>'Hartwell, 13 April 1977.'</p> <p>Manuscript notes.</p>   | 1977 |

**Lectures**

F.27, F.28	'Royal Institution Lecture, 26 May 1977.'	1977
	Typescript draft of lecture on cosmic radiation, with figures.	
	2 folders.	
F.29-F.31	'Charged Cosmic Ray Primaries', c. 1979.	c.1979
	Manuscript draft, photocopies, background material.	
	3 folders.	
F.32	'Ultra Heavy Cosmic Rays, Part 1 and Part 2', University of London, 1980.	1980
	Typescript and manuscript drafts.	
F.33-F.36	Honorary D.Sc. address for Klaus Pinkau, University of Bristol, 1986.	1986
F.33	Correspondence <i>re</i> arrangements for honorary degree.	1986
F.34	Draft of address.	1986
F.35, F.36	Background material.	1986
	Biographical sketch, list of publications and off prints of papers by Pinkau.	
	2 folders.	
F.37, F.38	Honorary D.Sc address for Professor Markov, University of Bristol, 6 July 1988.	1988
	Drafts of address, biographical information and off prints of papers by Markov.	
	2 folders.	

**Lectures**

F.39	Speech on the occasion of Fowler's retirement from the University of Bristol.  Manuscript notes.	1988
F.40-F.42	Honorary D.Sc. address for Goku Menon, University of Bristol, 12 July 1990.  Correspondence <i>re</i> Menon, drafts, biographical information and off prints of papers by Menon.  3 folders.	1990
F.43	'Cosmic Ray Research and Recent Development', Hobhouse Lecture, Kings School, Bruton, Somerset, 1991.  Fowler was a Governor of the School (see H.90-H.165).  Manuscript notes.	1991
F.44-F.47	'The Early Days of Cosmic Rays,' D.H. Perkins Festschrift lecture, 1993.	1993
F.44	Correspondence <i>re</i> registration for 'Perkins conference'.	
F.45	Draft and final typescripts.	1993
F.46, F.47	Miscellaneous manuscript and typescript notes.  2 folders.	1993
F.48	Speech at the opening ceremony, Hazelgrove Laboratory, Hazelgrove School, Yeovil, 19 October 1996.  Typescript draft.	1996

### Lectures

F.49-F.60	Untitled and/or undated lectures.	c.1950- c.1986
F.49, F.50	Untitled lecture.  Manuscript draft, figures and notes.  2 folders.	c. 1950
F.51	Untitled draft on: 'technical aspects concerning the detectors (? of pion mesons).'  Typescript draft.	c.1950
F.52	'Selecting a Scientific Stratosphere Balloon for Optimum Performance.'  8pp typescript.	N.d
F.53	Untitled lecture beginning: 'Photographic emulsion technique for studying tracks of nuclear particles.'  4pp manuscript draft.	c. 1979
F.54-F.58	'Cosmic Rays - from C.F. Powell to Cygnus X-3.'  This lecture was read at a British Association meeting.	c.1986
F.54	Correspondence.	
F.55	Manuscript and typescript draft.	
F.56	Photocopied figures and transparencies.	
F.57	Colour and black and white photographs.  Includes photograph of balloon launches and 'the first double decay, Pic 1952.'	

**Lectures**

F.58	Miscellaneous notes.	
F.59	'Cosmic rays', Delhi University, 'NPI' and 'Lecture Bangalore.'  Notebook.  Fowler appears to have used a discarded notebook of an undergraduate student for notes for these lectures.	N.d.
F.60	2pp manuscript draft entitled 'Bath'.	N.d.

<b>SECTION G</b>	<b>VISITS AND CONFERENCES, G.1-G.32</b>	<b>1956-1993</b>
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This section documents some of Fowler's conferences and visits worldwide from 1971 to 1993. There is also earlier material relating to his Visiting Professorship year at the University of Minnesota in 1956/1957 and his prospective move there as Full Professor in 1958.

G.1-G.5	Fowler's Visiting Professorship and subsequent invitation to Full Professorship at the University of Minnesota.	1956-1959
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Fowler was a Visiting Professor at the University of Minnesota from September 1956 to June 1957. In September 1958 he accepted a post of Professor of Physics at the same university but the American Embassy refused to grant him a visa on medical grounds. The University of Minnesota fought to overturn the decision and Senator Hubert H. Humphrey became involved in seeking to amend the law under which Fowler was denied entry.

G.1-G.3	Correspondence <i>re</i> arrangements and visa application.  3 folders.	1956-1959
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G.4	Undated correspondence and notes.  Series of draft letters by Fowler addressed to A.O.C. Nier, Chairman of the University of Minnesota, explaining his position after his visa was refused.	N.d
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G.5	Official documents supporting visa application.  Includes Fowler's certificate of military service, visa application form, US tax returns etc.	1956-1958
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G.6-G.10	The Royal Society of New Zealand Rutherford Memorial Lecture Tour, New Zealand, August-September 1971  On the occasion of the Rutherford Centenary Celebrations Fowler lectured on 'Tracks of Atomic Particles Ancient and Modern', 'Evolution of Elements' and 'Rutherford's Scientific Contributions'. He visited Nelson, Christchurch, Dunedin, Wellington, Auckland and Hamilton.	1970-1971
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**Visits and conferences**

G.6	Correspondence <i>re</i> arrangements.	1970-1971
G.7	Programme of the lecture tour.	1971
G.8, G.9	Drafts and off-prints of Fowler's lectures.  Includes 'Rutherford's Scientific Contributions', 'Evolution of the Elements' and 'Tracks of Atomic Particles Ancient and Modern'. Also includes notes by Rosemary Fowler on the lectures and where they were delivered.  2 folders.	1971
G.10	Graphs found with the material.	c. 1971
G.11, G.12	Ettore Majorana Centre for Scientific Culture, International School of Cosmic-Ray Astrophysics, Erice, Sicily, Italy, 22 June-6 July 1978.	1978
G.11	Correspondence <i>re</i> arrangements.  Includes an invitation to Fowler to come to the University of Chicago Enrico Fermi Institute as a Visiting Professor.	1978
G.12	List of participants and notes on arrangements for the school.	1978
G.13	American Physical Society Conference on Cosmic Rays, Astrophysics and Low-Energy Gamma-Ray Astronomy, University of Minnesota, Minneapolis, 3-6 September 1980.  Correspondence <i>re</i> arrangements and first notice.	1980
G.14	11th International Conference on Solid State Nuclear Track Detectors, University of Bristol, 7-12 September 1981.  Typescript abstract of papers.	1981

