CONTEMPORARY SCIENTIFIC ARCHIVES CENTRE

under the guidance of the Royal Society's
British National Committee for the History of Science, Medicine and Technology

Catalogue of the papers of

PATRICK MAYNARD STUART BLACKETT, O.M., F.R.S.

BARON BLACKETT, OF CHELSEA

(1897 - 1974)

VOLUME I

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Compiled by: Jeannine Alton
Harriot Weiskittel
Julia Latham-Jackson

Deposited in the Library of the Royal Society, London, 1979

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GENERAL INTRODUCTION TO THE COLLECTION

PROVENANCE

The material was assembled from various sources:

from Blackett's flat in London and his house in Wales, via Lady Blackett;

from his room at Imperial College, London, via the Royal Society and Professor H. Elliot.

Lady Blackett currently retains Blackett's diaries of his service in the Navy 1914-16 (see A.11), four bound volumes of press-cuttings, photographs and other family documents.

CONTENT

The collection is extensive, relating to almost every aspect of Blackett's long and varied career in science and in public life. Blackett himself frequently used the material for lectures and writings on matters of particular personal or historical interest such as his period of research at the Cavendish Laboratory, Cambridge, under Rutherford, operational research and other controversies in the second world war, aspects of India's development, and the like. Furthermore, it is apparent that, towards the end of his life, he was assembling material for one or perhaps two books: a collection of writings and an autobiography.* The clearest statement of his intentions is in a letter to M.M. Gowing dated 22 May 1972, in which he says: '... I am considering the possibility of publishing a volume of my collective papers, essays, lectures, etc.' (see D.183); in November 1973 he writes in similar vein to the Director, National Maritime Museum: 'I am writing up a good deal about my activities during the war ...' (see D.58); the note in H.123 would also seem to be part of a draft introduction to such a work. With this in view, Blackett obtained published or typed copies of the writings chosen for inclusion, revised and emended them, and sometimes added new linking material. Documents of this kind can be found in

D.58, D.110, D.183 (quoted in part above)

G.23-G.31, G.72, G.84

H.1, H.64, H.77, H.96, H.109, H.110, H.119, H.124.

It will be seen that none of these refers to any of Blackett's 'scientific' work in the narrow sense.

* See ADDENDUM on p.11.

As a result of these activities, and of the multiple provenance, the collection when received was in doubtful order. Although most of the folders bore Blackett's own note of the contents, this was not always a reliable guide, as he often 'cannibalised' previous work when preparing a lecture or paper, removing earlier work to a new folder or adding later material to the originals. While every attempt has been made to retain Blackett's preferred order in so far as it can be discerned, his headings and descriptions being preserved and indicated by inverted commas in the catalogue entries, some re-organisation was undertaken to bring the material under the broad headings of the List of Contents.

The introductory notes to the Sections and sub-sections of the catalogue indicate the main areas of interest in the collection. References to the 'Tizard Committee' and the 'Tizard-Cherwell controversy' are listed under Tizard in the Index of Correspondents; similarly, material on Rutherford (see esp. H.80), E.J. Williams, Nehru and others, can be located from the Index.

Various episodes in Blackett's career can be clarified, or more accurately dated, from the manuscripts, and are briefly noted here in chronological order. Fuller accounts appear in the catalogue entries.

J.35, correspondence with A.V. Hill on the date of Blackett's appointment as Scientific Adviser to General Sir Frederick Pile, A.A. Command;

D.84, Blackett's paper, 'Scientists at the operational level', leading to his appointment as Chief Adviser Operational Research, later Director, Naval Operational Research;

D.174, J.3, correspondence with C.R. Attlee and others on Blackett's paper on the international control of atomic energy;

B.48, correspondence with C.D. Anderson on the discovery and naming of V-particles;

E.24, E.33, papers and correspondence on the 'Gaitskell Group' of Labour Party advisers.

There are also the text of, or material relating to a substantial number of publications by Blackett omitted from the Bibliography accompanying the Memoir by A.C.B. Lovell (Biographical Memoirs of Fellows of the Royal Society, 21, 1975, 1-115, also available as a separate publication). They are listed here in catalogue sequence.

B.115, B.116, B.120

C.197-C.199

D.104, D.108

F.19-F.21, F.30, F.58, F.63, F.72-F.74

G.4 (Blackett's report on the organisation of the armed forces of India), G.66, G.71, G.110

H.8, H.45, H.74, H.77, H.105, H.122, H.132, H.136, H.137, H.139

J.6, J.116

There are in addition many unpublished writings throughout the collection.

For all the wealth of material in certain areas, there are lacunae elsewhere. No documents survive, for example, relative to Blackett's long service with the National Research and Development Corporation 1949-64, or the Department of Scientific and Industrial Research 1955-60; and, of his correspondence in the war years, only that for 1942 survives (D.126 - D.147).

Blackett always had a fondness for acronyms and abbreviations, and this grew stronger with age; some of his later notes and drafts bristle with clusters of initials which, in conjunction with his increasingly cramped hand and his habit of paginating by beginning with Roman I (on a page often later removed) and continuing in Arabic numbers 2...n, make them difficult to follow or attribute with confidence. Conversely, one can only admire his determination to maintain a presence in the world of scientific research despite great pressures of public life, and, later, of failing powers; the documents and correspondence on his last research (C.182 - C.185) convey this especially clearly.

PRESENTATION

The material in Sections A - H is presented chronologically within the sub-sections designated in the list of contents. Section J. Correspondence, is in alphabetical order. Many of the Sections and sub-sections include a brief introductory note summarising their contents and drawing attention to material of particular interest.

Scientific research notes and data

Blackett's scientific fame rests in part on the versatility of mind which enabled him to make significant contributions to knowledge in several areas of research (particle disintegration, magnetic spin, rock magnetism) as well as to develop the technique of operational research. Nevertheless, these contributions emerged from a gradual evolution in Blackett's thinking, and there is no sharp switch from one to another even when there is a discontinuity in time (such as the long period of war service) or place (such as the various moves from Cambridge to Birkbeck, Manchester and Imperial College). The distinction between Sections B and C is therefore to some extent an artificial one, and cases of overlapping material are noted in the entries.

Almost all the material was received in Blackett's own folders, usually with his note of the contents in some abbreviated form, e.g., 'C.R.' (= Cosmic Rays), 'R.M.' (= Rock Magnetism). The contents of the folders may be any or all of the following: laboratory experiments, datasheets, graphs and calculations; notes, drafts and comments for talks or publications; Blackett's or others' off-prints, sometimes annotated; correspondence. Bulky folders have been split into more manageable units, but kept together with a note of their original grouping. Blackett's titles and descriptions of the folders are given in inverted commas.

Blackett kept various sequences of his notes clipped or pinned together. These sequences have been retained in his order, although the pagination, size of paper, etc. are often heterogeneous.

Many of Blackett's own notes were made on the backs of previous notes, drafts, proofs, etc. No attempt has been made to give an account of such material.

Lectures and publications

Manuscript notes, typed drafts or offprints of Blackett's extensive output of lectures and writings are to be found throughout the collection. Those on specific research topics were kept by him with the data in Sections B and C and have been left there; similarly with material on operational research in Section D and on India in Section G. Section F groups together talks on three topics arising from Blackett's involvement in public life, and Section H contains the sequence of all other surviving documents of this type, including his Anniversary Addresses as President of the Royal Society and his speeches in the House of Lords.

Correspondence

Correspondence dealing with a specific research topic, lecture or publication was usually kept by Blackett in the same folder as his notes and drafts on the subject. Such material has been left in place whenever possible, or, if it has been re-allocated, a note has been made to that effect. The correspondence on magnetic spin (C.41 - C.71) and on rock magnetism (C.221 - C.268) is in chronological order and enables Blackett's thinking, his methods, and the graph of his activity to be clearly seen. The surviving correspondence on cosmic rays (B.132 - B.147) is, though interesting, regrettably much less complete. There is very little material remaining from the war years.

Correspondence on overseas activities (G.32 - G.51, G.82 - G.84) and general correspondence in Section J are in alphabetical order, with dates and an indication of any material of personal or scientific interest; a note is also made of cases when only Blackett's carbon copy survives.

The index on pp.361-401 includes correspondents from whom letters survive, with cross-references to any other material relating to the individual concerned.

Conspectus

Pp.348-355 contain a Conspectus of Blackett's publications as listed in the Bibliography of Lovell, Memoir, and the principal items in the collection to which they refer. There is a note on p. 8 above of several publications omitted from this Bibliography, and there are many unpublished items. A photocopy of the Bibliography is included by permission on pp.356-360.

References

Material in every Section is linked as far as possible to A.C.B. Lovell, Biographical Memoirs of Fellows of the Royal Society, 21, 1975, 1-115, of which a copy is included in A.1.

References to the text are in the form Lovell, Memoir, p ...
References to the Bibliography are in the form RS ...

ACKNOWLEDGEMENTS

We are very pleased to acknowledge the invaluable work of Professor H. Elliot and Dr. J.P. Astbury in identifying for the Conspectus of Publications the manuscripts and correspondence in Section B.

We are grateful for the advice given by Dr. W.S.C. Williams on cosmic rays, and by Professor E.A. Vincent on rock magnetism.

Our thanks are also due to Mrs. M.M. Edwards for careful and accurate typing, and her patience with successive drafts and revisions of the catalogue.

ADDENDUM

When this catalogue was in proof, Lady Blackett contributed some additional material, including plans and extracts from her husband's autobiography. These documents appear on p.13 as A.10A.

SECTION A BIOGRAPHICAL AND PERSONAL A.1 - A.106

The material in this Section covers every aspect of Blackett's long and varied career: his scientific achievements, his academic posts in Manchester and London, his wartime and political activities, and the many honours and awards he received.

Some of the material is in the form of photocopies of original documents still in family hands.

A substantial proportion of the Section (A.45 - A.83) consists of letters, cables and messages of congratulation received by Blackett on the award of the Nobel Prize (1948), the Copley Medal (1956), the Companionship of Honour (1965), his election as President of the Royal Society (1965), the award of the Order of Merit (1967) and his elevation to the peerage (1969). Many of these letters contain material of considerable biographical interest; they are not individually itemised in the list below, but are presented in alphabetical order, and indexed.

The material is presented as follows:

A.1	-	A.10	Obituaries and tributes Biographical and bibliographical notes
A.11	-	A.39	Career and appointments
A.40	-	A.84	Honours and awards Correspondence and letters of congratulation With an introductory note
A.85	-	A.104	Scrolls, Certificates and Diplomas
A.105	-	A.106	Photographs and press-cuttings

Section A - Biographical and personal

A.1 Obituary notices and tributes.

Includes memorial notices by:

H.S.W. Massey, Physics Today, September 1974.

E.C. Bullard, Nature, August 1974.

C.H. Waddington, C. Goodeve, R. Tomlinson, Operational Research Quarterly.

Sir Bernard Lovell, Biographical Memoirs of Fellows of The Royal Society, 21, 1978, pp.1-115.

A.2 Annual report of Council, King's College, Cambridge, November 1974. Biographical note of Blackett, pp.19-24.

A.3 3 pp. Typescript note by I.A. Richards for Magdalene College Magazine.

Letter to Blackett from Richards, 17 October 1957, congratulating him on his address to the British Association.

A.4 Year Book, Royal Society of Edinburgh, 1975, note by E.P. Hudson.

A.5 Memorial Meeting for Lord Blackett, Royal Society, 31 October 1974. Reprint from Notes and Records, 29, 2, March 1975.

A.6 The Blackett Memorial Lecture delivered by Rt. Hon. H. Wilson at Imperial College of Science and Technology, 3 December 1975, on the occasion of the naming of the Blackett Laboratory.

A.7 'P.M.S. Blackett. Nobel Prize for Physics', 22 pp. photocopy of paper by S. and V. De Benedetti, annotated by Blackett.

(An account of Blackett's life, mostly about early work leading to award of Nobel Prize.)

A.8 Curricula vitae, prepared by Blackett and Lady Blackett at various dates.

A.9 Bibliographies, of various dates.

A.10 Biographical material for Who's Who, Debrett, Who's Who in America, Modern Men of Science, etc., of various dates.

A.10A Material received from Lady Blackett, re Blackett's planned autobiography. Includes his notes on his career (3 pp.), 'Various notes for autobiography' (2 pp.), 'Biographical notes to 1919' (5 pp.), 'Extracts from diary kept from 1914 to 1916' (10 pp.), 'Interlude on Politics' (2 pp.), 'German scientists brought to England after the War', 1945 (1 p.), 'Cosmic Ray Conference Mexico 1961' on confiscation of passport (1 p.), etc. Also included here is Lady Blackett's list of material still retained in family hands.

Section A - Biographical and personal

A.11 First World War

'Naval Period': 10 pp. typescript of autobiographical reminiscences, with transcript of diary entries for 30 May - 1 June 1916. The typescript is incomplete, the last page reading 'Three weeks later I resigned from the Navy and became an . . .'

Lady Blackett retains the daily diaries kept by Blackett of his war service 1914 - 16. See A.10A on p.13.

2 pp. letter from Captain Lord Alastair Graham, 23 November 1967, congratulating Blackett on the award of the O.M. and quoting from the record which he kept of his cadets at Dartmouth. For Blackett he had entered: 'Games: does not shine. Remarks on character: Clever, quiet and nice. And in 4th term: Works and does well, and should turn out well.'

2 pp. letter from H.E. Piggott, 25 February 1957, with reminiscences of Blackett's naval training, and his resignation from the Navy to take up studies at Cambridge.

A.12 Moseley Research Fellowship

Photocopies of papers re Moseley Research Fellowship of the Royal Society, awarded to Blackett for two years from 1 October 1923.

Application for Fellowship to study 'the passage of X-rays through gases, particularly by the Wilson Condensation Method', 25 May 1923, with 2 pp. covering letter by Blackett to accompany the application in which he explains that he would like 'to devote myself almost exclusively to research for the next few years, but this will not be possible on my Fellowship [at King's] alone'.

Letter from Blackett, 11 March 1924, requesting permission to spend academic year 1924-25 in Göttingen working with Franck 'at a problem concerning spectroscopy and electron impact, which has arisen out of my work on the photography of alpha ray tracks'.

Note: Lovell (Memoir, p.11) quotes an earlier letter of 27 February 1924 about work in Göttingen, but no copy of this remains in the folder.

The originals of these documents are at the Royal Society, London.

Letter from Rutherford to Jeans, 4 March 1924, giving permission for Blackett to work in Göttingen.

Section A - Biographical and personal

A.13 Göttingen

'James Franck Memorial Volume', typescript, 6 pp., of contribution by Blackett who recalled his year in Göttingen (1924-25) and work with Franck. This note was prepared by Blackett for an edition by Robert Platzman of the 'Selected Papers of James Franck'.

The collection of Franck's personal papers (which includes correspondence and papers collected by Platzman) is located in the Joseph Regenstein Library of the University of Chicago.

See also B.10 - B.12 for notebooks of research at Göttingen.

A.14 Cavendish Laboratory, Cambridge

Photocopy of letter, 18 March 1924, from Cambridge colleagues to Blackett who was on his honeymoon. 1924

'From the Club greetings - we feel that we have lost an electron from our innermost ring . . .' Written and signed by the 'Adiabatic Invariants': D.R. Hartree, K.G. Emeléus, J.E. Jones, E.C. Stoner, H.W.B. Skinner, P. Kapitza, and unidentified.

