

Catalogue of the papers and correspondence of

HERBERT MARCUS POWELL FRS

(1906-1991)

Compiled by Peter Harper, Jeannine Alton and Timothy E. Powell

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GENERAL INTRODUCTION

The papers were received in 1992 from Mrs Primrose Powell, widow, through the good offices of Dr C.K. Prout, Chemical Crystallography Laboratory, Oxford.

OUTLINE OF THE CAREER OF HERBERT MARCUS POWELL

Herbert Marcus ('Tiny') Powell was born in 1906. He was educated at Henry VIII School, Coventry, and won a scholarship to St John's College, Oxford where he took a first in Chemistry in 1928. Powell made his whole career at Oxford University where he pioneered x-ray crystallography. Dorothy Hodgkin (Nobel Laureate Chemistry 1964) was his first research student. He went on to become first University Demonstrator and then in 1944 Reader in Chemical Crystallography and Head of the Chemical Crystallography Laboratory, before being given a Personal Chair in 1963. Powell became a Professorial Fellow of Hertford College, Oxford in 1963. He retired from his Chair in 1974.

Powell's research field was the determination of crystal structures by x-ray diffraction methods, especially structures with applications to chemical problems, such as the stereochemistry of the elements, metal-metal bonding, the nature of intermolecular compounds and some aspects of optical activity. He also originated and named a new class of molecular compounds (clathrates) in which one atom or molecule is enclosed in a cage formed by others. Hence he was able to prepare stable molecular compounds of inert gas elements and devise the method of separating mirror image molecules by trapping them in left or right handed molecular cavities.

Powell was an excellent linguist with particular accomplishments in Russian and Chinese. In 1960 he published a paper on how to read Japanese chemical papers without having to learn the language, which aroused great interest amongst Western chemists. He also addressed questions of language representation, seeking to represent linguistic communication by a system of visual symbols. Amongst Powell's interests was writing short stories and other fiction.

Powell's scientific achievements were recognised by his election to the Fellowship of the Royal Society in 1953. He died in 1991.

DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the list of contents.

Section A, Biographical, includes obituaries, curricula vitae and Powell's autobiographical drafts principally relating to his family background and school and university education. Also included here are examples of his short stories and other fiction.

Section B, Oxford, documents Powell's own education at Oxford University, the Laboratory of Chemical Crystallography, which Powell headed from 1944, and his university teaching. There are Powell's undergraduate notebooks and his notes on the lectures of F. Soddy, C.N. Hinshelwood, J.W.J. Taylor and D.L. Chapman, 1925, 1926. Chemical Crystallography material is not extensive but includes a small number of papers from or relating to Dorothy Hodgkin and Powell's historical notes on the development of chemical crystallography at Oxford. Powell's lecture notes were found in considerable disorder but cover an extended period from 1928 and such topics as crystal chemistry and molecular compounds.

Section C, Research, is of interest for its presentation of laboratory notebooks covering the early part of Powell's research career from 1928 to about 1940. Included here is a notebook with lecture notes made during a visit by Powell to the Mineralogy Institute of the University of Leipzig in 1930. There are also later notes and drafts of 1950s work on inert gases, tri-o-thymotide etc.

Section D, Lectures, publications, film, is the largest in the collection. It includes drafts of some of Powell's invitation and publication lectures 1953-1968 and of his scientific papers 1942-1966. Included here are drafts and correspondence relating to his 1960 paper on Japanese chemical writing and his 1966 spoof paper on colour in chemistry. There are also biographical accounts of colleagues in crystallography and chemistry including early recollections of Dorothy Hodgkin at Oxford and drafts for texts by Powell of a general or popular scientific nature. A film on crystal structure made by the Imperial Chemical Industries (ICI) Film Unit in collaboration with Powell is documented by scripts, drafts and correspondence.

Section E, Visits and conferences, covers the period 1948-1974. Particularly well documented is his 1962 visit to China as a member of a Royal Society delegation to the Academia Sinica, Peking. There are also papers relating to visits to Roumania in 1964 and Russia in 1966 and 1969. Also included is a little documentation relating to Powell's retirement symposium held in Oxford in 1974.

Section F, Language, documents Powell's linguistic interests. His work on language representation is particularly well documented by notes and drafts. There are also drafts for a course on learning Russian prepared with the scientific student in mind.