### Visits and conferences

- |            |   |           |
|------------|---|-----------|
| G.15       | <p>Annual Summer School for High Energy Experimental Physicists, University of Bristol, 25 September 1981.</p> <p>Programme of the meeting.</p> <p>Fowler lectured on 'Satellite Measurements on the Cosmic Rays of Highest Charge.'</p>  | 1981      |
| <br>       |   |           |
| G.16       | <p>18th International Cosmic Rays Conference, Bangalore, India, 22 August - 3 September 1983.</p> <p>Correspondence and minutes of the 'Long Duration Balloon Flight Meeting.'</p> <p>There is no evidence of Fowler's attendance.</p>  | 1982-1983 |
| <br>       |   |           |
| G.17       | <p>Institute of Physics, Material and Testing Group and Neutron Scattering Group, Joint one-day meeting on 'Industrial Uses of Electron and Particles Beams in the Study of Materials', London, 26 September 1985.</p> <p>List of participants including Fowler.</p>  | 1985      |
| <br>       |   |           |
| G.18, G.19 | <p>Visit to Texas and Chicago, USA. 1986.</p> <p>Personal correspondence, telegrams <i>re</i> arrangements and flight details.</p> <p>2 folders.</p>  | 1986      |
| <br>       |   |           |
| G.20       | <p>International Conference to Celebrate the 40th Anniversary of the Discovery of the Pi Meson, University of Bristol, 22-24 July 1987.</p> <p>Includes a typescript draft of Fowler's address, programme of the conference, list of participants and a guide to Bristol.</p> <p>Fowler lectured on 'The Pi Discovery.' See also E.59</p> | 1987      |

### Visits and conferences

G.21-G.24	<p>International Union of Pure and Applied Physics, 21st International Cosmic Rays Conference, University of Adelaide, Australia, 6-19 January 1990.</p> <p>Fowler attended as a Royal Society delegate to the Cosmic Rays Commission.</p>	1989-1991
G.21	<p>Correspondence <i>re</i> arrangements.</p> <p>Also minutes of the Adelaide Cosmic Rays Commission meetings.</p>	1989
G.22	<p>Conference information.</p>	1990
G.23	<p>Travel details and accounts.</p>	1991
G.24	<p>Memorabilia.</p>	1991
G.25	<p>Royal Meteorological Society-British Hydrological Society meeting on 'Natural disaster reduction: how meteorological and hydrological services can help.' Royal Society, London, 28 March 1990.</p> <p>Information on the meeting only.</p>	1990
G.26-G.28	<p>International Union of Pure and Applied Physics, 22nd International Cosmic Rays Conference, Dublin, Ireland, 11-24 August 1991.</p> <p>Fowler was asked to comment on the list of proposed speakers and co-authored a paper on 'Iron Fluxes from Ariel-6' presented at the conference (G.28).</p>	1988-1991
G.26	<p>Correspondence and papers <i>re</i> arrangements.</p>	1988-1991
G.27	<p>Accounts and budgets.</p> <p>Preliminary estimates of income and expenditure, draft budgets and minutes of conference preparation meeting.</p>	1991

**Visits and conferences**

G.28	Paper by Fowler et al, 'Iron Fluxes from Ariel-6'.	1991
G.29	University of Calgary Physics Department 'Proposal for the 23rd International Cosmic Ray Conference to be held at the University of Calgary, Canada, 1993.'	1993
G.30-G.32	<p>Various expense claims forms and invoices chiefly relating to visits, some not otherwise documented.</p> <p>Includes some from the BBC showing Fowler's involvement in radio and television interviews.</p> <p>3 folders.</p>	1967-1982

<b>SECTION H</b>	<b>SOCIETIES AND ORGANISATIONS, H.1-H.346</b>	<b>1964-1998</b>
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H.1	BRITISH AEROSPACE LTD
H.2-H.45	HERSCHEL HOUSE TRUST
H.46-H.51	INSTITUTE OF PHYSICS
H.52-H.68	INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS
H.69-H.77	INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS
H.78-H.89	JOINT MEDICAL RESEARCH COUNCIL/NATIONAL RADIOLOGICAL PROTECTION BOARD COMMITTEE ON RADIOLOGICAL PROTECTION
H.90-H.165	KING'S SCHOOL, BRUTON
H.166-H.173	METEOROLOGICAL COMMITTEE, METEOROLOGICAL OFFICE
H.174-H.207	NEHRU MEMORIAL TRUST
H.208-H.222	ROLLS ROYCE PLC
H.223-H.231	ROYAL ASTRONOMICAL SOCIETY
H.232-H.285	ROYAL SOCIETY
H.286-H.324	SCIENCE AND ENGINEERING RESEARCH COUNCIL (SERC)
H.325-H.341	SCIENCE RESEARCH COUNCIL (SRC)

**Societies and organisations**

H.342	SCIENCE AND TECHNOLOGY COMMITTEE OF THE HOUSE OF LORDS
H.343, H.344	TRACK ANALYSIS SYSTEMS, LTD (TASL)
H.345-H.346	UNIVERSITIES SPACE RESEARCH ASSOCIATION

### **Societies and organisations**

<b>H.1</b>	<b>BRITISH AEROSPACE LTD</b>	<b>1990</b>
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Contractual material including draft report entitled 'Nuclear Irradiation of Containers' relating to British Aerospace tender to Eurotunnel plc on the screening of freight vehicles.

<b>H.2-H.45</b>	<b>HERSCHEL HOUSE TRUST</b>	<b>1988-1996</b>
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The Herschel House Trust preserved the house in Bath where the astronomer Herschel discovered the planet Uranus. Fowler was a trustee of the Trust.

Correspondence *re* the administration of the Trust, agenda, minutes, report and accounts. Also includes the bulletins of the Herschel House Society.

H.2-H.4	1988
	3 folders.

H.5-H.10	1989
	6 folders.

H.11-H.16	1990
	6 folders.

H.17-H.24	1991
	8 folders.

H.25-H.28	1992
	4 folders.