Letter of appointment as Demonstrator in Physics, Cambridge, 30 November 1927. 1927

Letter from A.W. Smith, Physics Department, Ohio State University, offering one-year sabbatical appointment to Blackett. Ms. draft of Blackett's reply asking if he could come for a shorter period. 1930

A.15 Birkbeck College, London

Press-cuttings describing 11-ton magnet built by Metropolitan Vickers Electric Company, Manchester, for Blackett who had it transported to London and installed in a wooden hut ('Magnet House') for use by his Birkbeck team. 1934

Drawing of 'Approx. Arrgt. of magnet and fan' in another hand with some notes on dimensions added by Blackett. 1934

Section A - Biographical and personal

A.16 Second World War (see also Section D)

Letter from Air Ministry, 5 May 1939, thanking Blackett for his letter of 28 April accepting their invitation to serve on the Committee for the Scientific Survey of Air Offence. 1939

Correspondence re Blackett's exemption from regular fire-watching duties. 1942

Correspondence re Blackett's salary and appointment as Chief Adviser on Operational Research, The Admiralty. Blackett transferred from Coastal Command to the Admiralty with effect from 10 December 1941 following his meeting with the Admiralty's Scientific Research Advisory Committee, at which he explained his methods of Operational Research (see Lovell, Memoir, pp.60-61 and D.84). 1942

Allied Expeditionary Force Permit, N.W. Europe, 4-9 July 1944. 1944

A.17 Nobel Prize

Blackett was awarded the Nobel Prize for Physics in 1948 for his development of the Wilson cloud chamber method and for his discoveries in the field of nuclear physics and of cosmic radiation.

Photocopy of cable notifying award of Prize.

Photocopy of Blackett's correspondence with Vice-Chancellor of Manchester University requesting permission for leave of absence to journey to Stockholm to accept award.

Cable of congratulation on Nobel Prize sent from Princeton from Uhlenbeck, Einstein, Yukawa, Pais, von Laue, Placzek, Oppenheimer, Beblen.

Letter of congratulation from C.T.R. Wilson, 7 November 1948. Blackett replied: 'I was so delighted to get your letter of congratulation. All my work has depended on your invention of the cloud chamber; I feel very happy to have been able to carry on and develop still further this powerful method'.

See A.45-A.54 for messages of contratulation sent to Blackett on the occasion of the Nobel Prize from friends and colleagues all over the world.

Section A - Biographical and personal

A.18-A.23 Imperial College of Science and Technology, London

In 1953 Blackett left Manchester to succeed G.P. Thomson as Professor of Physics at Imperial College, London.

Note: Correspondence about the Department, its staff, research projects, academic and administrative matters, inherited by Blackett from G.P. Thomson, is in the manuscript collection of G.P. Thomson at Trinity College, Cambridge.

A.18 Correspondence re Blackett's appointment as Professor of Physics at Imperial College. Autograph letter from Blackett to D. Brunt (11 September 1952) suggests that he (Blackett) might not have been the first choice for this post. Letter of appointment and Blackett's letter of acceptance are missing. (Blackett was writing from Istituto di Fisica, Rome.) Folder includes correspondence with D. Brunt, Sir Roderic Hill (Rector) and the University of London Registrar. 1952

A.19 Important letter from Blackett to Rector, 29 December 1952, summarising fields of research then covered at Imperial College and Blackett's own wish 'to effect some considerable concentration of effort so as to produce fewer and stronger groups', including 'in the first instance' Cosmic Rays and Paleomagnetism. Very substantial increase in finance is asked for. Typescript 3 pp. 1952

See also C.72, Blackett's application to D.S.I.R. for research grants.

A.20 Patent Agreement between Blackett and J.D. McGee, Imperial College, and N.R.D.C. re Electronic Image Tubes, October 1955. 1955

A.21 Misc. short notes and correspondence re Blackett's service at Imperial College: 1965-68

conferment of title of 'Professor Emeritus of Physics'; 1965

appointment to Senior Research Fellowship, October 1965 - September 1968; 1965

resignation from boards and committees on retirement from the College; 1965

election to Fellowship of the College; 1967

renewal of appointment as Senior Research Fellow, October 1968-September 1971. 1968

Section A - Biographical and personal

A.22	Misc. short notes and correspondence re Blackett's service at Imperial College:	1970-74
	renewal of appointment as Senior Research Fellow, October 1971-September 1974;	1971
	notices of seminars, colloquia, etc.;	
	renewal of appointment as Senior Research Fellow until September 1977.	1974
A.23	Blackett's returns for the 'Rector's Bulletin' detailing his activities, honours, outside lectures, etc.	1965-67
	Blackett's Physics Departmental Expense account sheets.	1970-73
	See also C.186.	
A.24	Correspondence re academic posts in Cambridge, 1953-66.	
	Correspondence with Sir James Chadwick, June-July 1953 re Cavendish Chair. Includes photocopy (Lady Blackett has the original) of Blackett's copy of his autograph reply.	1953
	Correspondence with Richard Kahn (now Lord Kahn), September 1953, re Provostship of King's. Includes photo-copy of Blackett's copy of his autograph reply.	1953
	Letter from Sir James Gray, January 1966, re Provostship of King's.	1966
	File also includes correspondence with Master of Magdalene (Walter Hamilton) re College Appeal.	1971
	(See also correspondence with R.A. Lyttleton, B.142, re Mastership of St. John's.)	
A.25	Correspondence re Blackett's membership of official government committees:	
	- Correspondence with Sir William Black and Rt. Hon. Douglas Jay re Blackett's resignation from National Research Development Corporation following his appointment to the Ministry of Technology.	1964
	See also E.48 - E.65.	
	- Correspondence with Sir Solly (now Lord) Zuckerman, December 1969, re extension of Blackett's service on Central Advisory Council for Science and Technology.	1969

A.25 continued

Section A - Biographical and personal

- Correspondence with F.S. (now Sir Frederick) Dainton re Blackett's membership of Council for Scientific Policy. 1970

- Correspondence with Marquess of Lothian re Advisory Panel on Arms Control and Disarmament. Blackett declined invitation to become a member. 1970

A.26 Photocopies of letters of biographical interest. The originals are held by Lady Blackett. Some other photocopies have been distributed to the appropriate folders (see A.11, A.14, A.17, A.24, A.34).

Letter from H. Wright, 17 November 1932, congratulating and thanking Blackett for his essay on 'The craft of experimental physics' which was published in University Studies (ed. H. Wright). 1932

RS.25

Note of congratulation from J.J. Thomson, 3 March 1933. With a later ms. note by Blackett 'Positive electron or election F.R.S.' 1933

Letter from Alex Wood, 5 February 1935, with request that Blackett should accept nomination as the Labour candidate for Cambridge University. 1935

Letter from Mrs. Sidney Webb, 2 May 1935, with request that Blackett should read chapter on science in 'our forthcoming book' on Soviet Communism, before publication. 1935

Postcard sent from Copenhagen, 21 June 1936, with message from Niels Bohr 'We have all missed you very much but hope to see you among us next time'; with numerous signatures of those attending. (Signatures not itemised.) 1936

Correspondence with General Sir Frederick Pile, March 1945. Pile addresses his letter to Blackett 'My dear Magician'. 1945

2 letters from Henry Kissinger. 1959

Signed farewell letter on Blackett's retirement as first Chairman, Research Grants Committee, Department of Scientific and Industrial Research. (Signatures not itemised.) 1960

Letters from B. Katz and D.C. Phillips, November-December 1970 following Blackett's Presidency of the Royal Society. 1970

Section A - Biographical and personal

A.27	Correspondence re Blackett's ancestors and family.	1953, 1963-72
	Small pocket notebook, labelled on front 'Martha 1931': log of June-July sailing off S. coast of England.	1931
A.28	Correspondence re cataloguing and permanent deposit of Blackett's personal papers.	1972
A.29	Correspondence with J. Epstein re his bronze sculpture of Blackett's head. Later correspondence with Lady Epstein re Blackett's O.M. and re insurance value for bronze head.	1950-52 1967
A.30	Correspondence re portraits of Blackett commissioned by Manchester University and Imperial College. The portraits were painted by Claude Rogers.	1963-67
A.31	Misc. correspondence re portraits and photographs of Blackett.	
A.32	Interviews	
	2 pp. typescript of interview with Blackett re Ministry of Technology, 11 February 1974. Heavily annotated by Blackett.	1974
	14 pp. typescript of interview by Brian Connell from Anglia T.V. The National Film Archive, London, has a copy of the tape of this interview.	1971
	See also J.117.	
A.33	Press-cuttings re Blackett.	1962, 1967-71
A.34	Copy of resolution adopted by Senate and Council, Manchester University, 1953, of appreciation of Blackett's services to the University as Longworthy Professor of Physics 1937-53, Dean of the Faculty of Science 1948-50, member of Council 1949-52 and Pro-Vice-Chancellor 1950-52.	1953
	Typescript copy of ms. letter from Blackett to Vice-Chancellor of Manchester, 12 April 1952, giving his reasons for not attending Cathedral Centenary Service. Attached is an extract from The Owens College: its Foundation and Growth.	1952
	(Includes photocopy of Blackett's autograph letter.)	

Section A - Biographical and personal

A.35 Requests for historical/biographical information. With the exception of the last item, all of Blackett's replies are very brief. 1970-72

1. with R.L. Weber re Jocular Physics.
2. with R.S. Shankland re his introduction to the collected papers of A.H. Compton.
3. with W. Archibald re Allen House.
4. with editors of Sunday Times re profile of Lord Snow and re World War II bombing offensive.
5. with N. Cameron re the involvement of British scientists in World War II.
6. from J.G. Crowther re his book on the Cavendish Laboratory.
7. with M.M. Gowing re her book Independence and Deterrence.
8. with M.J. Williams re operational research.
9. with B.H. Muller re his proposed biography of Leo Szilard.
10. with W. Sullivan re the theory of continental drift. Blackett sent 2 pp. of typescript notes on the development of his scientific interests.

See also J.97.

A.36-A.39 Miscellaneous shorter personal correspondence presented in date order.

A.36 1955, 1960-61

Letter from Trans-Canadian Air Lines re circumstances of Blackett's arrest in Tampa, Florida, when his flight from Mexico was obliged to stop for refuelling. 1955

Correspondence with American Embassy, London, re obtaining visas for visits to the US 1960 and 1961. Blackett's 1960 visit was under the auspices of the Ford Foundation; the 1961 visit was to attend M.I.T.'s Centenary Celebrations (see also G.100, G.101).

Section A - Biographical and personal

A.37 1964-68

Includes correspondence re annual gathering of Nobel Prize Winners in Lindau, notification of Blackett's election as ex officio Member of the General Committee of the Athenaeum under Rule XX (with congratulatory poem from C.W. Wardlaw), letter and card from I.A. Richards, and letter of thanks from Lord Fleck following Blackett's 70th birthday celebrations.

A.38 1971-72

Includes congratulatory messages on Blackett's 75th birthday, Hon. Membership of Fabian Society.

A.39 1973-74

Includes Blackett's correspondence with his secretary at Imperial College re departmental celebrations of election of H. Elliot to the Royal Society.

Section A - Biographical and personal

A.40-A.44 Correspondence and papers re honours received by Blackett.

Presented in date order.

See A.45-A.83 for letters of congratulation and A.85-A.104 for diplomas, certificates and scrolls.

A.40 1942-60

1. Letter from 10 Downing Street requesting permission to confer C.B.E. Blackett declined the honour. Includes photocopy of Blackett's ms. reply and of typescript copy of letter from Prime Minister's office. 1942

2. Honorary Membership, Chinese Physical Society. Correspondence with Chinese Embassy, 1945. 1943

3. Hon. Sc.D. Cambridge. Copy of speeches by the Orator. 1954

4. Honorary Membership of South African Institute of Mining and Metallurgy. Letter from Secretary notifying election. 1957

5. Hon. LL.D. Dalhousie University, Halifax. Programme (Blackett delivered the address to the Convocation). 1960

Section A - Biographical and personal

A.41 1961-65

1.	Foreign Honorary Membership, American Academy of Arts and Sciences. Correspondence with secretary.	1961
2.	Hon. D.Sc. Manchester. Speech by the Public Orator.	1962
3.	Hon. D.Sc. Durham. Speeches by the Public Orator.	1962
4.	Hon. D.Sc. Oxford. Letter from Registrar.	1963
5.	Bimala Churn Law Gold Medal, Indian Association for the Cultivation of Science. Correspondence with Director.	1963
6.	Foreign Membership, Accademia Nazionale dei Lincei, Rome.	1965

A.42 1966

1.	Hon. D.Sc. Bristol. Speech by the Public Orator, A.R. Collar.	1966
2.	Hon. D.Sc. London. Correspondence with Vice-Chancellor.	1966
3.	Hon. D.Sc. Hull. Correspondence with Vice-Chancellor.	1966
4.	Foreign Member, Soviet Academy of Sciences. Later correspondence and invitations to Blackett to visit USSR as guest of Academy (1969-70).	1966
5.	Foreign Associate, National Academy of Sciences, Washington D.C.	1966
6.	Honorary Fellow, Royal Society of Edinburgh. Correspondence with secretary (N. Feather).	1966
7.	Honorary Member, Institute of Metals. Letter from secretary notifying election.	1966
8.	Hon. D.Sc. York. Correspondence with the Vice-Chancellor (1965).	1966

Section A - Biographical and personal

A.43 1967-68

1.	Honorary Member, Institution of Civil Engineers. Clipping from Bulletin.	1967
2.	Honorary Member, International Academy of Astronautics, Paris.	1967
3.	Honorary Fellow, Washington Academy of Sciences.	1967
4.	Order of Merit. Letter from Buckingham Palace.	1967
5.	Honorary Fellow, National Institute of Sciences of India.	1968
6.	Hon. D.Sc. University of Chicago. Correspondence with the President.	1968

A.44 1969-71

1.	Rabindranath Tagore Birth Centenary Plaque, Asiatic Society.	1969
2.	Order of the Eagle of Aztec, Mexico.	1970
3.	Fellow of Birkbeck College, London.	1970
4.	Hon. D.Sc. Cranfield Institute of Technology.	1971

Section A - Biographical and personal

A.45-A.83 Letters, cables and telegrams of congratulation received by Blackett on the award of the Nobel Prize (1948), Copley Medal (1956), Companionship of Honour (1965), Order of Merit (1967), his election as President of the Royal Society (1965) and his elevation to the peerage (1969).
Many of the letters are of interest for their biographical or historical reminiscences, discussions of scientific work, references to political activities or to social causes.

The letters on the Nobel Prize were kept by Blackett in an alphabetically indexed box file. These have been removed to folders but retain Blackett's original ordering.

The letters on the Companionship of Honour, the Presidency of the Royal Society and the Order of Merit were kept in three large bulky files. Each file has been split into nine smaller, alphabetically-arranged folders for ease of reference. Letters of congratulation on behalf of corporate bodies are generally filed under the name of the organisation.

If Blackett sent a typescript acknowledgement, the carbon is attached to the letter. Most of the correspondence generated by the award of the Nobel Prize was answered in this manner, but letters re the later awards were answered by hand.