Section G, Scientific correspondence, is not extensive. There is an alphabetical sequence of principal correspondents including scientific colleagues such as W. Baker, F.G. Mann and R.S. Nyholm and industrial concerns interested in the applications of Powell's work such as the British Oxygen Company, Imperial Chemical Industries and Johnson, Matthey & Company. Correspondence with the Ministry of Supply relates to research during the Second World War. There is a chronological sequence of shorter correspondence, 1935-1979.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

Professor Roy Harris was consulted on the language representation manuscripts in section F.

P. Harper
J.B. Alton
T.E. Powell
BATH 1995

SECTION A

BIOGRAPHICAL

A.1-A.20

A.1

Obituary, *Guardian*, 16 March 1991.

'Appreciation' by Dorothy Hodgkin, *Guardian*, 18 March 1991.

Obituary, *Daily Telegraph*, 25 March 1991.

Order for Funeral Service, Hertford College Chapel, Oxford, 19 March 1991.

A.2

Curriculum vitae, 1964.

Entries for biographical directories.

Press-cutting from *The Times* in which Powell gave his opinion on the first analysis of moon rock.

Drafts for Powell's after-dinner talk at his retirement symposium, 1974. See also E.36.

A.3-A.5

Autobiographical sketch presenting account of family background, schooling and undergraduate career at St John's College, Oxford. 3 folders.

A.6

Miscellaneous biographical items found with autobiographical sketch. Includes curriculum vitae.

A.7-A.20

Stories.

Powell wrote stories in his spare time and on at least one occasion offered some of them for publication.

In 1958 Powell declined an invitation from publishers Oliver & Boyd to write 'scientific textbooks and the like' offering other material instead: 'Some things can be written much more quickly and there is often the hour between Oxford and Paddington. So I have frequently thought of my fellow travellers; how I might make them laugh, or shudder rarely, instruct them sometimes and keep them wonderingly happy'. Oliver & Boyd explained that stories had never formed part of their list and suggested where they might more appropriately be placed.

A.7

Correspondence with Oliver & Boyd 1958.

Biographical

- A.8 'Amphigouri or January Black Melon'.
43pp typescript with manuscript additions and corrections. Nd.
- A.9 'Boustrophedon or the Zempokni'.
66pp typescript. Nd.
- A.10 'For those over Forty Five'.
6pp typescript. Nd.
- 'Thirteen'.
1p typescript found with preceding.
- A.11 'The Return'.
14pp typescript. Nd.
- A.12 'A triumph of evil'.
35pp typescript and manuscript draft.
- A.13 'Triumph of evil MS'.
Contents of envelope so inscribed: manuscript and typescript notes and drafts.
- A.14 'M.S. Witch'.
Contents of envelope so inscribed: manuscript draft and notes.
- A.15 'Witch MS'.
Contents of envelope so inscribed: manuscript and typescript drafts.

Biographical

- A.16-A.20 'Stories'.
 Contents of envelope so inscribed.
- A.16 'Just for fun, supposed tale in the future, one of the products of being
 bashed on the head'.
 Typescript paginated 161-182.
- A.17 'Conversation How we came to talk about the State'.
 Typescript paginated 201-[211].
- A.18 'Nobby the Fraud'.
 Typescript paginated 249-275.
- A.19 Untitled.
 Typescript paginated 28-34.
- A.20 Untitled.
 Typescript paginated 131-154.

SECTION B

OXFORD

B.1-B.37

B.1-B.19	OWN EDUCATION
B.20-B.24	CHEMICAL CRYSTALLOGRAPHY LABORATORY
B.25-B.33	UNIVERSITY TEACHING
B.34-B.37	PHOTOGRAPHS

OWN EDUCATION

B.1	Notebook inscribed 'Manipulation of gases' on front cover and 'H.M. Powell St. John's College Oxford' inside front cover. 1924 or later.
B.2	Notebook inscribed inside front cover 'H.M. Powell St John's Coll. Oxford' and 'Practical Crystallography'. 1925.
B.3	Notebook inscribed inside front cover 'H.M. Powell St John's Coll. Oxford'. Used for notes on colloids, production of sols, etc. Nd.
B.4	Notes of lectures on physical chemistry by F. Soddy. Trinity term 1925.
B.5, B.6	Notes of lectures on thermodynamics by C.N. Hinshelwood. Michaelmas term 1925 and Hilary term 1926. 2 folders.
B.7	Notes of lectures on 'Chemical Statics and Dynamics' by C.N. Hinshelwood. Nd.
B.8, B.9	Notes of lectures on organic chemistry of nitrogen by J.W.J. Taylor. Hilary term 1926. 2 folders.