**Societies and organisations**

H.29-H.30	1993  2 folders.	
H.31-H.33	1994  3 folders.	
H.34-H.36	1995  3 folders.	
H.37-H.40	1996  4 folders.	
H.41-H.44	Bulletins of the Herschel House Society.  4 folders.	1989-1996
H.45	List of annual lectures from 1981 to 1990 and brochure on Caroline Herschel.	
H.46-H.51	<b>INSTITUTE OF PHYSICS</b>  Fowler was a Fellow of the Institute of Physics and was on the board of the Physics Education Editorial Board and Advisory Panel and the Institute of Physics International Affairs Committee.	<b>1964-1992</b>
H.46-H.48	General	1964-1972

**Societies and organisations**

H.46, H.47	Correspondence <i>re</i> refereeing.  2 folders.	1964 -1972
H.48	Invoices, brochures and press release.	1965, 1968
H.49, H.50	Institute of Physics International Affairs Committee	1991-1992
H.49	Correspondence.	1991-1992
H.50	Minutes and proposals.  Includes 'Institute of Physics Responses to "A New EPS (European Physics Society)" submitted for consideration at the EPS Executive Committee.'	1991, 1992
H.51	Minutes of the Physics Education Editorial Board.	1965-1966
H.52-H.68	<b>INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS</b>  Correspondence, circulars and reports relating to the organisation of the International Council of Scientific Unions' 23rd General Assembly.	<b>1990</b>
H.52	Correspondence <i>re</i> arrangements.	1990
H.53	Circulars, information bulletins and agenda of meetings.	1990

### **Societies and organisations**

H.54	Reports and Recommendations.	1990
	Includes the recommendations of the 23rd General Assembly Nominating Committee, report of the General Assembly Finance Committee and Decision and Resolutions of the 23rd General Assembly of the International Council of Scientific Unions.	
H.55-H.65	'List of Documents for the 23rd General Assembly of the International Council of Scientific Unions.'	1990
	Includes list of participants, agenda, committees and financial reports.	
	11 folders.	
H.66	'Financial Statement of the International Council of Scientific Unions and its Scientific and Special Committees and Commissions and other Interdisciplinary ICSU Bodies for the year ending 31 December 1989.'	1990
H.67	Travel arrangements.	1990
H.68	Miscellaneous.	1990
	Includes biographical details of nominated candidates (possibly to attend the General Assembly), Fowler's application form for attendance, information on the International Society of Soil Science and manuscript notes.	
H.69-H.77	<b>INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS (IUPAP)</b>	<b>1984-1991</b>
	Fowler was a member of the UK delegation to IUPAP conferences and a member of Commission C4 on Cosmic Rays.	

**Societies and organisations**

H.69-H.71	<p>Correspondence <i>re</i> attendance at the 20th General Assembly in 1990, various committee membership and UK delegation appointments.</p> <p>3 folders.</p>	1987-1990
H.72	<p>Minutes, list of conferences for 1988 and invitation to the 22nd International Cosmic Ray Conference.</p>	1987-1990
H.73, H.74	<p>20th General Assembly of IUPAP, 25-28 September 1990, Dresden, East Germany.</p> <p>Programme of the assembly, list of participants and a series of nominations for UK members and officers of the various commissions.</p> <p>2 folders.</p>	1990
H.75, H.76	<p>News bulletins.</p> <p>The series of bulletins is incomplete. Also includes lists of conferences.</p> <p>2 folders.</p>	1984-1991
H.77	<p>Miscellaneous.</p> <p>Includes a copy of 'C4 Commission on Cosmic Rays-Report to IUPAP (1984-1987)' and 'ILSI Risk Science Institute.'</p>	c. 1987
H.78-H.89	<p><b>JOINT MEDICAL RESEARCH COUNCIL (MRC)/NATIONAL RADIOLOGICAL PROTECTION BOARD (NRPB) COMMITTEE ON RADIOLOGICAL PROTECTION</b></p> <p>Fowler was Chairman of this Joint MRC/NRPB Committee.</p>	1983-1992

**Societies and organisations**

H.78	Correspondence <i>re</i> publications of papers on the Chernobyl nuclear explosion in <i>Nature</i> .	1983-1992
H.79-H.83	Agenda of meetings and minutes.  Also includes copies of 'MRC Field Review of Radiobiology' and 'MRC Cell Mutation Unit Progress Report and Future Proposals, January 1991.'  5 folders.	1987-1991
H.84, H.85	Memorandum and statement of NRPB's 'Principles for the Protection of Patients and Volunteers during Clinical Magnetic Resonance Diagnostic Procedures.'  2 folders.	1990-1991
H.86-H.88	1990 Recommendations of International Committee on Radiological Protection.  Also includes 'The State of Development of the Revised Recommendations of ICRP' and 'Programme of Radiation Research Report of Industry Sponsors for the Period: April 1989-April 1990.'  3 folders.	1990
H.89	Miscellaneous.  Includes notes on the history of the Joint Committee.	1991
H.90-H.165	<b>KING'S SCHOOL, BRUTON</b>  Fowler was a Governor of King's School, Bruton, Somerset.  Correspondence <i>re</i> the administration of the school, minutes and reports, accounts and lists of governors.	1986-1996

**Societies and organisations**

H.90	1986
H.91, H.92	1987 2 folders.
H.93-H.100	1987-1988 8 folders.
H.101-H.108	1988-1989 8 folders.
H.109-H.112	1989-1990 4 folders.
H.113-H.117	1990-1992 5 folders.
H.118-H.125	1991-1992 8 folders.
H.126-H.136	1993-1994 11 folders.
H.137-H.146	1993-1994 10 folders.

**Societies and organisations**

H.147-H.155	1995  9 folders.	
H.156-H.165	1996  10 folders.	
H.166-H.173	<b>METEOROLOGICAL COMMITTEE, METEOROLOGICAL OFFICE</b>  Fowler was a member of the Meteorological Committee of the Meteorological Office. This Committee advised the Chief Executive of the Meteorological Office on present and future actions and reviewed the Office programme.	<b>1984-1994</b>
H.166	Correspondence <i>re</i> the Royal Observatories.	1984-1994
H.167-H.173	Minutes and meeting reports.  7 folders.	1985-1993
H.174-H.207	<b>NEHRU MEMORIAL TRUST</b>  The Jawaharlal Nehru Memorial Trust offers scholarships for Indian nationals to pursue advanced research. Fowler was one of the Governors of the Trust.	<b>1985-1991</b>
H.174	1985  Correspondence <i>re</i> the 11th Nehru Memorial Lecture on 25 November 1985 delivered by S. Ramphal on 'Nehru the Pathfinder: a legacy reappraised.'	