Section A - Biographical and personal

A.45-A.54 Nobel Prize 1948

Many of these letters refer to and comment on Blackett's newly-published book 'Military and political consequences of atomic energy'.

See also H.29 - H.41.

A.45	A - B
A.46	C - D
A.47	E - G
A.48	H
A.49	I - L
A.50	M - N
A.51	O - Q
A.52	R - S
A.53	T - V
A.54	W - Z

A.55 Copley Medal of The Royal Society (one folder only). 1956

A.56-A.64 Companion of Honour 1965

Congratulatory messages arranged alphabetically.

A.56	A - C
A.57	D - F
A.58	G - I
A.59	J - L
A.60	M - O
A.61	P - R
A.62	S - V
A.63	W - Z
A.64	Unidentified correspondents and first name signatures

Section A - Biographical and personal

A.65-A.73 President of the Royal Society 1965

Congratulatory messages arranged alphabetically.

A.65	A - C
A.66	D - F
A.67	G - I
A.68	J - L
A.69	M - O
A.70	P - R
A.71	S - V
A.72	W - Z
A.73	Unidentified correspondents and first name signatures.

A.74-A.82 Order of Merit 1967

Congratulatory messages arranged alphabetically.

A.74	A - C
A.75	D - F
A.76	G - I
A.77	J - L
A.78	M - O
A.79	P - R
A.80	S - V
A.81	W - Z
A.82	Unidentified correspondents and first name signatures

Section A - Biographical and personal

A.83-A.84 Life Peerage

Blackett's Life Peerage was announced in the New Year's Honours List, 1969. See the correspondence with Harold Wilson, November 1968 (J.110) in which Blackett accepts the recommendation for a Life Peerage.

A.83	Letters of congratulation.	1969
A.84	Correspondence and papers re arrangements for Blackett's introduction to the House of Lords, 19 February 1969. Blackett was sponsored by Lord Chalfont and Lord Snow.	

See H.146-H.149 for papers relating to Blackett's Maiden Speech in the Lords, 4 March 1970.

A.85-A.104 Scrolls, certificates and diplomas

Lady Blackett retains some of Blackett's personal medals and certificates. She gave his collection of scientific commemorative medals to the Museum of the History of Science, Oxford, in June 1975.

Not in folders.

A.85	Certificate of Honorary Membership, Chinese Physical Society.	1943
A.86	Hon. D.Sc. University of Delhi.	1947
A.87	Hon. D.Sc. Queen's University of Belfast.	1953
A.88	Honorary Fellowship, Weizmann Institute of Science.	1954
A.89	Honorary Associate, Royal College of Science, Imperial College.	1958
A.90	Hon. LL.D. University of Dalhousie.	1960
A.91 A.92	Foreign Honorary Member, American Academy of Arts and Sciences (2 certificates).	1961
A.93	Hon. D.Sc. University of Manchester.	1962
A.94	Hon. D.Sc. University of Leeds.	1962
A.95	Hon. D.Sc. University of Durham.	1962
A.96	Hon. D.Sc. University of Oxford.	1963

Section A - Biographical and personal

A.97	List of Members of the Order of the Companion of Honour.	1965
A.98	Hon. D.Sc. University of York.	1966
A.99	Foreign Associate, National Academy of Sciences, Washington D.C.	1966
A.100	Honorary Fellowship, Washington Academy of Sciences.	1966
A.101	Order of Merit: Statutes, Grant of the Dignity of a Member of the Order of Merit, List of Members.	1968
A.102	Honorary Membership of Academia Brasileira de Ciêcias.	1968
A.103	Writ of Summons to House of Lords.	1969
A.104	Hon. D.Sc. University of Chicago. Diploma, Photograph, Speech at presentation for the degree.	1969

Section A - Biographical and personal

A.105-A.106 Photographs and press-cuttings.

A.105 One box of personal photographs. Some of the loose photographs are dated and identified on verso. Includes:

Osborne (1911) and Dartmouth
Magdalene College, Cambridge (1919)
Cambridge University Natural Sciences Club (1921)
Cavendish Laboratory (1922)
Rome conference (1931)
with Occhialini (1933)
Manchester University (several photographs 1946-53)
UNESCO Cosmic Ray conference, Crackow (1947)
Photograph of portrait sketch by Homi Bhahba (1953)
Conference at Bagnères-de-Bigorre (1953)
Lindau meeting of Nobel Prize winners (1956)
British Association meeting, Dublin (1957)
Ghana (1959)
Leeds (1962)
Commemoration meeting for Niels Bohr, Copenhagen (1963)
Imperial College, Physics Department (1964)
Royal Society (1965)
Exeter (1966)
Royal Society visit to US Academy of Sciences (1966)
Royal Society Delegation to Indian Science Academy (1971). See also album below.
Misc. studio portrait photographs of various dates
Album of photographs of visit to India, December 1954-January 1955
Album of photographs of Royal Society Delegation to Indian Science Academy, Lucknow (1971)
Album of photographs of Blackett's visit to BP Research Centre, Sudbury-on-Thames (1966)

A.106 One box of press-cuttings relating to Blackett and his activities, or to topics which were of interest to him.

SECTION B PARTICLE DISINTEGRATION, COSMIC RAYS, ASTROPHYSICS
B.1 - B.145

The material in this Section documents the first steps in Blackett's scientific career - his work at the Cavendish Laboratory under Rutherford, his year in Göttingen with Franck, his move to Birkbeck College, London, in 1933 to head his own department, and then to Manchester to occupy the Langworthy Chair of Physics. He photographed the disintegration of the hydrogen nucleus (1924), collaborated with Occhialini to provide evidence for the existence of the positive electron (1933) and supported the research of Rochester and Butler which led to the discovery of the V-particles (1947). Not all of the evidence has survived - whether in the form of laboratory notebooks, working papers or correspondence - but those documents which remain testify to Blackett's energy, persistence and deft experimental technique.

Section A should be consulted for several items of interest pertaining to Blackett's work on particle disintegration and cosmic rays - see especially his application to the Royal Society for a Moseley Fellowship (A.12), press-cuttings relating to the electro-magnet built by Metropolitan-Vickers for Blackett and installed in the Magnet Hut at Birkbeck (A.15), letters of congratulation on the award of the Nobel Prize, many of which recall Blackett's work which led to the award, and of course the obituary notices and tributes published after his death.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

The material is presented as follows:

B.1	B.21	Laboratory notebooks on particle disintegration, 1920-32 With an introductory note
B.22	B.61	Working notes and papers on particle disintegration and cosmic rays, 1923-56 With an introductory note
B.62	B.67	Photographs of particle disintegration and cosmic rays
B.68	B.74	Working notes on theories of the origin of cosmic rays, 1949-55
B.75	B.83	Working notes on astrophysics, 1953-59
B.84	B.131	Lectures, broadcasts, publications, 1932-60 With an introductory note
B.132	B.147	Correspondence, 1923-74 With an introductory note

Because Blackett's research evolved from one topic to another, interest in each being aroused and developed by previous work, the above categories are not rigidly defined and are intended to provide only a rough guide to contents. Even if it were possible to distinguish areas of interest more strictly, Blackett's record-keeping would make inevitable some degree of overlap, since he often intermingled various types of document to suit his purposes, e.g. pages were torn from laboratory notebooks and kept with the working papers, photographs and notes for lectures were inserted in notebooks, etc. Wherever possible, the presence of 'anomalous' material of this kind is indicated in the entries below.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.1-B.21 LABORATORY NOTEBOOKS 1920-32

The notebooks are presented in chronological order as far as possible. They are all in Blackett's hand, unless otherwise indicated; other hands are identified where known.

The notebooks provide a record of Blackett's first research at the Cavendish Laboratory under Rutherford (B.2 - B.4), his year at Göttingen with Franck (B.10 - B.12) and his collaborative work with research students E.P. Hudson (B.13), F.C. Champion (B.17 - B.18) and D.S. Lees (B.15, B.19 - B.20) in Cambridge.

Several incomplete sequences (B.5 - B.6, B.17 - B.18) indicate that some notebooks have not survived. Sometimes pages have been torn from the notebooks and kept with the working notes.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.1 Small notebook labelled on cover 'Royal Naval College, Dartmouth. Blackett' and inside front cover 'Hawke Term. Blackett'. 1920

The first pages in the notebook (which presumably were work done at Dartmouth) have been cut from the book so that the first entry now reads: 'Aston. "The Technique of vacuum apparatus", May 1920', 17 pp. of notes and drawings on methods and materials. 1920

Second entry is 2 pp. of notes titled 'Experimental Hints'. n.d.

In the middle of the book are 3 pp. of notes titled 'Possible Experiments'. (Blackett has listed 11.) n.d.

At the end of the book, 2 pp. of miscellaneous calculations. n.d.

B.2 Blue notebook labelled on cover 'A' and on inside front cover 'Book A. P.M.S. Blackett. Magdalene College. If found please return to above address'. 1921-22

2 pp. of drawings titled 'Dimensions of Expansion Chamber'.

Then follow a few entries for July 1921 and a long sequence (pp.1-115) of notes from 11 October 1921 to 2 June 1922. This (and the following notebook, B.3) is a record of Blackett's first research at the Cavendish Laboratory (see Lovell, Memoir, pp.6-7). B.3 is a catalogue of photographs while B.2 contains journal-like entries describing laboratory techniques, modifications to apparatus (see Lovell, Memoir, p.6), quality of photographs, numerical data and measurements, calculations, hypotheses, sketches of apparatus.

Several pages of undated notes: 'Coil for Kapitza' (p.116), 'Enlarging on to Imperial Process Plates' (p.117), 'Magnetometer' (p.120).

Next sequence of dated entries begins on 3 October 1922 to (approximately) 2 November: record of photographs, measurements of angles, calculations, modifications of apparatus, notes on the literature, bibliography.

The notebook also contains 2 pp. of notes on bird migration. The first lecture which Blackett ever gave was to the University Physics Undergraduate Society on the subject of bird migration.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.3 Green notebook labelled on cover 'B' and on first page 'Book B. Catalogue of α-ray photographs November 1921. P.M.S. Blackett, Magdalene College. If found Please return to above address. 1921-22

The first few pages of the notebook (pages are not numbered) contain record of 28 photographs. This is followed by a 'Catalogue of interesting tracks, etc.' (6 pp.) and 'notes on general appearance of films' (4 pp.).

The notebook then contains a 139 pp. series of detailed analyses of photographs. This is a catalogue of Blackett's first research work at the Cavendish under Rutherford. See Lovell, Memoir, pp.6-7, which describes Blackett's modifications to the apparatus and two series of experiments. The record of experiments with a mixture of 75% argon + 15% nitrogen ends on p.75. On pp.9-10 there are calculations in another hand, probably Rutherford's.

R.S.1.

B.4 Blue notebook labelled on first page 'P.M.S. Blackett. Magdalene College. Book A'. 1921-22

Event by event analysis of tracks recorded in B.2 and B.3, analysis of results and of graphs.

Notes of tracks with recoil atoms, of air tracks, reduction of helium tracks in 'Book B' (B.3), test angles, range and velocity of hydrogen atoms, argon tracks, curled helium tracks.

One entry is dated 16 January 1923 'measurement of argon tracks'.

On p.74 there is a note in another hand (probably Rutherford's) commenting on Blackett's calculations of comparative curvature of hydrogen, helium and air. 'All wrong' has been crossed out and replaced by 'quite all right'.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.5 Small pocket notebook labelled on cover 'B' and on first page 'P.M.S. Blackett. King's College. Please return if found'. (Blackett was elected to a Fellowship at King's in 1923.) 1923-24

Entries begin with 29 October (1923) and continue to 11 July (1924). Record of photographs, with relevant data and calculations. There are several lists of 'defects' or 'faults' in the apparatus which were crossed out as they were corrected.

From other end of book entries begin with 2 November 1923 and continue to 21 May 1924. Notes on procedure, modifications of technique, measurements, list of 'conclusions' and 'suggestions'. All are concerned with work using cloud chamber to photograph disintegration of the nucleus.

B.6 Small pocket notebook labelled on cover 'C' and on first page 'P.M.S. Blackett. King's College. Please return if found'. 1924

Contains annotated bibliography, arranged by subject: electron impact, disintegration, isotopes, instruments, gases, alpha rays, spectroscope detection of nitrogen, neon, boiling points, electrochemical equivalents, emanating power, radio thorium, among others.

Followed by notes on experimental data, May-October (1924) in conjunction with notes in B.5.

2 pp. of notes for possible papers.

N.B. B.4 is not the 'Book A' of this sequence.

B.7 Small black pocket notebook labelled on first page 'P.M.S. Blackett. King's College. Please return if found'. 1924, 1927, 1929, 1930-32

Entries begin on 1 August 1924 and continue to 29 October. Record of film, description of adjustments to apparatus and of results, list of 'defects'.

One page of notes dated June 1927, January 1929 and February 1929.

Next set of entries begins on 9 January 1930 and continues to 24 January 1932. Some notes in F. Champion's hand (see also B.18).

At end of book there is a page of 'Notes on apparatus collected from notebooks'.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.8 Notebook labelled on first page 'P.M.S. Blackett. King's College. If found please return'. 1924, 1926

Numerous photographs of particle disintegration tracks are pasted in the notebook, with a record of measurements. Only a few of the entries (9 July, 23 August, 2 November 1924) are dated.

At the end of the book there is an entry for 9 June 1926.

Inserted at the back of the book were several sets of loose notes which have been removed and listed separately as B.9.

B.9 Loose notes found in back of B.8:

1. 'Calculation of angles in space from measurements of track photographs. Theory. Lees' method'. 9 pp. written on verso of petrol claim forms in another hand.

2. 'Measurement of α-track photographs and Calculations of the angles of a fork. Blackett's method'. 4 pp. in another hand.

3. 'Geometrical Theory' m.s. draft, 10 pp. in Blackett's hand.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.10-B.12 Work at Göttingen, 1924-25

Blackett spent the academic year 1924-25 working in Göttingen with James Franck. This work led to a joint paper on the excitation of the spectra of hydrogen by electron impact (R.S.5.). The following three notebooks document that period.

B.10 Small black notebook. Göttingen stationer's stamp on inside back cover.

Notebook contains long bibliography of articles and extensive notes on the literature, cross-referenced to the bibliography. The notebook is indexed on the inside front and back covers. 1924-25

From the other end of the book there are notes on photographs, calculations, and other laboratory work, plus an account of expenses, December 1924-January 1925.

B.11 Small black notebook. The first 15 pp. contain misc. notes and calculations, variously titled 'Macleod', 'glass fibres', 'Platinum', 'Gravitational control and elastic control', 'Theory', etc. 1925

These are followed by a series of records beginning on 22 January (1925) and continuing to 27 June. The last entry is a note on 'G.21'. This series is contained in B.12.

From the other end of the book there are several pages of notes on measurements of photographs of 'He, Hg, Hyd.'.

B.12 Small black notebook. Göttingen stationer's stamp on inside cover.

On the first page there is a list of 'screens'. The entries begin on 1 July and continue to 3 August.

The entry for 1 July contains notes on 'G.22. Test of screens', 'G.23. Test of focus', 'G.24. Test of intensity', etc., which indicate that this notebook is a continuation of the record of work begun in B.11 on the hydrogen molecule.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.13 — 1926-27

Red notebook labelled on cover 'Phos.' Contains numerous photographs of α-particles, probably for work in collaboration with E.P. Hudson on 'The elasticity of the collision of α-particles with hydrogen nucleii' (R.S.7.).