Oxford

- B.10-B.12 'Lect. Notes Kinetic Theory Chapman'. Contents of folder so inscribed divided into three for ease of reference. Notes of lectures by D.L. Chapman. Trinity term 1926.
- B.13-B.18 Contents of Powell's untitled folder divided into six for ease of reference: draft answers to questions from chemistry papers. 1923-1926.
- B.19 Thesis submitted for B.Sc. degree on 'The allotropy of lead monoxide'. Nd.

CHEMICAL CRYSTALLOGRAPHY LABORATORY

- B.20 Chemical Crystallography needs, 1944.

Carbon of letter from C.N. Hinshelwood to Registrar, Oxford University, enclosing memorandum from the two senior members of the Department of Chemical Crystallography, Powell and Dorothy Hodgkin. Only partial drafts of the memorandum were found with the carbon.
- B.21 'Memorandum on the Birkbeck Apparatus', 31 May 1945. 2pp manuscript by Dorothy Hodgkin *re* x-ray apparatus transferred from Birkbeck College London to Oxford at the outbreak of the Second World War.

Letter from Dorothy Hodgkin to Powell *re* arrangements for departmental teas, 26 May 1957.
- B.22 Accommodation, 1963-1964, 1966 and nd.
- B.23 Miscellaneous, 1960-1974.
- B.24 Notes by Powell on the development of Chemical Crystallography at Oxford. Nd.

Oxford

UNIVERSITY TEACHING

- B.25 'Molec. cpds lectures'. Contents of folder so inscribed: variously paginated and unpaginated manuscript and typescript drafts.
- Includes 1p manuscript 'Crystallography: Elementary Practical', dated 1 November 1928 and typescript sequence dated 27 October 1955.
- B.26-B.29 Contents of Powell's untitled folder divided into four for ease of reference: variously paginated and unpaginated manuscript and typescript notes and drafts for lectures.
- 1p manuscript dated 1942 but probably includes earlier material.
- B.30 'Introduction to Crystal Chem.'. Contents of folder so inscribed: variously paginated and unpaginated manuscript and typescript notes and drafts for lectures.
- Includes manuscript notes dated 1942.
- B.31 Contents of Powell's untitled folder. Principally draft of introductory lecture on crystallography. Nd.
- B.32 'Lecture XI. Determination of a structure'. 6pp manuscript, nd.
- B.33 Duplicated teaching material. Nd.

Oxford

PHOTOGRAPHS

The descriptive titles are taken from the envelopes in which the photographs were found.

- B.34 'Photographs and records of the gas explosion at the Old Chemistry Department on Saturday, June 3, 1893.'
- B.35 'Inorganic Chemistry Department photographs of reconstruction of the front to Parks Road, 1952-53'.
- B.36 'Museum House before and during demolition, 1954.'
- B.37 'Photographs of the Scaffolding in the Court.' Nd.

SECTION C RESEARCH C.1-C.21

C.1-C.8	NOTEBOOKS
C.9-C.20	NOTES, CALCULATIONS AND DRAFTS
C.21	EQUIPMENT

NOTEBOOKS

- C.1 Hard-backed laboratory notebook of miscellaneous notes and calculations on crystallographic experiments, some bearing dates between 8 February and 5 June 1928.
- Unused pages were subsequently used for later notes and ideas for work on visual language representation (F.1-F.14). In particular, the rear of the book contains an attempt at a pictographic lexicon of words in English beginning with 'A'. Pages numbered 1-49.
- C.2 Laboratory notebook inscribed inside front cover 'H.M. Powell Univ. Museum Oxford'. Used for miscellaneous notes and calculations 1929-1930. Loose papers enclosed.
- Powell seems to have reviewed the notebook at a later date and one additional comment is dated in 1939.
- C.3 Laboratory notebook labelled inside front cover 'H.M. Powell Department of Mineralogy, University Museum Oxford'. Used for notes and calculations on crystallographic experiments beginning with sequence of typescript notes pasted into notebook on 'investigation of tetramethyl ferrocyanide September 7 - 22 October [?1932]' and paginated 1-19. Subsequent manuscript notes are headed 'Research notes 1933' beginning with further work on tetramethyl ferrocyanide. Loose papers enclosed.
- C.4 Hard-backed laboratory notebook inscribed inside front cover 'H.M. Powell University Museum Oxford' and 'Notes on resetting of Xtals according to T.V.B[arker] System'. Used from the front and the back for notes and calculations on crystallographic experiments, nd. Many pages unused.