**Societies and organisations**

H.175	1987	
H.176-H.179	1988	
H.176, H.177	Correspondence.  2 folders.	
H.178	Minutes of meetings.	
H.179	12th Nehru Memorial lecture.  Includes a list of invitees, table plan and a copy of the lecture 'The English Language in India since Independence-and its Future role.' delivered by S. Gopal.	
H.180-H.187	1980-1989	
H.180	Correspondence <i>re</i> the 13th Nehru Memorial lecture, resignation of the Secretary to the Governors.	1989
H.181, H.182	Minutes of meetings.  Also includes a copy of the 13th Memorial Lecture entitled 'The Internal Impact of Nehru as Prime Minister', delivered by S.D. Sharma in November 1989.  2 folders.	1989
H.183	Finances.	1989
H.184-H.187	Scholarship applicant.  4 folders.	1980-1990

**Societies and organisations**

H.188-H.189	1990
H.188	Correspondence <i>re</i> the 14th Memorial Lecture, its publication and the case of an Indian student's application to UK universities.
H.189	Minutes of meetings.
H.190-H.193	1991
H.190, H.191	Correspondence <i>re</i> scholarship and the publication of the Memorial Lecture.  2 folders.
H.192	Minutes of meetings.
H.193	List of those attending the 15th Memorial Lecture.
H.194, H.195	1992
H.194	Correspondence <i>re</i> financial support for an overseas researcher.
H.195	Minutes of meetings.
H.196-H.198	1993
H.196	Correspondence <i>re</i> collaboration between the Jawaharlal Nehru Memorial Trust and the British Council.
H.197	Minutes of meetings.

## Societies and organisations

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| H.198        | List of those attending the 17th Nehru Memorial Lecture.<br><br>The lecture was delivered by K. Vatsyayan on 'Indian Art: The One and the Many.'   |
| H.199-H.201  | 1994   |
| H.199        | Correspondence <i>re</i> additional funding for Scholars.  |
| H.200        | Minutes of meetings.   |
| H.201        | Copy of the 18th Nehru Memorial Lecture.<br><br>The lecture was delivered by John Grigg on 'Indo-British Mythology about the Approach to Independence.'  |
| H.202-H.204  | 1995   |
| H.202, H.203 | Correspondence and papers.<br><br>Includes a copy of 'Note for the Trustees with an Appraisal of the Present Scheme of Awards and the Current Position, as well as a Proposal for the Future, which includes a Collaboration with the Cambridge Commonwealth Trust' and responses to the memo by Governors and Officers.<br><br>2 folders. |
| H.204        | Minutes of meetings and Accounts.  |
| H.205, H.206 | 1996   |
| H.205        | Correspondence.<br><br>Includes accounts for 1995-1996.  |

**Societies and organisations**

H.206 Minutes of meetings.

H.207 1999

Letter from Lord Romsey (Chairman of the Trust) to Rosemary Fowler.

**H.208-H.222**

**ROLLS-ROYCE PLC**

**1985-1992**

Fowler was a consultant for Rolls Royce. In 1987 he worked on 'non-invasive measurement of temperature of a moving item by means of neutron beams.' (H.216-H.218) and in 1990 he worked on the Athena Project for the US Federal Aviation Authority and developed, with Peter Stewart of the Rolls Royce Advanced Project Division, a thermal detection technique used to enhance aviation security (H.211-H.213).

H.208-H.210

General correspondence.

1987-1992

Correspondence *re* consultancy agreement and research, patent application on neutron/temperature measurement technique, financing of research and work in progress February-April 1989 and first quarter of 1992.

3 folders.

H.211-H.213

Athena Project.

1990

Fowler worked on the Athena Project on explosive detection systems. The project was part of an enquiry on aviation security commissioned by the US Federal Aviation Authority after a Pan Am airliner crashed in Lockerbie, Scotland in December 1988 following a bomb explosion.

H.211

Correspondence and papers *re* project management.

1990

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### Societies and organisations

/...	Includes proposed bid and the 'Report of the Presidents Commission on Aviation Security and Terrorism' (of the U.S Federal Aviation Authority).	
H.212	Draft report.	1990
H.213	Newspaper cutting from <i>The Times</i> entitled 'Battle to beat airport bombers' on improved detection devices and security.	1990
H.214, H.215	Consultancy agreements.  2 folders.	1989-1991
H.216-H.218	Papers on temperature measurements.  Includes draft of and figures for lecture on 'Remote temperature measurement using resonant epithermal neutrons and the need for a compact pulsed source.'  See also D.46-D.47 and E.53, E.56-E.57.  3 folders.	1985
H.219	Reports on 'A method for non-invasively measuring metal temperatures within aero gas turbine engines' and 'comparison of explosive detection systems'.	1986, 1990
H.220	Lists of Fowler's periods of activity for Rolls Royce.	1989
H.221, H.222	Miscellaneous.  Contains accounts and expenses forms, progress report on Fowler's activities with Rolls-Royce, notes on temperature measurement, manuscript notes, etc.  2 folders.	1988-1991

### Societies and organisations

H.223-H.231	<b>ROYAL ASTRONOMICAL SOCIETY</b>	<b>1983-1985</b>
	<p>Fowler was a member of the Royal Astronomical Society Study Group for Priorities for Astronomy in the United Kingdom for the Period 1990-2000. Most of the material relates to 'Astronomy in the UK 1990-2000', a project initiated by the Royal Astronomical Society to gather comments from scientists on the 'content and future direction of the UK astronomy in the period 1990-2000.'</p>	
H.223, H.224	<p>Correspondence <i>re</i> Astronomy in the UK 1990-2000 and submission of comments.</p> <p>See also H.227-H.230 for further submissions in respect to the call for comments on the Astronomy in the UK project.</p> <p>2 folders.</p>	1983-1985
H.225, H.226	<p>Agendas, draft minutes and final minutes of meetings of the study group.</p> <p>2 folders.</p>	1985
H.227-H.230	<p>Submissions of comments on UK astronomy 1990-2000.</p> <p>The submissions are arranged by author in alphabetical order.</p> <p>4 folders.</p>	1985
H.231	<p>Papers by O.C.A. Langmark from the Board of Education for the City of Toronto, Canada.</p> <p>Includes 'Proposal for a subdivision of Lyra into telescopic starfields' and the paper 'The telescopic starfields of the Auriga polygon'. Also includes a photograph.</p> <p>Found with the preceding material.</p>	1983, 1985