A 2 pp. ms. letter from Blackett to Hudson, 13 April 1926, is loosely inserted at the back of the book.

The notebook also contains 2 loose pp. of notes on 'New linear radiation formula', and 3 sets of photographs of cosmic radiation. On the verso of one set is a Leningrad address, indicating that perhaps Blackett was given these photographs by a colleague.

B.14 — 1925-26, 1927

Black notebook inscribed on first page 'P.M.S. Blackett. Cavendish Laboratory, Cambridge. Please return if found. 1925'. (The date is added in pencil.)

Entries begin on 22 October (1925) and continue to 27 August (1926), with one additional entry for 17 January (?1927). Record of experiments with automatic cloud chamber and mechanical oscillograph: list of photographs with measurements and descriptions of results, sketches of apparatus and modifications.

Various notes titled 'Illumination data', 'Vibration of Piston', 'Degree of approximation', 'Period of Vibration of Piston', 'Possible remedies' (all recorded in October).

Some notes on the literature. Many calculations.

Not all of the entries are in Blackett's hand.

B.15 — 1926-27

Small brown notebook labelled on cover 'P.M.S. Blackett. Book C'.

Entries begin in December 1926 and continue to August 1927, with one note for 'November 1927. D.S.L.' (D.S. Lees).

Contains sketches of apparatus, calculations, notes on modifications to apparatus, notes on lens, methods. Many are concerned with the design and use of double camera.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.16 Small blue pocket notebook labelled on first page 'Electron scattering by wire. July 1927'. 1927

Contains sketches of apparatus, numerous calculations and measurements, notes of points to investigate.

From other end of book, 'P.M.S. Blackett. April 1918'. Pages have been cut from book.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.17-B.18 Work with F.C. Champion

Notebooks related to Blackett's work with F.C. Champion on the collision of slow α-particles with helium which resulted in the publication of a joint paper (R.S.15.). N.B. Book B of this sequence is missing.

B.17 Large ledger labelled on cover 'P.M.S. Blackett. The Cavendish Laboratory, Cambridge, A', with list of rolls of film. 1929

Entries begin in January 1929. Careful, event by event analysis of collision of α-particle tracks with helium.

Numerous closely-written pages of measurements, calculations, summaries of results.

Pp. 55-59, 'Collision of H particles with gas atoms'.

B.18 Ledger labelled on cover 'F. Clive Champion. Cavendish Laboratory. α-Helium Collisions, 1930', and 'Book C' (in Blackett's hand). Inside the front cover are Blackett's notes on angles and arrangement of film. 1930

Careful, detailed analyses, event by event, of α-Helium collisions (photograph record, measurements, calculations). Most of the notes are in 2 unidentified hands (although presumably one is Champion's) with misc. shorter notes by Blackett throughout.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.19-B.20 Work with D.S. Lees

Notebooks related to Blackett's work with D.S. Lees on range-velocity relationships for hydrogen, oxygen, nitrogen and argon atoms. (R.S.16.)

B.19 Large ledger labelled on the cover 'Collected Tables of Results. Argon. Oxygen. Hydrogen'. 1929, 1931

Contains log of results (event by event) of scatterings of α-particles in cloud chamber gases. List of 'photos to be re-examined or of special interest', 'of photos cut out by Lees'.

Entries and calculations in both Blackett's and Lees's hand.

All of the entries that are dated are for April 1929, with the exception of the last which is a brief note 'July 15, 1931. All Argon Films looked thro: for A coil'.

B.20 Large ledger labelled on the cover 'Nitrogen', containing comments on photographs taken in cloud chamber and a log of scanning and measuring. Entries in Blackett's and Lees's hands, and another unidentified script. 1930-31

None of the entries are dated but there is a note by Blackett on the first page dated June 1931.

B.21 Small red pocket notebook labelled on first page 'P.M.S. Blackett. A. The Cavendish Laboratory, Cambridge. Please return if found'. 130 pp. 1932

Entries begin on 9 February 1932 and continue to 22 June (1932); the entries for 11 and 12 June are erroneously dated 11 and 12 July.

Record of laboratory techniques for work on lighting, photography, expansion condition, Wilson Cloud Chamber, drop sizes. Lists of alterations to apparatus.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.22-B.61 WORKING NOTES ON PARTICLE DISINTEGRATION AND COSMIC RAYS 1923-56

Blackett's folders of working notes and papers are of a very miscellaneous composition. An attempt has been made in the list below to present them in chronological order, but since many of the folders contain a wide range of material of differing dates, this ordering is of necessity somewhat artificial and incomplete.

Some originally very bulky folders have been split into several smaller folders for ease of reference, e.g. B.22 - B.25, B.35 - B.37; in some cases, manuscripts and drafts for lectures have been removed and listed sepaarately (see the introductory note to B.84 - B.131).

Some of the papers refer to measurements and observations recorded in laboratory notebooks. It has not been practicable to cross-reference such cases to the notebooks listed above (B.1 - B.21), since many of Blackett's notes refer to books which are missing from the sequence.

Some of the notes are written on the verso of examination scripts, others are on specially devised forms for the recording of data. All notes are manuscript, and in Blackett's hand unless otherwise indicated; other hands are identified where known.

All correspondence found with these working notes has been left in the folders, itemised and indexed (see the introductory note to B.132 - B.147).

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.22-B.25	One folder labelled on cover 'Curved Tracks. Results'. The contents have been extracted and listed separately below. The original folder is kept with B.22.	1923-30
B.22	'The Curvature of the Tracks'. 10 pp. typescript. First page is annotated by Blackett 'Fellowship Thesis. King's, 1923'. This is presumably Section 8 of that thesis. Blackett and Boris Ord were elected to Fellowships at King's in 1923.	1923
B.23	25 pp. ms. draft of paper (untitled) on curvature of forked tracks produced by collision of alpha particles with free protons. Probably draft of R.S.3.	
B.24	'Curved Proton Tracks. Copenhagen, September 1930'. 4 pp. ms. notes for talk in Copenhagen. See Blackett's letter to Bohr, 18 September 1930, re this visit (B.133).	
B.25	Misc. pages of notes, diagrams, graphs.	

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.26-B.30 Work with D.S. Lees

Working notes relating to Blackett's work with D.S. Lees on range and velocity of recoil atoms (R.S.16) and on particle disintegration.

B.26 Folder labelled on cover 'Fast Hydrogen and Test Tracks'. 1930-31

Numerous tabular summaries of data, with accompanying graphs and calculations, titled 'Hydrogen, Unequal Errors', 'Hydrogen Equal Errors', 'Fast Hydrogen Collision', 'Error Distribution of measured masses, alpha-particle-hydrogen', 'O & N collisions'.

Some of the results are entered on specially prepared forms, others are written on the verso of examination scripts. Not all are in Blackett's hand. Many bear the notation 'Check' or 'remeasure'.

B.27 Folder labelled on front 'Trigonometrical Calculations on Forked Tracks'. 1930-31

Numerous sheets of calculations and recordings of data (many are on the specially prepared forms as in B.26).

Graphs. Some notes on the literature.

Notes titled 'Range of argon atoms', 'Range and Velocity Nitrogen / Oxygen } Air', 'Argon recoil atoms', etc.

Much of the data is taken from the measurements and recordings entered in the laboratory notebooks. The only entries that are dated are for 1930 and 1931 but many of the papers may date from a much earlier period of research.

B.28 Folder labelled 'D[isintegration]Tracks. Measurements'. 1930-31

Numerous sets of calculations and recordings of data. The only ones which are dated are those which are on the specially prepared forms; these are for 1930 and 1931 as are those in B.26 and B.27.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.29 Folder labelled 'Paper I. Photography of Disintegration. Notes on Mass Defects'. Cover is also labelled with name and address (King's College, Cambridge. Cavendish) and, in Blackett's hand but at a later date, 'Important. Disintegration'. 1931

Numerous graphs and charts.

Notes titled 'Formation of O17', 'Energy change at collision', 'Energy change in terms of measured quantities, 'Note on mass defects', 'Transmutation Tracks'. Some of the notes are written on the verso of H. Elliot's examination scripts.

Includes 3 pp. typescript (pp.14-16 of a longer paper) 'The possibility that oxygen disintegrates' with letter from George Gamow (10 June 1931, Copenhagen) commenting on the draft and disagreeing with Blackett's conclusions. The draft bears Gamow's annotations.

B.30 Folder labelled 'Curvature of Tracks. Calculations'. 1930-32

Folder of very miscellaneous composition, including graphs, tabular summaries of data, list of films, tables of 'collected results', notes on the literature, sketches of apparatus.

Notes titled 'Rough Analysis of H curvature', 'Curled Tracks', 'Register of tracks for which angles over 70° occur', 'Curvature experiment'.

Many of the pages have been cut from laboratory notebooks; other loose sheets refer to findings recorded in the notebooks.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.31 Folder labelled 'Scattering of Light by Drops. Webb'.

2 graphs by Blackett and identical 2 graphs in unidentified hand (?Webb). One graph shows 'Photographic intensity of drops in a cloud chamber at different angles with the direction of the illuminating beam'.

B.32 Folder labelled 'Condensation theory'. 1932-34

2 pp. outline of series of 11 lectures on the technique of the cloud chamber.

Draft of first lecture 'Theory of drop formation' (6 pp.) with supplementary notes. Some of the other notes in this folder may also be drafts for lectures in the same series but this is not certain.

Includes working papers, notes and calculations: 'Estimate of rate of evaporation from flat surface', 'Size of drops in alpha ray tracks', 'Variation of pressure with height' (10 pp.)

B.33 Folder labelled 'Breadth of Tracks'. 1933-34

Notes titled 'Distribution of track breadth', 'Observed breadth of tracks and time of expansion', 'Distribution of track breadths in time', 'Diffusion of ions'.

Notes on the literature.

Graphs and charts.

Calculations.

Includes letter from P.I. Dee (15 April 1934) commenting on draft of a paper by Blackett, and letter from S. Goldstein (10 December 1933) re calculations on diffusion problems.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.34 Folder labelled 'Zenith Angle Distribution and Air Absorption Curve'. 1934-35

Numerous graphs and notes, many documenting results obtained from experiment using geiger counter equipment erected by D.H. Follett and J.D. Crawshaw in vacant part of Holborn tube station tunnel, London.

Notes on the literature and on results of experiments conducted by other research teams, including table of 'Vertical distribution of Cosmic Radiation at Jungfraujoch'.

Includes letter from Follett (17 February 1935) describing results to date and one page undated note from Follett re readings.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.35-B.39	Work on 'Time Variations'	1940, 1946-48
B.35-B.37	Correspondence, notes and drafts kept by Blackett in folder labelled 'Time Variations. Duperier'. Contents have been split into 3 smaller folders:	
B.35	Ms. notes and drafts: 'Temperature effect of mesons and decay electrons' (4 pp.), 'Meson decay' (1 p.), 'Cosmic ray intensity and the July 1946 magnetic storm' (2 pp. typescript for talk), 'Florence 12.4.48.' (1 p.).	
B.36	Letter from E.V. Appleton (20 February 1940) on 'alternative explanation of the correlation of cosmic ray diminution and magnetic storm'. Letter from M.V. Wilkes (18 November 1946), re work of Mailvaganam and of Pekeris. Correspondence with P. Nicholson and V. Sarabhai, April-August 1947, re the draft of their joint paper 'Semi-diurnal variation of C.R. intensity', with Blackett's notes on the draft.	1940, 1946-47
B.37	Correspondence exchanged with A. Duperier, February 1946 to October 1949. Includes summary of results obtained by Duperier, of observations made at Birkbeck, 4 pp. typescript of 'The Height of Meson Formation' and 4 pp. typescript of 'The Latitude Effect and the Pressure-Level of Meson Formation' and several offprints of papers by Duperier.	1946-49
B.38	Folder labelled 'Time Variations' containing copies of papers by research workers: 1. 'Calculation of Counting Rates and Shower Energies', 4 pp. typescript, J.K. Crawshaw, with ms. annotations by Blackett. 2. 'Cosmic rays and the magnetic field of the sun', 5 pp. typescript by D.W.N. Dolbear and H. Elliot. 3. 'Time Variations of Extensive Air Showers', 7 pp. typescript, probably by H. Elliot, with ms. annotations by Blackett. 4. 'A World-wide variation in the phase of the solar daily variation in cosmic ray intensity', 4 pp. typescript, annotated by Blackett and bearing his name and that of Elliot.	1952-54

continued

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.38 (continued)

5. 'Experimental Arrangement', 1 p. ms. note, 2 graphs in H. Elliot's hand.

6. 'Time Variations', 3 pp. typescript with 5 pp. graphs, probably by H. Elliot c. 1954.

N.B. Correspondence in this folder has been extracted and listed separately. See B.39.

Blackett's lecture 'Time Variations of Cosmic Rays' delivered in Milan, January 1953, has been extracted and listed separately. See B.113.

B.39 Correspondence from H. Elliot, November 1952-February 1953, commenting on work by Ehmert, Clay, Dolbear and re his own work. 1952-53

Correspondence with V. Sarabhai, April-May 1953, requesting Blackett's and Elliot's comments on his manuscript.

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B.40 Folder labelled 'Penetrating Showers'. 1947-49

2 pp. ms. note labelled 'Cosmic Rays. Important contemporary problems. Oxford, March 1947'.

'On the relative numbers of positive and negative μ mesons at sea-level', 4 pp. typescript, possibly by J.G. Wilson c.1947.

Working notes, calculations and notes on the literature.

N.B. Blackett's lecture on 'Cloud Chamber Studies of Penetrating Showers' delivered in Como, September 1949, has been extracted and listed separately. See B.104.

R.S.63.

B.41 Folder labelled 'APPs' (Associated Penetrating Particles). 1950-53

'Notes on Differential Range Measurements of Hard Component of Cosmic Rays in Water', typescript and graphs by A.J. Dyer.

'A Cloud Chamber Study of Associated Penetrating Particles at Sea-Level', typescript of paper by V. Appapillai, A.W. Mailvaganam and A.W. Wolfendale.

Misc. notes by Blackett and related offprints.

Correspondence from H.J.J. Braddick (26 November 1952) enclosing note by A.W. Wolfendale on 'Effect of Knock-on Electrons on APP Results' and later letter (14 March 1953) commenting on 'Colombo draft'. See also B.49, B.109.

Correspondence from A.W. Wolfendale (June-December 1953) enclosing copies of his letters to V. Appapillai.

N.B. Draft of Blackett's lecture 'Fundamental Particles of Nature' delivered in Colombo has been extracted and listed separately. See B.109.

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B.42-B.55 Work on V-particles

In 1946-47 G.D. Rochester and C.C. Butler, working with Blackett in Manchester, obtained the first photographs of V-particles. Their results were published in Nature, 160, 855. In 1949 the cloud chamber and magnet which Rochester and Butler had used to obtain their photographs was moved from Manchester to the Observatory on the Pic du Midi in the hope of photographing new tracks (see letters to Carl Anderson, 5 December 1949 and 26 April 1950, in B.48).