Research

- C.5 Hard-backed 'Day Book' used for calculations on crystallographic experiments. Many loose papers enclosed including papers dated 1938 and 1940.
- C.6 Soft-backed notebook inscribed inside front cover 'H.M. Powell Mineralogisches Inst. d. Universität Leipzig'. Used for notes in German on lectures on physical chemistry and mineralogy. The first lecture is dated 7 May 1930.
- C.7 Soft-backed notebook inscribed on front page 'H.M. Powell University Museum Oxford'. Used for notes on the literature, draft on atomic theory etc, nd.
- C.8 Notebook without covers. Used from one end by Powell for notes on the literature etc (latest bibliographical reference 1936) and from the other for student classwork in another hand.

NOTES, CALCULATIONS AND DRAFTS

- C.9 Manuscript notes, calculations etc *re* x-ray analysis of crystals of potassium uranyl sulphate, nd (bibliographical reference 1937).
- C.10 Fourier analyses etc, nd. Found in envelope postmarked 1939.
- C.11 Manuscript and typescript notes *re* inert gases experiments. Includes 'Krypton xenon experiment ending July 5 1950'.
- C.12, C.13 'T.O.T. [Tri-o-thymotide] Analyses'. Contents of folder so inscribed divided into two for ease of reference: analytical results 1952-1957.
- C.14 'T.OT. Adducts Film Measurements'. Contents of envelope so inscribed. Includes paper dated 14 May 1957.

Research

- C.15 Notes, calculations *re* work on tri-o-thymotide. Includes calculations dated 12 and 14 April 1957.
- C.16 Similar to preceding. Includes calculations dated in March, April 1957, January 1958.
- C.17 Similar to preceding, nd.
- C.18 Notes and correspondence *re* optical activity, 1953-1959.
- C.19 Miscellaneous notes and papers *re* clathrates etc, 1952-1959.
- C.20 Manuscript draft on the structure of methylammonium ferrocyanide, nd.

EQUIPMENT

- C.21 'Instructions for use of Dr Muller's X-ray goniometer spectrograph E.336 and Shearer X-ray tube F.245'. Contents of envelope so inscribed: blueprint, printed and typescript material. Includes papers dated 1927 and 1928.

SECTION D

LECTURES, PUBLICATIONS, FILM

D.1-D.60

D.1-D.21

LECTURES

D.22-D.55

PUBLICATIONS

D.56-D.60

FILM

LECTURES

D.1

'Iron pronunciation'.

Typescript draft with manuscript additions and corrections. Nd but includes pages typed on back of carbon copies of correspondence dated 22 and 23 July 1953.

D.2

'Atoms in cages', Science Masters' Association, Clarendon Laboratory Oxford, 1 January 1954.

Typescript draft with manuscript additions and corrections; letter *re* arrangements.

D.3

'Sorting molecules by shape and size', British Association, 5 September 1955.

Typescript draft dated '24.II.55'; ?related drafts dated in March and April 1955 and nd; duplicated circular *re* publication of British Association proceedings; typescript summary 'Sorting molecules' of British Association Section B Chemistry, 5 September 1955.

D.4

Untitled lecture delivered at Solvay conference, ?9 March 1956.

58pp typescript 'Complete Solvay manuscript April, 1956'. Probably the version prepared for publication after the delivery of the lecture.