**Societies and organisations**

<b>H.232-H.285</b>	<b>ROYAL SOCIETY</b>	<b>1964-1998</b>
	<p>Fowler was elected to the Fellowship of the Royal Society in 1964. He was a Royal Society Research Professor at Bristol from 1964 to 1988. Fowler served on the Royal Society International Relations Committee, the British National Committee for Physics, the British National Committee for Solar-Terrestrial Physics and was the Royal Society liaison for the International Foundation for High Altitude Research Observatories at Jungfraujoch and Gornergrat in Switzerland.</p>	
<b>H.232-H.246</b>	<b>General file</b>	<b>1964-1995</b>
H.232-H.242	<p>Correspondence.</p> <p>Correspondence <i>re</i> Fowler's Royal Society Research Professorship, research, annual progress reports, finance and expenses, publications, visits abroad for conference or balloon flight expeditions, lectures, the Scientific Research in Schools Committee, the Swiss High Altitude Observatories and the International Union of Pure and Applied Physics.</p> <p>11 folders.</p>	1964-1992
H.243, H.244	<p>Royal Society circulars.</p> <p>2 folders.</p>	1964-1995
H.245	<p>Fowler's reports to the Royal Society as a Research Professor.</p>	1968, 1969, N.d
H.246	<p>'Expenditure in connection with Royal Society Grant.'</p>	1966-1968, 1988

**Societies and organisations**

<b>H.247, H.248</b>	<b>British National Committee for Physics</b>	<b>1972, 1987</b>
	Minutes and agenda of meetings.  2 folders.	
<b>H.249-H.252</b>	<b>British National Committee for Solar-Terrestrial Physics</b>	<b>1968-1973</b>
	Fowler served as a representative of the British National Committee for Physics.  4 folders.	
<b>H.249</b>	Correspondence <i>re</i> Fowler's appointment and arrangements for meetings. Also includes the first circular.	<b>1968-1973</b>
<b>H.250, H.251</b>	Minutes.  2 folders.	<b>1968, 1971</b>
<b>H.252</b>	Miscellaneous.  Includes proposed terms of reference, membership of the Committee for Solar-Terrestrial Physics and list of UK operating stations.	<b>1968, 1970, 1973</b>
<b>H.253</b>	<b>British National Committee on Space Research</b>  This folder relates to the 24th COSPAR Plenary Meeting and Symposia held in Ottawa, Canada, 16 May-2 June 1982. There is a list of contributed and invited papers and report of the proceedings.	<b>1982</b>
<b>H.254</b>	<b>Royal Society Club</b>  Correspondence <i>re</i> meeting and dinner arrangements. Also includes draft notes for speech by Fowler in honour of R.V. Jones.	<b>1984-1994</b>

**Societies and organisations**

<b>H.255-H.268</b>	<b>International Relations Committee</b>	<b>1989-1994</b>
	<p>The International Relations Committee was created in 1990 to replace various British National Committees. Fowler represented the International Union of Pure and Applied Physics (IUPAP) on the Committee.</p>	
H.255	Correspondence <i>re</i> meetings, the Royal Society's committee reorganisation and the establishment of the International Relations Committee.	1989-1994
H.256-H.268	<p>Agenda, minutes and reports.</p> <p>Also includes correspondence and various documents relating to the committee's responsibilities, by-laws, relationship with other organisations, meetings and conferences.</p> <p>13 folders.</p>	1990-1993
<b>H.269, H.270</b>	<b>UK Membership to CERN Ad Hoc Group</b>	<b>1987</b>
	Letter and copy of the CERN Review Committee Interim Report.	
<b>H.271-H.285</b>	<b>International Foundation High Alpine Research Stations Jungfrauoch and Gornergrat, Switzerland.</b>	<b>1982-1998</b>
	<p>The Royal Society was making a regular financial contribution to the maintenance of the two stations but in 1982 decided to stop the contribution. Fowler was asked to write a report to assess the importance of the Royal Society's financial contribution and eventually payment was resumed.</p>	
H.271-H.274	<p>Correspondence and reports.</p> <p>Includes correspondence prior to Fowler's involvement, sent to him for information.</p> <p>4 folders.</p>	1982-1995

**Societies and organisations**

H.275-H.282	<p>Agenda and minutes.</p> <p>Also includes reports and accounts. Many of the papers are in German.</p> <p>8 folders.</p>	1982-1998
H.283, H.284	<p>'Report on Board Meeting of the Swiss High Altitude Research Stations held at Zermatt, 25-26 October 1989' and 'Report on Board Meeting of the Swiss High Altitude Research Stations, 27-28 October 1989 at Interlaken' by Fowler.</p> <p>Also includes a description of the research stations.</p> <p>2 folders.</p>	1981,1991
H.285	<p>Miscellaneous manuscript notes.</p> <p>The notes were taken during Fowler's visit and board meetings in Switzerland.</p>	1991
H.286-H.324	<p><b>SCIENCE AND ENGINEERING RESEARCH COUNCIL (SERC)</b></p> <p>Fowler was a member of the Haverah Park Project Review Panel and Chairman of the Neutron Beam Review Panel.</p>	1985-1990
H.286	<p><b>Haverah Park Project Review Panel</b></p> <p>Report of a meeting.</p> <p>The Haverah Park extensive air shower project was established in 1960 on the recommendation of the Cosmology Committee of the Department of Science and Industrial Research 'to measure the arrival direction distribution and energy spectrum of cosmic rays above <math>10^{15}</math> eV(..)'</p>	1987

### **Societies and organisations**

<b>H.287-H.324</b>	<b>Neutron Review Panel</b>	<b>1985-1990</b>
H.287-H.290	<p>Correspondence <i>re</i> SERC reviews of neutron facilities in the UK and Europe.</p> <p>Includes a list of publications at the Rutherford Appleton Laboratory.</p> <p>4 folders.</p>	1988-1990
H.291-H.295	<p>Agenda, minutes and memorandum.</p> <p>5 folders.</p>	1985-1990
H.296-H.313	<p>ISIS Project Group</p> <p>ISIS is a Neutron Accelerator at the Rutherford Laboratory that Fowler used for his research on neutrons. This report explored possible expansions of the accelerator to make it a 'fully international facility.' However the project was not accepted.</p> <p>18 folders.</p>	1986
H.314-H.316	<p>'Neutron Scattering Facilities Supported by the Department of Energy.'</p> <p>Copy of the report inscribed 'Report of the Pincus Committee'. It relates to facilities in the United States.</p> <p>3 folders.</p>	1987
H.317	<p>Articles and papers.</p> <p>Also includes a list of publications produced at KENS.</p> <p>KENS was a neutron scattering research facility created in 1980 in Japan.</p>	1986