B.42-B.46 contain the initial correspondence: between Blackett and J. Rösch of the Observatory (with the intermediary help of G. Occhialini) re the possibility, practicalities and funding of such a transfer; between Butler and Rösch re details of installation; between Blackett and P. Auger re collaboration between French and British scientists; correspondence re results obtained, with special reference to the possibility that one of the disintegration products of V-particles is a proton (see letter from R.E. Peierls, 26 April 1951 in B.45), photographs, plan, funding estimates; with J. Clay and M.F. Perutz re Pic du Midi conference planned for August 1950.

See Lovell, Memoir, pp.35-36.

For lectures by Blackett on the subject, see B.112, B.114.

B.42 May-July 1949.

B.43 August-December 1949 (includes 2 pp. note by Butler on 'The arrangement of the Manchester University electro-magnet on the Pic du Midi').

B.44 January-October 1950.

B.45 January-October 1951.

B.46 Photographs and blueprint plan of the Observatory, funding estimates.

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B.47-B.50 Folder labelled 'T-mesons. Old calculations. Reprints of stable heavy particles'. The contents of this folder have been split into 4 smaller folders:

B.47 Ms. notes by Blackett: 'Decay Process' (15 December 1950), 'Range of T-mesons', notes on the literature, notes and graphs in another hand. Related offprints by S.W. Mitra and W.G.V. Rosser, L. Leprince-Ringuet. 1950

B.48 Correspondence and papers, mainly re work of C.D. Anderson's team at California Institute of Technology. 1949-50

Includes:

Correspondence with C.D. Anderson, November 1949-August 1950, re proposal that E. Cowan should spend some time in Blackett's laboratory at Manchester (he was unable to do so), and re verification by Anderson's team of Rochester's and Butler's hypothesis that forked tracks were 'caused by new unstable particles'; re Pic du Midi project and re naming of the new particles.

In his letter of 12 July 1950, Blackett suggests the names 'V-tracks' and 'V-particles' and adds: 'I would like to get our ideas set on this question before the end of August as I will be talking at the British Association on these particles on the 31st, and would like by then to have come to some decision as to what they should be called. I propose to write to Niels Bohr to ask for his approval when I have heard from you'. (see also Blackett's letter of 19 July 1950 to A.H. Chapman in B.44);

An extract from a letter from Anderson to Rochester, 18 January 1950, is attached to correspondence of 23 November 1949.

'Paris 28.4.50. T-Meson'. 6 pp. ms. notes for talk on 'Two new processes'.

3 pp. ms. notes by Blackett on paper 'Cloud chamber observations of new unstable particle' by Anderson's team; a ms. note at head reads 'no published comment till paper appears'.

A press-cutting from Life magazine, 1950, on the new particle is also included.

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B.49 'V-particles', ms. draft of talk at 'Harwell Conference, Oxford', September 1950, with note 'Revised Colombo November 1950' (see also B.41, B.109). 1950

'V-particles', ms. draft of talk by Blackett in Bombay, December 1950. Typescript of 'Cloud Chamber Photographs of V-particles' sent by India government to Blackett for his amendments before publication. Typescript is heavily annotated by Blackett (see also B.110).

Correspondence with C.C. Butler in Manchester (September-December 1950) re V-particle decays. The September letters report new photographs of neutral V-decays sent to Blackett for his talk in Oxford. The December letter reports new V-particle decay events sent to Blackett in India for his talk there.

B.50 Letter from J. Blaton (19 October 1947) enclosing a note by him on 'Momentum and Energy Conservation'. 1947

B.51-B.54 Folder labelled 'V-particles. Old notes'. The contents of this folder have been split into smaller folders, as follows:

B.51 Numerous sets of ms. notes by Blackett, few of them dated or titled. Includes notes on the literature. 'Decay in flight of neutral particle', 'Spontaneous decay of mass M into two bodies of equal mass m', 'Symmetrical decay'.

B.52 Correspondence from C.C. Butler, October 1951 and October 1952, writing from America with reports of cloud chamber experiments by research teams there. Includes report on 'Cloud chamber experiments in progress and projected at Caltech' (21 October 1951) and 'The Present Position on V^o particles' (November 1952). Very detailed full letters from Butler with news of personnel, equipment, theories, etc. 1951-52

Includes copy of letter from R.B. Leighton, Caltech, 25 June 1951, to Blackett.

B.53 Correspondence from K.H. Barker, A. Newth and C.C. Butler (all writing from Manchester to Blackett in Rome), December 1952 to January 1953, re future work of Pic du Midi group. (See also B.95.) 1952-53

B.53 continued

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.53 (continued)

Butler's letter (13 January 1953) accompanies an abstract of a report by R.D. Sard at the Rochester Conference, December 1952, a copy of Blackett's letter to Butler (29 December 1952) commenting on Butler's report of his American visit and offering proposals for future work, and his note on 'Consideration of possibility of using random expansion with the flash controlled by a counter system'. Notes by Barker and Butler on the future of the Pic du Midi group, which originally also accompanied this letter, have not survived.

B.54 'The decay of V-mesons', typescript of paper by C.C. Butler and K.H. Barker with accompanying graphs.

'Identification of T-mesons in Photographic Emulsion' (in unidentified hand).

Misc. drawings, photographs, etc.

B.55 Folder labelled 'Counter Controlled Cloud Chamber Techniques' containing sets of ms. notes.

'Yield of V^{o} and Chamber Size'. 3 pp.

Notes on solenoids.

'Yield of penetrating shower as function of height for cloud chamber of given size'. 2 pp.

'"New law of nature". All good cloud chambers give $\sim$2 Vs per day, independent of their size (or to some extent their height)'. 1 p.

'Flux of proton and neutron'.

N.B. Lectures delivered in Varenna, August-September 1953 have been extracted and listed separately. See B.114.

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B.56 Folder labelled 'Extensive Showers', of a very miscellaneous composition. 1952-56

Includes:

Blackett's ms. notes on papers presented by others, perhaps at Cosmic Rays conference, Lincoln College, Oxford, April 1956.

Numerous graphs and charts (not all in Blackett's hand).

Notes on the literature.

Notes and calculations.

B.57 Copies of papers by other workers in the field. (Originally kept by Blackett in B.56.) 1951-54

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B.58-B.60 Work on Cerenkov Radiation

Folder labelled 'Cerenkov Radiation', containing work for Blackett's paper 'A possible contribution to the light of the night sky from the Cerenkov radiation emitted by cosmic rays', published in 1948. This paper was read at a conference held in July 1947 under the auspices of the Gassiot Committee. See Lovell, Memoir, p.37, for a full description of the paper. The contents of the folder have been split into smaller folders.

R.S.58.

B.58 Ms. notes (8 July 1947) for talk, typescript for published version, offprint as published.

2 pp. typescript note, perhaps not by Blackett.

Letter from J.T. Randall, 18 December 1945, and note from J.G. Wilson, 22 July (?1947).

B.59 Numerous sets of ms. notes:

'Photo-cell Detection of Shower'

'Visibility of Shower, etc.'

'Naked eye observation of scintillations'

'Visible light from single particle in fluorescent material'

'Photometry'

'Least reflectible brightness of steady and extended source'

B.60 Notes on the literature.

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B.61 Folder labelled 'Harwell Experiment. Cerenkov Radiation'.

Correspondence with J.V. Jelley and W. Galbraith re their work at Harwell which was eventually published as 'Light Pulses from the Night Sky associated with Cosmic Rays' (Nature, 171, 349, 1953). Jelley's and Galbraith's work was stimulated by Blackett's paper on the Cerenkov radiation (see B.58-B.60).

Includes several preliminary drafts for the paper and offprint, notes and graphs sent to Blackett for comment, and typescript of later paper for publication in Nature 'Light Pulses from the Night Sky'.

Correspondence with officials at Harwell re the experiment, comments by B.D. Hyams on early draft of paper.

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B.62-B.67 PHOTOGRAPHS OF PARTICLE DISINTEGRATION AND COSMIC RAYS

The numerous requests to reproduce Blackett's photographs of particle disintegration and cosmic rays (B.145 - B.147) amply testify to the truth of the statement by E.C. Bullard (quoted by Lovell, Memoir, p.9) that these photographs 'have adorned almost every text book of nuclear physics for the past fifty years'.

B.62	Copies of Blackett's photographs of particle disintegration. These were originally published in his early papers on the subject and were later used to illustrate numerous textbooks on nuclear physics. All are labelled on verso; most of the captions are of later dates.	c. 1924-32
B.63	Photograph album with many pages removed from the binding and loosely inserted. Contains numerous photographs of particle disintegration with notes by Blackett of their origin or of their use as illustrations in early papers. Many of the photographs have become detached from the pages of the album.	
B.64	One envelope of photographs of 'Slow alpha ray collisions, 1922'.	
B.65	Album of photographs, with many loose photographs, mainly of cosmic ray tracks in cloud chamber. Many are described on verso by Blackett or others.	
B.66	Envelope of photographs labelled 'Cosmic ray photographs taken in a cloud chamber 1933 and 1946'. Also includes photograph of equipment used by Blackett and Occhialini, 1933.	1933-46
B.67	Envelope of photographs labelled 'Pic du Midi. Discovery of cascade decay (Butler et al)'.	1951-59

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.68-B.74 WORKING NOTES ON THEORIES OF THE ORIGIN OF COSMIC RAYS 1949-1955

For lectures by Blackett on the subject, see B.105-B.108, B.110, B.112, B.115, B.118, B.121, B.124, B.127-B.129.

B.68 Folder labelled 'Origin Theories of Cosmic Rays.'

Includes:

Misc. notes on the literature.

'The possibility of a betatron acceleration mechanism in the equatorial plane of a variable magnetic star'. 11 pp. ms. draft by C.B. Wheeler with notes by Blackett.

N.B. Lectures by Blackett on the origin of cosmic rays given in Manchester and London, 1949, have been extracted and listed separately. See B.105 and B.106.

B.69 Folder labelled 'Summaries of papers on theories of origin of cosmic rays'.

Contains numerous sets of ms. notes and calculations by Blackett, few of them dated or titled. Many pages of notes on the current literature. Contents have been left in Blackett's original order.

N.B. Notes for 2 lectures by Blackett on the origin of cosmic rays have been extracted and listed separately. See B.110 and B.112.

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B.70 Folder labelled 'Origin of Cosmic Rays'.

Includes:

Numerous sets of ms. notes by Blackett; several are headed 'Varenna', probably notes taken by Blackett at cosmic ray conference there.

Notes on the literature.

7 pp. typescript by C.B. Wheeler (probably report on research) with sub-headings 'The origin of primary cosmic radiation', 'The rate of thermonuclear reactions', 'Impulsive fuse-blowing', 'Water stabilised high-power arcs'.

N.B. Outline of lecture by Blackett delivered in Manchester, revised and delivered to Royal Meteorological Society, 1950, has been extracted and listed separately. See B.107.

B.71 Folder labelled 'Origin Theories of Cosmic Rays'.

Includes:

Numerous sets of working notes, including 'Acceleration Mechanisms', 'Acceleration of C.R. by varying magnetic field', 'Theory of decay of magnetic field of lines of force', and 'Conductivity of interstellar space'.

Notes on the literature, especially on work by E. Fermi.

B.72 Folder labelled 'Origin Theories. Russian Translation'. 1951-54

Typescripts of translation of 4 papers published in Russian scientific journals, 1951-54.

One letter from B.F. Kraus (Translator?).

B.73 Folder labelled 'Swann. Origin Theories'. 1955

Bibliography and various publications by W.F.G. Swann, Bartol Research Foundation, The Franklin Institute.

Correspondence from Swann re cosmic ray conference to be held in Guanajuato, Mexico, September 1955.

B.74 Folder containing offprints collected by Blackett re origin theories of cosmic rays.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.75-B.83 WORKING NOTES ON ASTROPHYSICS 1953-1959

B.75-B.77 Folder labelled 'Freundlich and Red Shift', containing drafts, correspondence and offprints. The contents have been split into 3 smaller folders as follows: 1953-54

B.75 'A new interpretation of the observed displacement of lines in the spectra of the Sun and Stars', 26 pp. typescript of paper by E. Finlay-Freundlich.

'Theoretical remarks about Freundlich's Red Shift formula', typescript comments by M. Born on Freundlich's paper (2 versions: 6 pp. and 12 pp.)

Both papers were submitted to the Proc. Phys. Soc. and Proc. Roy. Soc. for publication in the summer of 1953. They were eventually published in the Gött.Nachrichten.

B.76 Blackett's correspondence with Born and Freundlich re content and publication of their papers, with other colleagues in the field re the red shift.

Includes copy of lengthy letter from Lovell to Born sent to Blackett for information and copy of 'A note on Freundlich red-shift and the effect of radiation on Lamb-shift', by D.S. Kothari and F.C. Auluck.

B.77 'Gravitational Red Shift and Light Deflection', 5 pp. ms. by Blackett, with misc. notes.

Association copies of offprints sent by Freundlich to Blackett.

Copy of obituary notice of E. Finlay-Freundlich, 1965, by H. von Klüber, and of Blackett's letter of sympathy to Mrs. Finlay-Freundlich.

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B.78-B.80 Folder labelled 'Crab Nebula. Synchrotron Radiation. Cosmic Rays'. 1956-57

Contents have been split into smaller folders as follows:

B.78 Ms. notes by Blackett:

'Compton effect for $k < mc^2$', 4 pp. (19 October 1957)

'Simple picture of interaction of photon and fast electron'

'Rate of gain of energy of oscillation at resonance', 10 pp.

'Motion of electron under influence of light wave and magnetic field', 15 pp.

'Doppler Effect', 6 pp.

'Polarisation by individual fast electron stream', 2 pp.

'Inverse synchrotron radiation'

Includes numerous other sets of notes and calculations, not dated or titled.

B.79 Correspondence and notes by others.

Copy of letter from J.H. Oort to C.J. Bakker, 19 June 1956, re cosmic rays from the Crab nebula.

Letter from M. Ryle to Blackett, 5 March 1957, with list of publications re galactic emissions.

Notes by J.A. Clegg, July 1957, on 'Scattering by electron in magnetic field'.

2 letters from W.H. McCrea, August 1957.

B.80 Extensive notes by Blackett on the literature.

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B.81 'Cosmic Rays in the Earth's Magnetic Field', 8 pp. paper (+ 3 pp. maps and charts) by P. Rothwell and J. Quenby. 1957-58

Typescript of another paper (with the same title) heavily annotated by Blackett. Author not known.

Numerous graphs, charts and maps (some in Blackett's hand).

Letter from V.A. Sarabhai, 14 February 1958, forwarding ms. by Rothwell.

B.82 Notes and calculations by Blackett on papers by Rothwell and others on dipole.

Includes 3 pp. ms. draft for a paper or lecture, probably written in India, on regional variations in the earth's magnetic field; with ms. note at head 'Refer to Johnson's work'.

B.83 Folder labelled 'Radiation from accelerated electrons'. c. 1959

Numerous sets of ms. notes by Blackett, notes on the literature, drafts for possible papers, summaries of arguments. Some have been reworked and revised by Blackett at a later date.

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B.84-B.131 LECTURES, BROADCASTS, PUBLICATIONS 1932-1960

Blackett kept his notes and drafts either among his working papers or in bulky folders labelled simply 'Cosmic ray lectures', each folder containing perhaps a dozen different lectures. These scattered manuscripts have been brought together and listed below in one chronological sequence. Those lectures which have been extracted from the working papers are cross-referenced to the folder in which they were originally found (i.e. B.70 and B.107).