Lectures, publications, film

- D.5 'Unusual types of co-ordination compound'
Typescript draft, nd (latest bibliographical reference 1957); two annotated duplicated typescripts.
- D.6 Lecture on how molecules fit together, British Association, 23 September 1958.
Typescript drafts.
- D.7 Miscellaneous and typescript notes and drafts.
Contents of Powell's untitled folder.
Includes British Association lecture (see D.6) and 'Leeds Jan 13/59 Organic Crystal Chemistry'.
- D.8 'Hole and Corner Chemistry', Annual Meeting Society of Chemical Industry, Oxford, 14 July 1961.
Manuscript and typescript notes and drafts; brief correspondence.
- D.9-D.11 '5 co-ordination and other matters' and 'University College 31st January 1967'.
Contents of Powell's folder so inscribed divided into three for ease of reference.
Manuscript and typescript notes and drafts including 'Pentaco-ordination and some recent work on the stereochemistry of transition metals' and 'New methods for the resolution of optically active substances'.
Letter from UCL Chemical & Physical Society, 18 January 1965 (D.11) identifies the topic of Powell's lecture as 'New types of crystalline molecular compounds'.
- D.12 Oxford and Cambridge Chemists Dinner, Emmanuel College, Cambridge, 4 May 1968.
Manuscript and typescript notes for Powell's talk; menu card.

Lectures, publications, film

- D.13 'Inert gases'.
Typescript drafts, nd. One of the drafts is headed 'Leicester'.
- D.13A 'Inert gases cpds lecture'.
Contents of folder so inscribed: manuscript and typescript drafts, nd.
- D.14 Lecture on clathrates.
Manuscript drafts, nd.
- D.15 Lecture on clathrates.
20pp typescript draft, nd.
- D.16 'Lecture Disorders observed in structures of crystalline molecular
compounds.'
Contents of envelope so inscribed: manuscript and typescript notes and
drafts. Nd.
Includes manuscript draft in French.
- D.17 Manuscript draft paginated 1-24 (pages torn from notebook), nd.
Draft begins 'I shall speak about crystalline molecular compounds'.
- D.18 'Order Order Lecture'.
Contents of envelope so inscribed: manuscript and typescript drafts, nd.
- D.19 Talk on Powell's article in which 'those who study Chemistry were shown
how they might read the subject in languages that they did not understand'.
Manuscript draft, nd but see also D.27-D.30.

Lectures, publications, film

D.19A 'Optical activities'

Contents of folder so inscribed: includes notes on lecture demonstrations on optical properties of crystals, notes headed 'introduction to crystal chemistry', and untitled typescript draft of lecture, nd.

D.20, D.21 Invitations to lecture, 1949-1969.

D.20 1949-1959.

D.21 1961-1969.

PUBLICATIONS

D.22-D.39	Scientific papers
D.40-D.44	Scientific biography
D.45-D.54	General and miscellaneous
D.55	Correspondence

Scientific papers

D.22 'A method for determining the crystal structures of compounds containing very large numbers of atoms'.

13 typescript draft 'received 3 October 1942', figures.

Folder also includes typescript draft 'A shortened approximate calculation of structure factors' found with the preceding.

D.23 'The crystal structure of dibenzylsulphidebromogold'.

Typescript drafts; correspondence 1956-1957.

Lectures, publications, film

- D.24 'Paper with Wetters'.
Contents of folder so inscribed: typescript drafts on 'forms of molecules in the inclusion compounds of tri-o-thymotide', 'molecular shape and molecular inclusion', etc, 1957, 1958.
- D.25 'Crystal structure of a hydrated nickel cyanide ammoniate'.
Correspondence only, 1958.
- D.26 'Some new chemistry in space'.
Copy of article submitted to 'Times Science Review', 25 April 1958; correspondence, April, May 1958.
- D.27-D.30 'Japanese chemical writing - read it yourself', *Proceedings of the Chemical Society*, April 1960.
- D.27 Typescript drafts; reprint.
- D.28-D.30 Correspondence with Chemical Society *re* publication; correspondence arising; requests for reprints. 1959-1963. 3 folders.
- D.31, D.32 'Stereochemistry of a 5-co-ordinated nickel compound'.
Manuscript and typescript notes and drafts, reprints by others, correspondence. 1960, 1961. 2 folders.
- D.33 'Clathrates and anaesthesia'
6pp typescript, nd (latest bibliographical reference 1961).
- D.34 Drafts of note by Powell on Chinese synthesis of crystalline insulin, reprint from Chinese publication, letter. 1966.

Lectures, publications, film

- D.35-D.37 'Colour in chemistry', *Chemistry in Britain*, December 1966.
This spoof paper was published under the names A.H. Oakes, H.A. Dubois, Isa Beinzieher and Owa Tatodo.
- D.35 Reprint of 'Colour in chemistry', related printed and duplicated material.
- D.36 Manuscript and typescript notes.
- D.37 Correspondence with *Chemistry in Britain* re publication, requests for reprints.
- D.38 'Exhibition collection reprints'.
Contents of envelope so inscribed: 2pp typescript note headed 'H.M. Powell Some applications of X-ray diffraction to chemical problems' introductory exhibits and a selection of thirteen reprints by Powell covering period 1935-1961 annotated in connection with the exhibition.
- D.39 Draft of Powell's contribution on Crystallography to Cambridge *Encyclopaedia of the Soviet Union*, 1980.