### **Societies and organisations**

H.318, H.319	<p>Reports on KENS research activities between September 1986 and March 1988.</p> <p>Also includes a copy of 'Kens report -7, 1987/1988.'</p> <p>The reports relates to collaboration in neutron scattering research between the Rutherford Appleton Laboratory and KEK, the National Laboratory for High Energy Physics in Japan.</p> <p>2 folders.</p>	1988
H.320	<p>'SERC Neutron review ISIS Facility Submission March 1989.'</p>	1989
H.321	<p>Submission by the Neutron Beam Research Committee to the Neutron Review Panel, April 1989.</p>	1989
H.322	<p>'A View from the ILL Presentation to SERC Neutron Review Panel, 15 June 1989'.</p> <p>Institute Laue Langevin (ILL) was the leading European neutron scattering facility at Grenoble, France.</p>	1989
H.323, H.324	<p>'Report of the Neutron Review Panel, March 1990.'</p> <p>2 folders.</p>	1990
H.325-H.341	<p><b>SCIENCE RESEARCH COUNCIL (SRC)</b></p> <p>Fowler was a member of the SRC's Astronomy Policy and Grants Committee Working Group to Review Cosmic Ray Research, the Astronomy, Space and Radio Board and the Space Policy and Grants Committee Astrophysics Working Group.</p>	1967-1988

**Societies and organisations**

H.325	<b>Astronomy Policy and Grants Committee, Working Group to Review Cosmic Ray Research</b>	<b>1969</b>
	Minutes and reports.	
H.326, H.327	<b>Astronomy, Space and Radio Board</b>	<b>1969-1980</b>
	Includes letter <i>re</i> an invitation to serve on the Astronomy, Space and Radio Board and reports and minutes.  Fowler was a member of the Millimetre Telescope Review Panel of the Astronomy, Space and Radio Board.  2 folders.	
H.328-H.333	<b>Space Policy and Grants Committee Astrophysics Working Group</b>	<b>1967-1988</b>
	Also includes a Science Research Council pamphlet entitled 'Selectivity and Concentration in Support of Research.'	
H.328	General correspondence.	<b>1967-1970</b>
	Correspondence <i>re</i> cosmic rays research, invitation to Fowler to serve on a 'small ad hoc panel to consider the most appropriate use of balloons, rockets or satellites for infra-red or ultra-violet astronomy' and financing of space research.	
H.329	Correspondence <i>re</i> grants.	<b>1968-1988</b>
H.330-H.333	Minutes and reports.	<b>1969-1970</b>
	4 folders.	

**Societies and organisations**

H.334	<p>'Space Flight Opportunities for UK Experimenters, April 1970.'</p> <p>Includes correspondence, memorandum and paper.</p>	1970
H.335-H.341	<p>Background material.</p> <p>UK and US space research experiment proposals.</p> <p>7 folders.</p>	1969, N.d.
H.342	<p><b>SCIENCE AND TECHNOLOGY COMMITTEE OF THE HOUSE OF LORDS</b></p> <p>1 letter only.</p>	1987
H.343, H.344	<p><b>TRACK ANALYSIS SYSTEMS, LTD (TASL)</b></p> <p>Fowler was a director of TASL. In 1990 the main activities of the company were the 'development and supply of neutron dosimeters, TASTRAK plastic and radon detectors to local authorities, laboratories and householders.'</p>	1989-1990
H.343	<p>Notices of Annual General Meetings and Accounts.</p>	1989-1990
H.344	<p>Memorandum on marketing opportunities.</p>	1989
H.345, H.346	<p><b>UNIVERSITIES SPACE RESEARCH ASSOCIATION</b></p> <p>This Association was an American body based in Alabama that included research in atmospheric sciences, material processing and astronomy.</p>	1988-1989

### **Societies and organisations**

H.345	Correspondence <i>re</i> Fowler's membership of the Space Station Attached Payloads Peer Review Panel and an invitation to act as a consultant for the Space Station Freedom Attached Payload Proposal Review.	1988
H.346	Miscellaneous documents and guidelines.  Includes photocopy of an agreement for temporary appointment, copy of the guidelines for the review of the Space Station Freedom Attached Payload Proposal and a meeting programme.	1989

<b>SECTION J</b>	<b>CORRESPONDENCE, J.1- J.108</b>	<b>1957-1996</b>
	J.1-J.8      'GENERAL CORRESPONDENCE'	
	J.9-J.108      ALPHABETICAL SEQUENCE	
<b>J.1-J.8</b>	<b>'GENERAL CORRESPONDENCE'</b>	<b>1963-1968</b>
	Contents of Fowler's folder so labelled.	
J.1-J.6	Correspondence <i>re</i> research, technical matters and material, publications, reference for research proposal, conferences and seminars and laboratory job vacancies.  6 folders.	1963-1968
J.7, J.8	Papers found with the correspondence.  Includes technical drawing entitled 'PX 130 K Counter', paper by S.A. Colgate on 'The measurement of cosmic rays of atomic number greater than iron', world weather charts and list of miscellaneous publications.  2 folders.	1963-1968
<b>J.9-J.108</b>	<b>ALPHABETICAL SEQUENCE</b>	<b>1957-1996</b>
J.9	Antoci, S.	1996
J.10	Atiyah, M.F.  Atiyah was the Master of Trinity College Cambridge between 1990 and 1997.	1994
J.11	Atkins, H. L.	1965

**Correspondence**

J.12	Badash, L.	1964
J.13	Barritt, K.D.	1965
J.14	Baschkin, B.B.	1964
J.15	Bhatia, V.S.	1965
J.16	Bristol Aircraft Limited.  Letter to C.F. Powell <i>re</i> request for investigation of the potential danger of cosmic radiation for passengers and crew members in aircraft flying at around 65,000 feet.	1962
J.17	British Technology Group.	1991
J.18	Brown, D.	1963
J.19	Bruce, C.E.R.	1965
J.20	Brush, S. G.	1964
J.21	Burhop, E.H.S.	1965, 1969
J.22	Campbell, D.A.	1965
J.23	Curtis, S.B.	1969
J.24	Daniel. R.R.	1966

**Correspondence**

J.25	Darius, J.	1983
J.26	Duke, P.J.	1982
J.27	EOLAS (The Irish Science and Technology Agency).  Fowler was asked to act as an independent assessor for grant applications.	1990-1991
J.28	Evans, E.	1965
J.29	Fews, P.	1991
J.30	Freier, P.S.  Correspondence <i>re</i> research.	1968
J.31-J.35	Galison, P.L.  Includes copy of Galison's paper 'Image and Logic, the Material Culture of Microphysics', University of Chicago Press.  5 folders.	1996
J.36	Gay, A.	N.d, c. 1990
J.37	Gibson, J.A.B.	1964
J.38	Gillinder, A.D.	1969
J.39	Guggenheim, E.A.	1964