Many of the notes for lectures are very brief jottings, occupying only one or two pages. Places and precise dates of delivery are given in the handlist where possible. Many of the later lectures are in the form of reminiscences of early cosmic ray research and thus provide interesting historical and biographical information. Other semi-autobiographical lectures which touch upon Blackett's work on particle disintegration or cosmic rays may be found in Section H. See also under Rutherford in the general index.

Occasionally, a lecture was directly related to the working notes with which it was found. These were left in situ and are briefly noted here for ease of reference: Copenhagen, 1931 (B.29); Gassiot Conference, 1948 (B.58); Florence, 1948 (B.35); Paris, 1950 (B.48); Oxford, 1950 (B.49) and Bombay, 1950 (B.49).

Published lectures are cross-referenced to the bibliography in the Royal Society Memoir, with the notation R.S.x, 'x' being the number in the bibliography. Some of the publications listed below do not appear in the Royal Society bibliography. See especially B.115, B.116, B.120.

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B.84 'The Energy Spectrum and Showers'. 8 pp. 1932

London Physics Club, 24 October 1932(?).

B.85 'Cosmic Rays and the Fundamental Particles'. 1 p. 1938

Institute of Physics, 1938.

B.86 Lecture at the Royal Society, May 1938, on hard and soft component of cosmic rays. 1938

Includes heavily annotated typescript 'On the nature of the heavy component of cosmic rays' (5 pp.) c. 1937-38, with later note by Blackett 'never published, luckily!'

B.87 'Cosmic Radiation: Recent Developments'. 1940

3 pp. notes for 24th Guthrie Lecture, Physical Society. Published as 'Cosmic rays: recent developments', 26 February 1940. See Lovell, Memoir, pp.33-34 for full description of this paper.

R.S.51.

B.88 'Cosmic Rays'. 2 pp. 1946

Institution of Electrical Engineers, 13 March 1946.

B.89 'Some points of special interest in contemporary Cosmic Ray Research'. 2 pp. 1946

University College, London, 10 December 1946.

B.90 Untitled lecture given at 'Girton and Princeton', 1946, 7 pp. 1946

B.91 'The place of cosmic ray research in the physical sciences'. 1946

A mainly historical account, for lecture or publication. 16 pp. typescript.

B.92 'Collision Processes of Cosmic Ray Particles'. 1 p. 1947

Calcutta, 14 January 1947.

B.93 'The Place of Cosmic Ray Research in Modern Physics and Cosmology'. 1947

2 pp. of a lecture delivered in Calcutta, 13 January 1947, and in Bombay, 14 January 1947 (1st Lecture of a series of 5).

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B.94 'Collision Processes in Showers'. 4 pp. 1947

Bombay, January 1947 (3rd Lecture).

B.95 'Penetrating Showers'. 5 pp. 1947

Bombay, January 1947 (4th Lecture).

B.96 'Time Variations of Cosmic Rays'. 5 pp. 1947

Bombay, January 1947 (5th Lecture).

B.97 'Cosmic Rays'. 1947

1 p. of notes for lecture delivered at Indian Science Congress, Delhi, January 1947.

B.98 'Kosmische Schauer', notes for lecture delivered in German in Göttingen, April 1947. 1947

B.99 'Some Photographs of Penetrating Showers'. 3 pp. 1947

Cracow and Prague, October 1947.

B.100 'Recent British Work on Cosmic Rays'. 2 pp. 1947

International Summer School, Queen Mary College, London, July 1947.

B.101 'Some Problems of Cosmic Ray Research'. 1 p. 1947

Physical Society, Manchester, 21 July 1947.

B.102 'Cloud Chamber Researches in Nuclear Physics and Cosmic Radiation'. 1948

18 pp. typescript with ms. annotations of Blackett's Nobel Lecture, delivered 13 December 1948. In this lecture he gave a summary of his cosmic ray research to date.

R.S.59.

B.103 'Fundamental particles of physics'. 1 p. 1949

College of Aeronautics, 9 March 1949.

B.104 'Cloud chamber studies of penetrating showers'. 1949

Lecture at 'Physics of cosmic rays' conference, Como, September 1949. Ms. draft (3 pp. + 3 pp. notes on slides), 4 pp. typescript, page proof, misc. notes. (See also B.40.)

R.S.63.

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B.105 'Recent developments in cosmic ray research'. 2 pp. 1949

Dalton Lecture 1949, and Bedford College, 2 November 1949. (See also B.68.)

B.106 'Fundamental particles'. 1 p. 1949

Institute of Physics, 9 December 1949. (See also B.68.)

B.107 'Theories of origins of cosmic rays'. 1950

Lecture delivered to the Manchester Astronomical Society, 22 February 1950, revised and delivered as the G.J. Symons Memorial Lecture, Royal Meteorological Society, 19 April 1950. 3 pp. and notes. (See also B.70.)

B.108 'Theories of the Origin of Cosmic Rays'. 7 pp. 1950

Ms. draft for 'Three Lectures, February 1950, Manchester'.

'Theories of origin of cosmic rays'. 10 pp. 1950

Typescript with ms. annotations and note by Blackett 'Southampton ~1950?'

B.109 'Fundamental particles of nature'. 1 p. notes. 1950

'Cosmic rays'. 3 pp.

2 lectures delivered in Colombo during meeting of Ceylon Association of Science, 30 November to 2 December 1950.

See also B.41 and B.49, correspondence with A.W. Mailvaganam re this meeting.

B.110 'Remarks on origins of cosmic rays'. 1950
2 pp. ms. headed 'Bombay December 1950'.

4 pp. typescript with ms. corrections, same title, headed 'Bombay January 1951'.

Lecture delivered by Blackett on the occasion of this visit to India to attend a meeting of the Cosmic Ray Commission of the International Union of Physics and at International Conference on Elementary Particles organised by Bhabha in Bombay, December 1950.

See also B.49 for another lecture delivered by Blackett on that visit, and correspondence with Bhabha (G.33).

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B.111 'Photographing Atoms'. 8 pp. 1951

Typescript '3rd draft', June 1951. Autobiographical talk on cosmic ray research.

B.112 'New cosmic ray particles', notes for lecture in Rome. 1952-53

'Two lectures on V-particles'.

Rome, December 1952, 10 pp. ms.

'Theories of origins of cosmic rays'.

Rome, January 1953. 6+ pp. ms. notes, photographs, chart. (See also B.69.)

See also Blackett's correspondence with Manchester colleagues during this visit to Rome (B.53).

B.113 'Time variations of cosmic rays'. 1953

Lecture delivered at seminar in Milan, January 1953, and later published (R.S.66).

2 typescript versions of abstract (1 p. each).

2 typescript draft versions of lecture, both with ms. annotations by Blackett.

Typescript of lecture as delivered.

File also includes ms. draft with same title and annotated by Blackett 'Rome. December 1952'. Probably another lecture delivered in Rome (see B.112) used as a basis for Milan lecture.

See also B.38.

B.114 'Cloud chamber techniques for V-particle investigation'. 1953

3 lectures delivered at Varenna International School of Physics, August-September 1953 and later published as 'V-particles and the cloud chamber' (R.S.67). 10 pp. ms. (See also B.55.)

File also includes 2 pp. ms. notes titled 'Design of cloud chamber experiment with V⊙ particles', variously dated November 1952 and July 1953.

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B.115 'Where Do Cosmic Rays Come From? Acceleration by Changing Magnetic Fields', Times Science Review, Winter 1954. 1954

Heavily annotated typescript (23 pp.) dated October 1954.

Copy as published.

Editorial correspondence.

Notes on the literature.

Letter from D. Gabor, 11 November 1954, commenting on article.

B.116 'The Big Machines of Modern Physics'. 1954

A series of 3 talks by Blackett broadcast on the BBC Home Service and published in The Listener, March 1954. Copies as published:

1. 'The Birth of Nuclear Science'
2. 'Big Accelerating Machines of Nuclear Physics'
3. 'Discoveries from the Big Machines'

These talks are historical/autobiographical accounts of research in particle physics and cosmic rays.

B.117 'The fundamental particles of physics'. 1954

Notes for Radford Mather lecture, Reading, 31 May 1954 with 2 later charts (November 1956) attached.

B.118 'Origin of C.R.' 1955

3 pp. of notes for lecture in Cambridge, 28 April 1955.

B.119 'What are cosmic rays?' 1955

A television talk broadcast on I.T.A., November 1955, 4 pp. typescript.

B.120 'From Cosmic Rays to Cosmotron'. 1956

Article published in The New Scientist, 29 November 1956, with editorial correspondence.

B.121 'Origin Theories of Cosmic Rays'. 1956

Lecture in Manchester, January 1956. 1 p.

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B.122 'Cosmic Rays'. 1956

Talk broadcast on BBC Canadian Service, June 1956, 7 pp. typescript, heavily annotated.

B.123 'Elementary Particles'. 1956

Talk to Society of Chemistry and Industry, 3 December 1956, several loose ms. pp.

B.124 'Origin Theories of Cosmic Rays'. 2 pp. 1957

Talk in Aberdeen, 1 February 1957.

B.125 'The Elementary Particles of Nature'. 1957

Sylvanus Thompson Memorial Lecture, British Institute of Radiology, 14 March 1957. Offprint only.

R.S.76.

B.126 'Isotropy - Diffusion - Absorption'. 1957

Lecture at Newcastle, 30 March 1957.

B.127 'Theories of origins of cosmic rays'. 1959

Lecture in Oxford at Clarendon Laboratory, 28 April 1959, several loose pp. of ms. notes + notes on literature.

B.128 'Origin Theories of Cosmic Rays'. 1959

20 October 1959.

B.129 'Theories of Origins of Cosmic Rays'. 1959

Lectures at Imperial College, June 1959. Sets of ms. notes which have been reworked and revised.

B.130 'Cosmic Rays'. 1960

Talk by Blackett on BBC School Television Broadcasts 'Science for Sixth Forms', 14 March 1960.

Folder includes:

ms. draft for talk, 3 pp.

camera script

correspondence with BBC re recording of broadcast

ms. notes

brochure describing the series.

B.131 One folder of misc. undated lectures on cosmic rays and particle disintegration. n.d.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.132-B.147 CORRESPONDENCE 1923-1974

Very little remains of what must once have been an extensive correspondence on particle disintegration and cosmic rays. The little that is left, and which is presented below, has been extracted from miscellaneous folders found elsewhere in the collection; it is presented in chronological order, with an indication of contents.

Correspondence found with the working papers and notes in Section B has been left in situ and itemised in the entries for the relevant folders. The majority of the letters thus preserved are usually isolated items, or an exchange of letters over a brief period, which have survived largely by chance. Attention is drawn, however, to the following more extended sequences, of some historical interest: B.42 - B.46, extensive correspondence on the electro-magnet and cloud chamber erected on the Pic du Midi in 1948-49 and the observations recorded there; B.48, an important and interesting exchange of letters between Blackett and C.D. Anderson of the California Institute of Technology in 1949-50 re the newly-discovered and as yet un-named V-particles, and their nomenclature.

Some of the correspondence in Section J. marginally refers to work on particle disintegration and cosmic rays. See the birthday message to Blackett from B. Rossi (J.76) recalling their early collaboration, the letter from M. Cosyns (J.20) hoping to rejoin Blackett in Manchester after the Second World War, and a letter from E.J. Williams, 1931 (J.108).

See also correspondence with H. Bhabha, D.S. Kothari, A.W. Mailvaganam in Section G., and letters of congratulation on the award of the Nobel Prize in Section A.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.132 1923-1929

Letter from P. Ehrenfest, 24 April 1923, in German, written from Leiden. 4 pp.

Letter from M. Born, 14 March 1927, in German, written from Göttingen. 4 pp.

Letter from P. Ehrenfest, 5 December 1927, in German, written from Berlin. 2 pp.

B.133 1930

Postcard from P. Ehrenfest, 5 May 1930, in German.

Letter from D. Rose, 5 June 1930. 3 pp. Written from National Research Council, Canada, re his wish to obtain an expansion chamber similar to that used by Blackett at the Cavendish Laboratory.

Letter from G. Beck, 28 July 1930, in German. 2 pp.

First draft of letter of thanks from Blackett to N. Bohr, 18 September 1930 (2 pp.), written from Berlin following Blackett's visit to Copenhagen (see also B.24). Blackett also refers to the 'question of why there is such a large group of tracks which go apparently quite straight'.

B.134 1933-1934

Letter from W. Pauli, 19 April 1933, written from Zurich. 2 pp. re Blackett's and Occhialini's paper on the positive electron and speculating on the possibility of the existence of 'neutrinos'.

Letter from K. Darrow, 27 August 1934, written from New York. 2 pp., re work in progress at Berkeley and California Institute of Technology.

Postcard from P. Ehrenfest, 26 September 1934, written from France. Photograph on front of card is described by Ehrenfest: 'Wilson-Blackett photo taken at Jungfraujoch with 3 counters some electrons, two havy ionising particles wich comme out of the same point of the 5 mm Pb plate. One is strate, the other hase two angles'.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.135 1935-1936

Letter from S. Leipinski, 5 December 1935, written from Kharkov. 1 p.

Letter from D. Skobelzyn, 31 January 1936, written from Leningrad (in German). 6 pp.

Photocopy of letter from Blackett to Rutherford, 2 February 1936, re his wish to stay at Birkbeck rather than apply for chair at Birmingham.

Letter from S. Leipinski, 11 April 1936, written from Kharkov. 2 pp. re possible mountain sites for cosmic ray experiments and re his own work.

Letter from P. Ehrenfest, 8 October 1936, written from Leiden hospital. 11 pp. re cosmic ray work, with diagrams of equipment, graphs. Very full detailed letter describing work on Jungfraujoch (Ehrenfest was recovering from a tonsillectomy).

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.136-B.138

In April 1937 Blackett communicated for publication in Proc. Roy. Soc. A. an experimental paper by himself and J.G. Wilson on 'The energy loss of cosmic ray particles in metal plates' (R.S.40). He then wrote a theoretical paper which he circulated in draft form to Rutherford, Dirac and Peierls for comment. (Blackett may have distributed it more widely but this is not apparent from the surviving correspondence.)

In his letter to Rutherford of 26 May 1937, Blackett wrote: 'I am awaiting your comments on my paper with great hope that you will think there is something in it! Heisenberg has written expressing great interest in our experimental paper, and saying that the results are extremely important for the further development of the theory. As our experimental paper is out, I think I had better publish the theoretical paper quickly - if it is considered not too unreasonable. For others will surely be getting on to the same points'.

In the event, Blackett did not publish this theoretical paper, but did communicate another paper in December 1937 (R.S.42) which accepted the conclusions of Neddermeyer and Anderson that two types of particles existed.

See Lovell, Memoir, pp.26-29 for full discussion of the Bhabha-Heitler theory and Blackett's response to it.

B.136 1937

Photocopy of letter from Blackett to Rutherford, 26 May 1937, re theoretical paper.

Letter from Rutherford, 27 May 1937. 1 p. 'I think the idea that you have put forward is an excellent one and does offer an explanation as to why the radiation loss diminishes for very fast particles in agreement with your experiments. I imagine, however, that even if this method of explanation be right in general, the particular form of dissipated function will want much further consideration ....' Rutherford then passed the paper on to E.V. Appleton for comment (see B.137).