Encyclopaedia-style note on Clathrate compounds, nd.

Scientific biography

- D.40 W.H. Bragg, O. Diels and H.G.J. Moseley.

Drafts of contributions to *McGraw-Hill Encyclopedia of World Biography*; correspondence 1969-1970.
- D.41 W.H. Bragg and M.v. Laue.

Drafts of contributions to *A Biographical Dictionary of Scientists*; correspondence 1967.

Lectures, publications, film

- D.42 D.LI. Hammick.
Drafts of obituary notice or memoir, 1966 or later.
- D.43 D.M.C. Hodgkin.
Early recollections of Dorothy Hodgkin at Oxford, nd but found in envelope with 1979 postmark.
- D.44 M.v. Laue.
Article for *Encyclopedia Americana*; correspondence 1971

General and miscellaneous

- D.45, D.46 'Ms the Calculus'
Contents of envelope so inscribed: typescript drafts 1954, 1955. 2 folders.
- D.47-D.51 Draft sections for unidentified scientific publication.
The sections are identified by letters of the alphabet dated in April and May 1955 but are generally untitled. Exceptions include Section E 'The Chemical Argument' and Section Q 'Height of a pile of pennies'.
- D.47 Sections A, B.
- D.48 Sections C, D, E.
- D.49 Sections M, N.
- D.50 Section Q.
- D.51 Sections S, T, X, Z.

Lectures, publications, film

D.52 Manuscript and typescript notes for ?popular book on chemistry, nd.
Includes note headed 'All your chem.'

D.53 'Solid World Carbons'.
Contents of folder so inscribed: manuscript and typescript drafts.

D.54 Draft introduction to book on crystals for the general reader, nd.

Correspondence

D.55 Miscellaneous shorter correspondence *re* publications 1950-1979.
Includes referee's reports.

Film

D.56-D.60 'Crystal structure'
Film made by the ICI Film Unit in collaboration with Powell.

D.56 'Shooting script' dated 18 August 1964. Retained in original folder.

D.57 'Shooting script' with manuscript additions and corrections dated 8 July 1964. Retained in original folder.

D.58 'Crystallography - draft shooting script' dated 16 December 1963.

D.59 Correspondence, 1963-1964. Enclosures include annotated 'draft shooting script' and 'copy of the commentary'.

Lectures, publications, film

D.60

'Film'

Contents of folder so inscribed: drafts 'The topaz outline explained' and 'Notes on the film "crystal structure" '; letter dated 9 April 1965.

SECTION E

VISITS AND CONFERENCES

E.1-E.38

- E.1 First General Assembly of the International Union of Crystallography, Harvard, Massachusetts, 28 July - 3 August 1948.
- Letter from Royal Society *re* Powell's nomination as British delegate.
- Visit to Holland, 27 October - 5 November 1949.
- 'Revised itinerary for Dr H.M. Powell in Holland'; letter *re* arrangements.
- E.2 Convegno internazionale sulla chimica dei composti di coordinazione, Rome, 1958.
- Powell gave the introductory lecture on 'Unusual types of co-ordination compounds'.
- Photograph of Powell lecturing; reprint of Powell's lecture.
- International Conference on Scientific Information in the Field of Crystallography and Solid State Physics, Nishinoya near Osaka, Japan, 3-4 October 1961.
- Invitation; letter from Powell to the effect that his acceptance depended on the result of enquiries *re* financial support for his journey to Japan.
- E.3-E.14 Visit to China, 22 September - 7 October 1962.
- Powell was a member of the Royal Society delegation to the Academia Sinica, Peking.
- E.3 Correspondence *re* arrangements; correspondence and papers arising.
- E.4 Programme for the Royal Society delegation. Chinese and English language versions.
- E.5 Miscellaneous travel papers.