### Correspondence

J.40	Henley, G.	1993
J.41	Higham, N.	1989
J.42	IOP Publishing Ltd.	1989
J.43	Jeffreys, B.	1996
J.44	Jones, R.V.  Jones requested Fowler to recount in writing the 'observation of the time difference on the pulses from the G jammer', a famous incident that occurred in 1945 when Fowler was a radar officer in the R.A.F. As a result of his investigations the German station responsible for the jamming of radar signals was identified and destroyed.	1964, 1992
J.45	Knowles, H.B.	1976
J.46	Koch, L.	1965, 1967
J.47	Lal, D.	1966
J.48	Lally, V.E.  Correspondence <i>re</i> data on the RACOON flight from French Guiana.	1982
J.49	Landbeck, R.	1965
J.50	Lawson, A.	1969

**Correspondence**

J.51	Leeland, J.R.	1964
J.52	Lindhard, J. Correspondence <i>re</i> research.	1969
J.53	Maccabee, H.	1969
J.54	McAulay, I.	1995
J.55	McWhirter, N. Correspondence <i>re</i> Powell's discovery of the pion.	1990
J.56	Maddox, J.R.	1969
J.57	Mashedier, M.R.W.	N.d
J.58	Mason, A.	1964
J.59, J.60	Menon, G. K. Includes April 1985 Newsletter of the Indian Academy of Sciences featuring Menon. 2 folders.	1982-1994
J.61	Merrison, A.W.	1965
J.62	Michaelis, A. R.	1982

### Correspondence

J.63	Mitchell, E.W.J.  Letter from Fowler <i>re</i> research with Rolls Royce.	1985
J.64	Occhialini, G.P.S.	N.d.
J.65	Owen, L.	1973
J.66	Pal, Y.	1973
J.67	Parkinson, D.H.  Correspondence <i>re</i> research.	1969
J.68	Perkins, D.H.  Includes black and white photographs.	N.d.
J.69	Pfotzer, G.	1971
J.70	Pollard, F.H.	1959
J.71	Powell, C.F.  Includes photograph and personal correspondence <i>re</i> Powell's retirement party.	1968, N.d.
J.72	Quayle, J.R.	1990
J.73	Quenby, J.J.	1989, 1990
J.74	Rice, C.G.	1991

### Correspondence

J.75	Rochester, G.D.	1970, 1986
	Includes copy of Rochester's paper 'Cosmic Ray Cloud Chamber Contributions to the Discovery of the Strange Particles in the Decades 1947-1957.'	
J.76	Royal Greenwich Observatory.	c. 1994
	Articles, photocopied photographs, manuscript notes.	
J.77	Rudinger, E.	1982
J.78	Setti, R. Levi-	1968
J.79	Shoenberg, D.	1989
J.80-J.82	Simpson, J.A.	1983
	Includes copy of Simpson's 'Elemental and Isotopic Composition of the Galactic Cosmic Rays.'	
	3 folders.	
J.83	Singhvi, L.M.	1993
J.84	Smith, H.	N.d.
J.85	Spiers, F.W.	1970
	Correspondence <i>re</i> research.	
J.86, J.87	Stern, M.C.	1986-1993
	Correspondence between Fowler and Stern, MP for Bristol North West, <i>re</i> the shortage of science teachers.	
	2 folders.	

**Correspondence**

J.88, J.89	Stewart, P.  2 folders.	1990
J.90	Swordy, S.P.	1990-1992
J.91	Tamm, I.  Correspondence <i>re</i> pi-mesons.	1965
J.92	Ter Haar, D.	1964
J.93	<i>The Times</i>  Comments on weather forecasts.	1994
J.94	Ubertini, P.	1982
J.95	University of Melbourne  Correspondence <i>re</i> 'balloon base reactivation' in Australia.	1982
J.96, J.97	University of Minnesota  Correspondence <i>re</i> research (exposure of emulsion) and Fowler's possible move to the University of Minnesota. Also includes a copy of P.S. Freier, E.P. Ney and J.R. Winckler's paper 'Balloon Observations of Solar Cosmic Rays on March 26 1958' and newspaper cuttings.  2 folders.	1958-1959
J.98	University of Washington  Correspondence <i>re</i> research.	1966

**Correspondence**

J.99	Waddington, C.J.	1982
J.100	Waldegrave, W.A.  Correspondence <i>re</i> the relocation of the Royal Greenwich Observatory.  Waldegrave was MP for Bristol West.	1986
J.101	Walford, [?]	1996
J.102	Waller, C.	1957
J.103	Ward, F.A.B.  Correspondence <i>re</i> research.	1966
J.104	Welford, W.	1989
J.105	Whitaker, [?]  Correspondence <i>re</i> July 1968 flooding in the south west of England.	1968
J.106	Whites, R.	1964
J.107	Wideroe, R.  Correspondence <i>re</i> research.	1965
J.108	Wolfendale, A.W.  Correspondence <i>re</i> research.	1996

## INDEX OF CORRESPONDENTS

ANTOCI, S.	J.9
ATYIAH, Sir Michael Francis	H.190, J.10
ATKINS, H.L.	J.11
BADASH, L.	J.12
BARRITT, K.D.	J.13
BASCHKIN, B.B.	J.14
BHATIA, V.S.	J.15
BLACKETT, Patrick Maynard Stuart, Baron Blackett of Chelsea	A.16-A.18
BØGGILD, J.K.	B.141
BOYD, Sir Robert Lewis Fullarton	H.328
BRAGG, Sir William Lawrence	A.18
BRISTOL AIRCRAFT LTD	J.16
BRITISH AEROSPACE LTD	H.1
BRITISH TECHNOLOGY GROUP	J.17
BROWN, D.	J.18
BRUCE, C.E.R.	J.19
BRUSH, Stephen G.	J.20
BURHOP, Eric Henry Stonely	A.22, B.144, H.237, H.238, J.1, J.2, J.21, J.23
BUTLER, Sir Clifford Charles	A.18
CAMPBELL, D.A.	J.22
CHADWICK, Sir James	A.18
COCKCROFT, Sir John Douglas	A.18, J.3
CURTIS, S.B.	J.23