Photocopy of letter from Blackett to Rutherford, 5 July 1937, telling Rutherford of his decision to move to Manchester to take up the Langworthy Chair of Physics.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.137 Letter from P.A.M. Dirac, 19 May 1937. 2 pp., commenting on paper sent to him by Blackett. 'I think your argument inferring the simultaneous emission of several photons by a fast-moving electron is not right and needs elaboration'.

Letter from E.V. Appleton, 27 May 1937. 2 pp., commenting on paper (see B.136).

Letter from P.A.M. Dirac, 2 December 1937. 1 p. re electron passing through a lead plate.

B.138 Blackett's correspondence with R.E. Peierls, April-May 1937. Lengthy letters from Peierls (14 April - 6 pp., 17 May - 4 pp., 25 May - 4 pp.) and Blackett (20 May - 4 pp.) re Blackett's experimental and theoretical papers on energy loss of cosmic ray particles, with comments on Bethe-Heitler Theory (1934).

The Peierls collection (CSAC 52/6/77) deposited in the Bodleian Library, Oxford, contains a set of notes and calculations in Peierls's hand on 'Blackett paper I' and one page of notes in Blackett's hand on 'scale drawing of chamber with counters'.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.139 1947

Correspondence with C.E.R. Bruce, May-June 1947, re origin of cosmic rays.

Correspondence with F. Simon, December 1947, re possibility that He3 particles are emitted in nuclear disintegration by cosmic rays.

Letter from W. Heisenberg, 9 December 1947. 1 p. re new elementary particles (the V-particles, see B.42-B.46).

B.140 1947-1948

Correspondence with J.R. Ashworth, June-July 1947, on ionisation, with comments on the experimental method and data by C. Ellyett.

Letter of congratulation from D.C. Rose (see also B.133) on Blackett's Nobel Prize with news of work by Canadian scientists on cosmic rays.

B.141 1952-1955

Comments by B. Touschek on paper by L. Riddiford and S.T. Butler, 1952.

Letter from B. Peters, 9 September 1953. 1 p. re energy balance in cosmic rays.

Copy of letter from E.C. Bullard to A.H. von Engel, 25 May 1954, sent to Blackett for information re estimation of magnetic field of the sun from the polar streams of the Corona. 1 p. of ms. notes by Blackett appended to the letter.

Stencilled letter from N. Dallaporte, 5 July 1955, re symbols of fundamental particles formulated during conference in Pisa, with request for comments.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.142 1959, 1964

Correspondence with R.A. Lyttleton, March-April 1959, re non-equality of positive and negative charges and re paper on that subject sent by Lyttleton to Blackett for comment. Correspondence also discusses proposal conveyed by Lyttleton that Blackett become Master of St. John's (Cambridge); declined by Blackett who wanted to remain in London.

Correspondence with F. Hoyle, July 1959, re magnetic fields of sun and stars.

Letter from B. Matthews, 17 January 1964, enclosing 1 p. typescript of proposed note to Nature describing negative findings of tests on biological effects produced by magnetic fields made by Matthews in 1939 using Blackett's large electro-magnet.

B.143 1972

Correspondence with R.G. Stansfield, February 1972, re technique of scintillation-counting in the early 1920's. Includes copy of Some Personal Recollections by Stansfield of the Rutherford Centenary Celebrations sponsored by the Royal Society, October 1971.

Copy of Blackett's letter to G.D. Rochester, 24 November 1972, requesting copy of original Rochester-Butler paper on V-particles.

Copy of Blackett's letter to T. Thambyahpillai, 12 January 1972, re early Birkbeck experiment using equipment installed in Holborn tube station.

Section B - Particle disintegration, Cosmic Rays, Astrophysics

B.144 1974

Letter from A. Wolfendale, 6 February 1974, re discussion meeting at Royal Society on 'Origin of Cosmic Rays'. Includes offprint by Wolfendale 'The primary radiation: a brief review'.

Copy of letter from Blackett to R.B. Brode, 12 February 1974, with recollections of early work on cosmic rays with special reference to theories of energy loss: 'I made a definite mistake in interpreting the penetrating cosmic rays as owing to some change of state of the penetrative particles - it was, of course, Karl (sic) Anderson who got the right answer'. (See B.136-B.138.) Blackett also makes reference to Rochester's and Butler's discovery 'that three different unstable particles were all heavy particles' (see B.42-B.46).

Copy of letter from Blackett to M. Newman, 25 April 1974, re his first paper on alpha-rays, which Newman thought had contained an incorrect method.

B.145-B.147 Numerous requests to reprint Blackett's photographs of particle disintegration and cosmic rays. Not indexed.

B.145 1942, 1967-68

B.146 1970-71

B.147 1972-73

See B.62-B.67 for photographs.

SECTION C MAGNETISM C.1 - C.289

The generic term 'Magnetism' is used for convenience, to describe several related areas of scientific research and activity. These are:

C.1	-	C.71	Magnetic Spin and Rotating Bodies
C.72	-	C.268	Rock Magnetism, Continental Drift, Magnetic Field Reversal
C.269	-	C.285	Plasmas, Fusion Reactions

Each of these sub-sections, which may include research notes and data, lectures and writings, and correspondence, is preceded by an introductory note on the material and its presentation.

Section C - Magnetism

C.1-C.71 MAGNETIC SPIN AND ROTATING BODIES

Blackett's principal period of research on this topic was 1946 - 51. His work on cosmic rays and their origin had led to an interest in astrophysics and the possible influence of magnetic fields on phenomena in electron showers. Further investigation led Blackett to postulate a proportional relationship between magnetic moment and angular momentum, which might constitute 'a possible general law of Nature for all massive rotating bodies'. This hypothesis, formulated in his 1947 paper published in Nature (R.S.56) attracted very wide attention among the general public as well as in scientific circles. (See C.68 - C.71.)

Experiments to verify the hypothesis were devised and undertaken, Blackett's own chief contribution being the construction of a highly sensitive magnetometer which eventually gave a negative result and thus disproved the general validity of the earlier theory (R.S.64). (See C.9 - C.12 and note.) The sensitivity of the apparatus, however, enabled weak magnetic fields to be detected, and was thus admirably suited to the work on palaeomagnetism to which Blackett turned his attention. (See C.72 - C.268 and the introductory note.) Blackett's letters to J.W. Warwick, M. Farbstein (C.64) and W. Sullivan (J.97) give his account of his hypothesis and its history.

See Lovell, Memoir, pp.39-44, and R.S.54, 56, 60, 61, 62, 64.

The material is presented as follows:

C.1 - C.29 Working papers, notes, lectures and publications relating to Blackett's hypothesis on magnetic spin, and the devising of apparatus and experiments to test it. Presented chronologically, retaining Blackett's folders and descriptions as far as possible, 1946-54.

C.30 - C.40 Notebooks at Manchester and Imperial College, by Blackett and his assistants, 1947-54.

C.41 - C.71 Correspondence on magnetic spin, 1946-73.

Section C - Magnetism

C.1-C.29 NOTES, LECTURES, PUBLICATIONS ON MAGNETIC SPIN 1946-54

C.1-C.4 'Pomeranchuk'

Notes, drafts and correspondence related to Blackett's first major work on geomagnetism.

This was his paper read at a conference on 'Fundamental particles and low temperatures', held at the Cavendish Laboratory, Cambridge, July 1946, and published 1947 (Lovell, Memoir, p.39).

R.S.54

Folder includes:

C.1 Paper by H.Y. Tzu, Manchester University 'On the radiation emitted by a fast charged particle in the magnetic field', 20 pp. typescript. n.d. (c) 1946.

C.2 'On Pomeranchuk's Theory of the Radiation by Ultra-relativistic Electrons in the Earth's Magnetic Field', ms. of Blackett's paper read at International Conference on 'Fundamental particles and low temperature'.

8 ms. pps.,+ additional page 3 of previous draft, and 2 ms. pps. summary in note form headed 'Physics Conference Cambridge 1946'.

A reprint of the published paper is included here.

R.S.54

C.3 Extensive notes and calculations on same subject, some preceding and some following above paper. The notes are in sequences of pages numbered and sometimes given a title by Blackett:

'Notes for Paper', 7pp.

'Two Lorentz Transformations', 7 pp.

'Upper Limit of Energy Spectrum', 8 pp.

'Pomeranchuk in 10^6 Gauss fields', 2 pp.

'Angular Distribution of photon from electron in sun's field' 4 pp.

'19.10.46. Spectral Distribution', 4 pp.

Misc. untitled notes, diagrams and calculations.

Notes on 'Radiation of an accelerated electron' (not in Blackett's hand), 8 pp.

C.4 Correspondence with H.J. Bhabha and H.Y. Tzu on Pomeranchuk's theory, August 1946, with 2 copies of a note 'Radiation loss of electrons in earth's field', and 5 pp. of ms. calculations and diagrams by Bhabha (copied by H.Y. Tzu).

Section C - Magnetism

C.5 'A Possible Re-interpretation of Wilson's Postulate' (H.A. Wilson, see Lovell, Memoir, p.40).

Heavily corrected ms. draft, 9 pp. n.d.

Perhaps for lecture or paper outlining ideas for research leading to 1947 paper.

C.6 'The magnetic and rotational character of cosmic bodies'.

Typescript and ms. draft of a paper by another, 'to adduce further evidence which supports the Blackett-Wilson hypothesis'. n.d. but later than Blackett's 1947 paper.

C.7-C.8 Two papers by Blackett on rotating bodies, April 1948.

C.7 'The Wilson Experiment and the Schiff Paradox.'

4 pp. ms. notes for lecture or talk, dated 24.4.48.

C.8 'On the interpretation of the relation between magnetic moment and angular momentum of rotating bodies. P.M.S. Blackett, 28 April 1948.'

11 pp. typescript and ms., probably for talk at Cavendish Laboratory, Cambridge.

Attached is Blackett's carbon of a letter, June 1959, to M. Ryle referring to Babcock's results.

See also C.59.

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C.9-C.12 'Rotating Body. Mechanical Design'.

Drawings, calculations and correspondence relating to the design of a magnetometer to measure the magnetic fields of a rotating sphere (see Lovell, Memoir, pp.41-43). 1947

This magnetometer was designed to test the hypothesis advanced in Blackett's 1947 paper (RS.56) of a relation between the magnetic moment and the angular momentum of massive rotating bodies. He began to plan its design immediately after the publication of his paper, and observations are recorded from 9 August 1947 (see C.30-C.32 for laboratory notebooks of observations on the apparatus). The sensitivity of the instrument enabled earlier experiments, by Swann and Longacre, Schuster and Wilson, and others, to be further tested, a negative result being obtained and presented in Blackett's 1952 paper (RS.64).

This magnetometer thus disproved Blackett's own 1947 hypothesis, which had attracted great attention at the time, but its superior sensitivity made possible further advances in paleomagnetism.

C.9 Misc. notes, diagrams and calculations by Blackett on design, some dated 1947; note by S.K. Runcorn on design.

C.10 Correspondence with manufacturing firms on suitable materials for design (porcelain, beryllium) and commercial literature.

C.11 Correspondence with L. Boddington and P.R. Martin (Royal Aircraft Establishment, Farnborough), June-September 1947, in which Blackett sets out the aim of the experiment and the design problems, with memo. of recommendations by P.R. Martin.

C.12 Copy of note 'A compressed air turbine for spinning A.A. Shells' by E. Robinson. n.d.

Section C - Magnetism

C.13 'Astro-physical'.

Folder with above title: diagrams, calculations, notes on the literature, etc. re misc. problems in magnetism, some titled 'White dwarfs', 'Zeeman effect'. c. 1948

C.14 'Rotating Body. Eddy Currents'.

Folder with above title: diagrams, calculations, notes on the literature. c. 1949

C.15 'Rotating Body Experiment'. 'Stray effects, etc. Historical Experiments'.

Calculations, diagrams, notes on the literature, repetitions of some experiments, e.g. those of Eichenwald, Swann and Longacre, some dated 1948, 1949.

C.16 Draft of paper or article on 'Virtual charge separation', March 1951, by another, with extensive additions and corrections in Blackett's hand. (Kept with C.15.)

C.17 Misc. folder of notes, calculations, and notes on the literature, relating to Blackett's paper 'The magnetic field of massive rotating bodies', read at the Eighth Solvay Conference, Brussels, October 1948 (R.S.60), a typescript of which is included.

Includes copy of Blackett's 1947 paper on same subject (R.S.56), heavily annotated and revised, and copies of paper and lecture on 'Terrestrial magnetism' by Sir Arthur Schuster, 1912-13.

C.18-C.20 Misc. papers on rotating bodies. 1949

C.18 Offprint of Blackett's Solvay Conference paper (R.S.60) with ms. note on front 'p.130 wrong', and with other annotations, deletions and corrections.

C.19 'Discussion at R.A.S. 25.3.49', typescript with ms. corrections. 5 pp. (R.S. 61).

C.20 'Theoretical discussion', heavily-corrected pencil draft, 11 pp., perhaps for above discussion, 1949 (R.S.61).

Section C - Magnetism

C.21 'Field of Cylinder'.

Folder with above title: misc. notes, diagrams, calculations re magnetometer, some dated. Various dates 1950.

C.22 'Field of Rotating Cylinder'.

Folder with above title: misc. notes and calculations. c. 1951 n.d.

C.23 'Wilson experiment. Air turbine'.

Folder with above title: misc. notes, calculations, notes on the literature, some with various dates 1950-52.

Correspondence with W.A. Mair.

C.24 'Measurement of Low Magnetic Fields'.

Lecture given at Geophysical Department, Cambridge, 24.5.51.

Notes and headings, with equations and diagrams, many corrections and additions; includes account of Blackett's own rotor experiment, and possible application to '"thin" geological specimens'. 6 pp.

C.25 'Rotor Experiment. Current'.

Folder with above title: misc. notes and calculations on 'Rowland Expt.', 'Wilson Expt.' etc., various dates 1952, 1953, 1954, some referring to the 'Rotor' notebooks (C.39, C.40).

Misc. notes on equipment and functioning of rotor, including letter from Tom Ball, December 1953, on method of dismantling rotor.

C.26 Notes and working papers, mainly on design of magnetometers, some dated 1952.

C.27 'Terrella Experiment'.

Folder with above title: misc. notes and calculations on particle acceleration in magnetic fields. n.d. c. 1953

Section C - Magnetism

C.28 'Field of Dipole'.

Folder with above title: misc. notes and calculations on dipole, rotor experiment, some dated, various dates 1953, 1954

(related to paper by E.C. Bullard,'Electromagnetic induction in a rotating sphere', Proc. Roy. Soc. A, 199, a copy of which accompanies the notes).

This work, carried out after Blackett's move to Imperial College, continues the Manchester experiments.

C.29 Misc. photographs of magnetometers:

at Birkbeck, 1934-38

at Manchester, 1950, in 'Blackett's hut'

at Imperial College, 1966.

Section C - Magnetism

C.30-C.40 LABORATORY NOTEBOOKS 1947-54

The ten surviving notebooks form part of three different incomplete sequences as follows:

C.30-C.32, at Manchester University, almost entirely in Blackett's hand. It should be noted that the first observations recorded (in C.30) are dated '9.8.47.', and that observations headed 'Jodrell' are dated '16.1.49.' (p.25 of C.30).

Lovell, Memoir, gives 'during the spring and summer of 1949' as the beginning of measurements at Jodrell Bank.