Visits and conferences

- E.6 Notebook used for notes on scientific institutions visited by Powell: Institute of Experimental Biology, Academia Sinica; Institute of Chemistry, Academia Sinica; Peking University; Institute of Electronics, Academia Sinica.
- E.7 Manuscript draft of lecture by Powell on the development of x-ray diffraction in England.
- E.8, E.9 Memorabilia relating to China visit. 2 folders.
- E.10-E.12 Manuscript and typescript drafts for report on visit for the Royal Society. 3 folders.
- E.13 Miscellaneous shorter notes and drafts. Includes material *re* talks given by Powell on his visit to China.
- E.14 Report on visit to China, 25 April - 2 June 1961 by E.B. Chain. Found with papers relating to Powell's 1962 visit.

Chain made the visit as Scientific Director of the International Centre for Chemical Microbiology, Istituto Superiore di Sanita, Rome.
- E.15-E.20 Visit to Roumania, 16-30 March 1964.

Powell took part in an exchange visit between Oxford and Jassy universities under the auspices of the British Council. The visit to Roumania took place first.
- E.15 Correspondence *re* arrangements.
- E.16 Typescript drafts of Powell's report on visit.
- E.17 Manuscript draft of short talk in Roumania 'on a particular application of the method of structure analysis by the use of X-ray diffraction'.

Visits and conferences

- E.18 Photograph; postcards etc.
- E.19 Papers *re* visit of the Roumanian delegation from Jassy to Oxford University, Trinity term 1964.
- E.20 Papers *re* visit of Roumanian local government officials to Oxford as guests of the British government, 1965. Found with the Oxford/Jassy exchange papers.
- E.21 Oxford and Edinburgh Universities expedition to Mongolia, 1965.

Information only *re* proposed expedition. Powell did not visit Mongolia at this time.

Includes report of the reconnaissance, August 1965.
- E.22 Seventh International Congress of Crystallography, Moscow, July 1966.

Printed background material only.
- E.23-E.30 Visit to the USSR, March 1969.

Powell visited Russia as part of a programme of exchange visits between the Royal Society and the USSR Academy of Sciences.
- E.23 Correspondence *re* arrangements.
- E.24 Notebook (lacks covers) used for notes of discussions with Russian colleagues.
- E.25 Notebook used for notes on more general aspects of Russian life.

Visits and conferences

'Russian expedition'. Contents of envelope so inscribed divided into three for ease of reference.

Miscellaneous manuscript notes including pages torn from notebooks.

Typescript draft beginning 'Investigation of the stereochemistry of Ni(II) in some of its pentacoordinate complexes...', possibly prepared for lecture; reprint.

Invoices; printed memorabilia.

'R.S. Russian Visit'. Contents of folder so inscribed: manuscript and typescript notes and drafts.

'USSR'. Contents of folder so inscribed: draft report on visit.

Conference on Structural Studies of Partially Ordered Materials, University of Sussex, 9-11 April 1969.

Powell lectured on 'Order and disorder in molecular compounds'.

Printed booklet with programme, abstracts etc; draft for Powell's lecture.

E.32

Eighth International Congress of Crystallography, Stony Brook, New York, 7-27 August 1969.

Information; statements of student protest addressed to congress delegates; report on the Congress from Powell as Chairman of the British National Committee for Crystallography.

E.33, E.34

Bragg Symposium, 1-3 April 1970.

The symposium was held to celebrate the 80th birthday of Sir Lawrence Bragg.

Correspondence and papers *re* arrangements. 2 folders.

Visits and conferences

- E.35 Ninth International Congress of Crystallography, Kyoto, Japan, 26 August - 7 September 1972.
- Correspondence *re* arrangements; draft report on Congress, etc.
- E.36 VIII Konferencija Jugoslavenskog centra za kristalografiju, Opatija, Yugoslavia, 25-27 October 1973.
- Duplicated papers only.
- E.37, E.38 H.M. Powell Symposium, Oxford, 8-10 April 1974.
- The symposium was held to mark Powell's retirement in 1974. See also A.2. He lectured on 'The advance of Chemical Crystallography'.
- E.37 Programme of abstracts; list of participants.
- E.38 Draft for Powell's lecture; letter from J. Lewis.

SECTION F	LANGUAGE	F.1-F.21
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F.1-F.14	LANGUAGE REPRESENTATION
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F.15-F.19	RUSSIAN
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F.20	CHINESE
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F.21	CHEROKEE
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See also D.19, D.27-D.30.