# Index of correspondents

DANIEL, Roy R.	C.9-C.14, C.26, J.1, J.24
DARIUS, J.	J.25
DAVIES, John H.	B.144, B.149, B.152, C.10-C.14, C.26, C.39, J.39
DEBRUNNER, Herman	H.271-H.274
DUKE, Philip John	J.26
EOLAS, THE IRISH SCIENCE AND TECHNOLOGY AGENCY	J.27
EVANS, E.	J.28
FEWS, P.	J.29
FOWLER, J.F	D.5-D.8
FOWLER (née Brown), Rosemary Hempson	A.88
FRANK, Sir Frederick Charles	A.17, B.142, B.143
FREIER, P.S.	J.30
FRIEDLANDER, M.W.	C.36-C.38, C.50, D.25
GALISON, Peter L.	J.31-J.35
GAY, A.	J.36
GIBSON, J.A.B.	J.37
GILLINDER, A.D.	J.38
GREAT BRITAIN AND NORTHERN IRELAND	J.39
HOUSE OF LORDS SCIENCE AND TECHNOLOGY COMMITTEE	H.342
GUGGENHEIM, Edward Armand	J.39
HAAR, Dirk TER	J.92

**Index of correspondents**

HAGGE, Donald, E.	C.23, C.35-C.40, C.50
HEITLER, Hans	C.9-C.13
HENLEY, G.	J.40
HERSCHEL HOUSE TRUST, BATH	H.2-H.45
HIGHAM, Norman	J.41
INSTITUTE OF PHYSICS	H.63-H.68
IOP PUBLISHING LTD	J.42
INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS (ICSU)	H.46-H.62
INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS (IUPAP)	H.69-H.77
JAWAHARLAL NEHRU MEMORIAL TRUST	H.174-H.207
JEFFREYS, Bertha, Lady	J.43
JOINT MEDICAL RESEARCH COUNCIL/ NATIONAL RADIOLOGICAL PROTECTION BOARD COMMITTEE ON RADIOLOGICAL PROTECTION	H.78-H.89
JONES, Reginald Victor	J.42
KING'S SCHOOL, BRUTON	H.90-H.164
KNOWLES, H.B.	J.45
KOCH, L.	J.46
LAL, D.	J.47
LALLY, Victor Edward	J.48
LANDBECK, R.	J.49
LAWSON, A.	J.50
LEELAND, J.R.	J.51
LEVI-SETTI, Ricardo	See SETTI, Ricardo

# Index of correspondents

	LEVI-
LINDHARD, J.	J.52
McAULAY, I.	J.54
McCREA, Sir William Hunter	H.166
McWHIRTER, Norris Dewar	J.55
MACCABEE, H.	J.53
MADDOX, Sir John Royden	J.56
MANNING, Geoffrey	D.7
MASHEDER, Michael R.W.	J.57
MASON, A.	J.58
MENON, Mambillikalathil Govind Kumar, ('Goku')	C.11, C.12, J.59, J.60
MERRISON, Sir Alec (Alexander Walter)	J.61
METEOROLOGICAL COMMITTEE, METEOROLOGICAL OFFICE	H.166-H.173
MICHAELIS, Anthony R.	J.62
MITCHELL, Sir Edgar William John	J.63
MOTT, Sir Nevill Francis	A.17, A.18, A.22
NEY, Edward Purdy	G.1, G.3, J.96
NEHRU MEMORIAL TRUST	See JAWAHARLAL NEHRU MEMORIAL TRUST
OCCHIALINI, Giuseppe Paolo Stanislao, ('Beppo')	J.64
O'CEALLAIGH, Cormac	C.51, J.5, D.25
OWEN, L.	J.65
PAL, Y.	J.66
PARKINSON, D.H.	J.67

### Index of correspondents

PERKINS, Donald Hill	C.1, J.1, J.3, J.68
PFOTZER, G.	J.69
PINKAU, Klaus	F.33, H.328
POLLARD, Frederick Henry	J.70
POWELL, Cecil Frank	A.16, B.15, B.139, B.141- B.144, B.148, B.154, C.1-C.3, C.11, C.20, C.28, C.33, F.10, H.235, J.3, J.16, J.71 See also A.89-A.92
POWELL, Isobel	B.148
PRICE, Buford P.	C.39-C.40, C.49-C.51, D.25
PRICE, J.H.	H.329
PRYCE, Maurice Henry Lecorney	A.17, B.139, B.154
QUAYLE, John Rodney	J.72
QUENBY, John James	J.73
RICE, C.G.	J.74
ROCHESTER, George Dixon	A.18, H.238, J.4, J.75
ROLLS-ROYCE, PLC	H.208-H.222
ROMSEY, Norton Louis Philip, Baron	H.177, H.180, H.188, H.202, H.203, H.205, H.207
ROTLAT, Sir Joseph	D.5
ROYAL ASTRONOMICAL SOCIETY	H.223-H.231
ROYAL GREENWICH OBSERVATORY	J.76
ROYAL SOCIETY	H.232-H.285
RUDINGER, E.	J.77

**Index of correspondents**

SCHEIN, Marcel	J.97
SCIENCE AND ENGINEERING RESEARCH COUNCIL (SERC)	H.286-H.324
SCIENCE RESEARCH COUNCIL (SRC)	H.325-H.341
SETTI, Ricardo LEVI-	J.50, J.78, J.96
SHOENBERG, David	J.79
SIMPSON, J.A.	J.80-J.82
SINGHVI, L.M.	J.83
SMITH, H.	J.84
SPIERS, Frederick William	J.85
STERN, Michael Stern	J.86, J.87
STEWART, P.	J.88, J.89
WORDY, S.P.	J.90
TAMM, I.	J.91
<i>THE TIMES</i>	J.93
TRACK ANALYSIS SYSTEM, LTD (TASL)	H.343, H.344
UBERTINI, P.	J.94
UNIVERSITIES SPACE RESEARCH ASSOCIATION	H.345, H.346
UNIVERSITY OF MELBOURNE	J.95
UNIVERSITY OF MINNESOTA	G.1-G.5, J.96, J.97
UNIVERSITY OF WASHINGTON, SEATTLE	J.98
WADDINGTON, C. Jake	C.1-C.3, C.23-C.25, J.99
WALDEGRAVE, William Arthur, Baron Waldegrave of North Hill	J.100
WALFORD, [?]	J.101
WALLER, C.	J.102

**Index of correspondents**

WARD, Francis Alan Burnett	J.103
WARREN, J.C.	C.23-C.26, C.28-C.30, C.35, C.37, C.38
WELFORD, W.	J.104
WHITAKER, [?]	J.105
WHITES, R.	J.106
WIDEROE, Rolf	J.107
WILSON, J.G	J.2
WOLFENDALE, Sir Arnold Whittaker	J.108