LANGUAGE REPRESENTATION

Notes and drafts relating to an attempt by Powell to represent linguistic communication by a system of visual symbols.

Although Powell was, in this respect, following in the footsteps of John Wilkins and the Royal Society in the seventeenth century, his work seems to have been undertaken entirely independently, possibly as a result of his teaching of foreign languages to undergraduates. There is no evidence of his having read any of the existing literature on linguistics or conceptual analysis, nor of acquaintance with the linguistic philosophy of the Oxford School.

Powell's aim was a lofty one, the devising of nothing less than 'a method of direct universal communication' which should express by non-language-specific visual symbols, pictograms or abstract signs encompassing 'grammatical' relationships and a full lexis the range of concepts conveyed in traditional languages.

This proved perhaps a more difficult task than he had at first assumed. At all events, nothing was completed for publication. A little of the surviving material is in typed or heavily-corrected manuscript form, but the majority consists of notes and ideas struggling to systematise the complexity of natural language into increasingly lengthier and more elaborate codes, often greatly more opaque than any standard alphabet.

It would seem that this was a very long-term interest of Powell, though none of the notes and drafts are dated. A few are on the writing paper of the Oxford Chemical Crystallography Laboratory, but most are on foolscap paper suggesting a date before the early 1970s. There are notes on an envelope postmarked 1966, and on the writing paper of a chemical conference in 1982 (both included in F.12).

Language

Attention is also drawn to the laboratory notebook of 1928 at C.1 which Powell later used for an attempt at a symbolic lexicon for English words beginning with 'A'.

- F.1-F.4 Folders inscribed 'Chap I', 'Chap II', 'Chap III' for a proposed work on a non-alphabetic, non-language-specific system of communication by visual symbols.
- A few typed pages, but mainly heavily corrected manuscript; a few paginated sequences.
- F.1 'Chap I'. Various versions of introductory material on 'The general nature of the problem'.
- F.2, F.3 'Chap II'. 2 folders.
- F.4 'Chap III'...'mainly verb-equivalents'. Includes some paginated sequences.
- F.5 Shorter manuscript and typescript drafts on specific communication topics:
- 'Mental activities'.
 - 'Quantity'.
 - 'Relationship in space'.
 - 'Possession'.
 - 'More than one of a kind'.
 - 'Doing'.
 - 'Positives, negatives and opposites'.
- F.6 Manuscript and typescript draft paginated 1-29 with many intercalated pages.
- F.7-F.9 Notes, drafts, symbols, originally enclosed in envelope postmarked 1982. 3 folders.

Language

F.10, F.11 Manuscript and typescript drafts, a few paginated. 2 folders.

F.12-F.14 Shorter notes. Attempts to analyse and express linguistic concepts in pictorial or coded forms. 3 folders.

Includes notes on envelope postmarked 1966, and on writing paper of Symposium on Molecular Inclusion 1982 (F.12).

RUSSIAN

F.15-F.18 'Russian Course'.

Contents of envelope so inscribed: drafts for course on learning Russian prepared with the scientific student in mind. 4 folders.

Includes duplicated copies of Russian reprints 1962 (F.17).

F.19 'The one page ten minute summary'.

Drafts of short note on learning the Russian language, nd.

CHINESE

F.20 Miscellaneous notes.

CHEROKEE

F.21 Postcard depicting Cherokee alphabet sent to D.LI. Hammick 1961.

SECTION G SCIENTIFIC CORRESPONDENCE G.1-G.30

G.1-G.22 GENERAL SCIENTIFIC CORRESPONDENCE.

Correspondence with individuals. In alphabetical order.

G.23-G.30 SHORTER SCIENTIFIC CORRESPONDENCE.

In chronological order.

G.1, G.2 **Baker, W. and Ollis, W.D.** 1951-1955

Baker was Professor of Organic Chemistry at Bristol University and Ollis was a member of his department.

re trithymotide and other compounds.

G.1 1951-1952.

G.2 1953-1955

G.3-G.5 **British Oxygen Company Ltd (BOC)** 1948-1958

Correspondence *re* clathrate compounds, inert gases, etc.

G.3 1948-1950. Includes specifications for patent applications in respect of 'improvements in or relating to the purification of the rare gases'.

G.4 1951-1952. Includes agreement between BOC and Powell for 'services in connection with clathrate compounds'.

G.5 1953-1954, 1958. Includes correspondence with National Research Development Corporation.

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