C.33-C.38, at Jodrell Bank. The majority of the observations are by J.M. Pickering, checked and annotated by Blackett. Some are entirely in his own hand.

C.39-C.40, at Imperial College, London, where the work was continued after Blackett's appointment to the Chair of Physics in succession to G.P. Thomson. These books are entirely in Blackett's own hand.

C.30-C.32 Three laboratory notebooks, nos. 1, 5, 8 of an incomplete sequence, as follows:

C.30 Red notebook, cover labelled 'Book 1 1948-49' (observations begin 9.8.47. inside book) to 18.7.49.

Observations dated 16.1.49. (p.25 in book) are marked 'Jodrell'.

C.31 Green notebook, cover labelled 'Book 5', observations 30.1.50. to March 1950.

C.32 Black notebook, cover labelled 'Book 8. 10 July-17 September' 1950.

All books contain notes and calculations on the working of the magnetometer installed at Manchester University, and experiments carried out with it. Almost all the work is in Blackett's hand, sometimes with later corrections or re-thinking in pencil or red ink. Sometimes a page is in another hand, later checked over by Blackett.

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C.33-C.38 Six laboratory notebooks, nos. 4, 5, 6, 7, 8, 9 of an incomplete sequence, all labelled 'Jodrell', containing observations of magnetic swing under various conditions.

The observations cover the following periods:

C.33	Book 4	July-October 1950
C.34	Book 5	October-November 1950
C.35	Book 6	October 1950-February 1951
C.36	Book 7	November 1950-March 1951
C.37	Book 8	November 1950-January 1951
C.38	Book 9	January-April 1951.

All these books are labelled inside 'J.M. Pickering, Manchester University' and contain her observations, checked and annotated by Blackett, as well as Blackett's own.

C.39,C.40 Two black notebooks, nos. 2 and 3 of an incomplete sequence, labelled 'ROTOR 2. October 1953 to January 1954' and 'ROTOR 3. January-April 1954', with Blackett's name inside, and pages numbered by him.

Continuation, at Imperial College, London, of work begun at Manchester: notes and dates of experiments carried out, or ideas for further experiments, calculations and queries. These books are entirely in Blackett's hand.

Section C - Magnetism

C.41-C.71 CORRESPONDENCE ON MAGNETIC SPIN 1946-73

The topics principally referred to are:

Blackett's hypothesis, as set out in his papers of 1947 and 1949 and in related talks, its reception and discussion.

Experiments arising from the hypothesis, especially the new magnetometer and the 'White Dwarfs' experiment (C.42-C.44, see also C.13), and other possible experiments.

Later observations on geomagnetism.

C.41 Correspondence preceding May 1947 paper

Letter from Blackett to S. Chandrasekhar, asking for information on 'any promising stars with high angular momentum', November 1946, and Chandrasekhar's reply enclosing report on H. Babcock's paper on 78 Virginis, January 1947.
(See Lovell, Memoir, p.39 for the importance of this letter for Blackett's work.)

Letter to 'Paul' [Ehrenfest] to accompany draft of paper, March 1948.

Letters from H.H. Plaskett and Sydney Chapman re draft of paper, April 1948.

C.42-C.44 Correspondence on 'White Dwarfs', May 1947-January 1948.

Following his 1947 paper, Blackett attempted to interest astronomers in examining the spectra of white dwarfs for evidence of polarisation. It was hoped to undertake the experiment at the Solar Physics Laboratory, Cambridge, under the direction of A.D. Thackeray; it proved unsuccessful with the available equipment and conditions.

See also C.50, C.52, C.56.

C.42 Jones, H. S.

Greaves, W. M. H.

Stratton, F. J. M.

Edwards, D. L.

Oliphant, W. D.

C.43 Thackeray, A. D.

C.44 Correspondence with suppliers of optical and photographic equipment.

Section C - Magnetism

C.45-C.59 General correspondence on magnetism following 1947 paper 1947-51

Presented alphabetically, with dates and a brief indication of contents when these are of particular interest.

C.45 Arley, N. February 1948

re his paper on Blackett's theory, read at Inst. Theoretical Physics, Copenhagen, and Neils Bohr's reactions. Includes copy of paper and Blackett's autograph draft reply.

C.46 Babcock, H. W. July 1947-December 1948

correspondence, photographs and drafts of Babcock's work on white dwarfs, and comments on Blackett's paper.

C.47 Barnóthy, J. M. June 1947

Bates, L. F. May 1947 and October 1950

Bennett, J. G. June 1947

'Brab' [Brabazon of Tara] May 1947

C.48 Bullard, E. C. October 1947-June 1950

personal and scientific correspondence (on magnetism in mines).

C.49 Bjerkens, V. October 1949

Campbell N. January 1948 (Blackett's carbon only)

Chapman, S. May 1947-February 1949 (brief correspondence only)

Clark, E. F. August 1947

C.50 Cowling, T. G. April-December 1947

includes comments on draft of May 1947 paper, and correspondence on 'White Dwarfs' experiment at Cambridge.

C.51 Daudin, J. December 1947 (Blackett's carbon only)

de Haas, W. J. July 1947

Ferraro, V. C. A. July 1950 (on new evidence against fundamental theory)

C.52 Finlay-Freundlich, E. July 1947-January 1949

on 'White Dwarfs' experiment and other magnetic field experiments. Finlay-Freundlich's letter of January 1949 contains interesting reflections on the implications of this astro-physical work.

Section C - Magnetism

C.53 Fraser, R. G. J. June-December 1947 (Blackett's carbons only)

Heckman, December 1947 (Blackett's carbon only)

Hoyle, F. March 1949

Hutchison, R. March 1948

C.54 Jones, H. S. July-August 1947

re equipment and progress of Blackett's experiment to measure 'the horizontal component of the earth's magnetic fields in mines as a test of the various theories'; includes information on researches of Bullard and Runcorn.

C.55 Jones, R. V. May-June 1947

Jordan, P. 1947, 1949, 1951

includes a theory on magnetism by Jordan and comments on it by Runcorn and Papapetrou, and correspondence, February 1951, in which Blackett explains the existing state of research in magnetism and his own plans to repeat the 'crucial' Swann/ Longacre experiment.

Kopal, T. n.d.

Livens, G. H. June 1947

Lundbak, A. December 1949

C.56 McCrea, W. H. August 1947

re 'White Dwarfs' experiment and coelostat as 'a useful adjunct to Lovell's work on solar noise'.

Nash, T. May-June 1947

Orton, J. H. February 1948

C.57 Pauli, W. June 1948

letter sent to L. Rosenfeld re Blackett's theory; also 4 pp. ms. comment 'A Rough Survey and some Remarks on Pauli's Article' (by H.Y. Tzu) and some notes and calculations by Blackett.

Section C - Magnetism

C.58 Piggott, H. E. July 1947

(Blackett's former maths. teacher at Dartmouth. His letter and Blackett's reply contain biographical reminiscences.)

Redfield, A. W. July 1947

re early work on magnetism.

Runcorn, S. K. n.d.

ms. notes on problems in Blackett's theory and ms. note by Blackett taking account of same, to be incorporated in a paper.

C.59 Ryle, M. November 1948

with comments by H.Y. Tzu, re Blackett's talk (C.8)

Schatzman, E. September 1947

on White Dwarfs.

Schroedinger, E. June 1947 (Blackett's carbon only)

Weiner, T. November 1949

Wilson, H. A. July 1947 (Blackett's carbon only)

on Wilson's early experiments.

Wilson, J. C. June 1947

C.60-C.64 Continuing misc. correspondence and working papers on magnetism, possible experiments, and theories.

C.60 Chapman, S. June 1952

re Chapman's suggested experiment 'to measure speed and curl of ocean currents by electrical or magnetic measurements'.

C.61 Builder, G. 1953

C.62 Major, F. G. 1954

re possible experiment 'to investigate the space-time properties of the magnetic field', with extensive letter of comment on the proposal by W.H. McCrea.

C.63 Alzofan, F. E. (& others) 1954-55

re Alzofan's research papers on 'unified field theory'.

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C.64 Letter to J.W. Warwick, expressing Blackett's continuing interest in magnetism of rotating bodies. 1970

Letter to M. Farbstein in which Blackett states 'I have to tell you that the relationship between magnetic field and rotation, put forward in Nature (1947) proved to be quite wrong', and goes on to give a very clear summary and bibliography of the evidence against the theory. 1973

See also correspondence with W. Sullivan (J.97).

C.65-C.67 Correspondence re delivery and publication of Blackett's papers on rotating bodies (not indexed). 1947-49

C.65 Correspondence with Royal Society re delivery of paper and those to be invited to meeting, April 1947; Blackett accepted May 1947 as meeting date, but arranged to have the paper published in 3 weeks in Nature rather than wait 9 months for publication in the Society's Proceedings (see his letter to T.R. Merton, April 1947, and Lovell, Memoir, 39-40).

Correspondence with Nature re publication, May 1947.

Correspondence re circulation of paper, 1947.

C.66 Misc. brief correspondence re publication of Blackett's work or articles about it in various journals, June 1947.

C.67 Correspondence re publication of Blackett's paper in Phil. Mag. 1949.

Photocopies of letters in Nature re Blackett's 1947 paper.

C.68 Misc. press-cuttings relating to May 1947 paper.

C.69 Requests from scientists and members of the general public for reprints of Blackett's papers on rotating bodies (not indexed). 1947-51

C.70,C.71 Letters and manuscripts from eccentrics and members of the general public, arising from Blackett's papers on rotating bodies. 2 folders, not indexed. 1947-48

Section C - Magnetism

C.72-C.268 WORK ON ROCK MAGNETISM, CONTINENTAL DRIFT AND MAGNETIC FIELD REVERSAL

This work, begun at Manchester, was continued at Imperial College, London, where it became Blackett's chief research interest. There is some overlap between the later work at Manchester (see C.39 - C.40 above) and its continuation at Imperial College, where some of Blackett's research students and collaborators followed him (see especially the letter from J.A. Clegg, December 1952, in C.221).

Blackett made contributions to the study of continental drift and of magnetic field reversal, through his own researches, lectures and publications, through his initiation and encouragement of research teams in UK and abroad, and by the devising of improved instruments and techniques of magnetic measurement. All these activities can be amply documented from the records below, though Blackett's contribution to the debate on continental drift is more widely known through lectures and writings, while his work on field reversal is more extensively displayed in the data and working notes than in published work.

The high proportion of notes in his own hand in the folders below indicates his urge to maintain personal involvement in scientific research during a period when much of his time was occupied with heavy public and political commitments in Britain and overseas (see Sections E and G), and his Presidency of the Royal Society. His interest in rock magnetism continued to the end of his life; see especially C.125 - C.188 for the extensive data on magnetic field reversal and drafts for unpublished papers on the subject, and the correspondence with R.L. Wilson (C.182) and C.W.F. Everitt (C.268).

Attention is drawn to C.72 (1954) and C.125 (1967), which contain particularly clear expositions of Blackett's thought on the subject at the dates in question and, with more specific reference to magnetic field reversal, to C.170 - C.171.

Section C - Magnetism

The material is presented as follows:

C.72-C.188 Working notes and data 1953-73

These folders, while generally following chronological order, often group themselves about a specific paper or papers in which Blackett summed up his research to date and advanced hypotheses: for example, C.106 - C.124 and introductory note, dealing with his paper on climatology (R.S.88), and C.125 - C.188 and introductory note, dealing with his unpublished work on magnetic field reversal.

Correspondence found in these folders has been left in place, as have drafts or notes for lectures. The correspondence, when seen in chronological order with its related notes and data, gives a good picture of Blackett's drive in pressing on a research project.

C.189-C.220 Lectures and papers.

C.221-C.268 Correspondence.

See note to C.221 on the presentation of this material.

Section C - Magnetism

C.72-C.188 WORKING NOTES AND DATA 1953-73

C.72 Letter to Sir Ben Lockspeiser, to accompany Blackett's application to Department of Scientific and Industrial Research for three substantial research grants 'to support the study of rock magnetism' by himself and S.K. Runcorn. 5 pp. duplicated typescript. 3 May 1954

In this letter, Blackett says:

'As the subject and possibilities of rock magnetism are not very well known in this country, I have thought it fit to attempt to give a short outline of its history, and of possibilities which may result from further work.'

The succeeding 'Notes' review current work throughout the world, the contribution of various researchers (many of whom supplied specimens, data or other information to Blackett, and corresponded with him), existing hypotheses especially on field reversal, Blackett's attempts to initiate co-operative projects on an international level (especially in South Africa and with Bhabha's Institute at Bombay), the importance of the project, and Blackett's belief that at that time 'this country has, largely through the operation of various accidental causes, taken over the lead in the application of rock magnetism to geophysical problems'.

See also A.19, Blackett's letter to Rector, Imperial College, on his plans for research in the Department of Physics.

C.73 Blackett's notes on the literature, of discussions with colleagues, conference papers, etc. Various dates 1951-56

C.74 Experimental notes and calculations on earth as dipole. May 1954

C.75 Misc. notes, drafts and papers by E.C. Bullard, J. Maddox, N. Kawai, J.W. Graham and others, some annotated by Blackett. Various dates 1953-56

Misc. press-cuttings of articles on Blackett's work on rock magnetism 1955, 1956, 1961.

Section C - Magnetism

C.76 'Tests on Rock Magnetism'.

Folder of notes and graphs of laboratory work on various rocks; most are in Blackett's hand, and all are checked and verified by him. c. 1954

Includes some work in collaboration with J.M. Pickering on Triassic Sandstone.

C.77 Laboratory notebook inscribed on front cover 'P.M.S. Blackett. May 1954. Rock Minerals. Separation and Magnetic Properties'.

The experiments run May-September 1954, and deal with the magnetic fields of various rock specimens. The work was done in collaboration with J.M. Pickering, but all the notes and calculations in this book are in Blackett's hand, in ink, with his own annotations, comments or corrections added in pencil or red ink.

The pages are numbered up to 66; pages 8 and 9 contain a list of slides.

C.78 Folder of photographs, diagrams and charts on magnetic field reversal and polar wander. Many of the sites used by Blackett for his later work are indicated here.

The cover is inscribed 'T.A. Reilly. Dublin' and the contents bear some annotations in the same hand. n.d.

Section C - Magnetism

C.79-C.83 'R.M. Book. Notes and Data'.

Folder so inscribed, probably a reference to the Weizmann Lectures 1954, published in an expanded version as Lectures on Rock Magnetism, 1956.

See also C.91-C.92, C.193.

R.S.72.

C.79 Misc. notes and calculations, by Blackett and others, on various aspects of rock magnetism, remanence, polar wandering, etc., some dated. c. 1954-56

C.80 3 pp. pencilled note by Blackett (unfinished), perhaps draft for short paper or research talk, on 'Qualitative Outline of Neel's Theory of the magnetisation of dispersed magnetic materials'.

C.81 Correspondence 1954-55 (kept with above) in chronological order:

Marsden, E.	(Letter to L.F. Bates, passed on to Blackett)
Gough, D. I.	(Transvaal Dykes)
Welsh, A. J.	
Carey, S. W.	(Tasmanian rocks)

C.82 Correspondence 1955.

Asami, E.	(Japan lavas)
Holmes, A.	(Deccan Trap)
Belshé, J. C.	

C.83 Correspondence 1955-56.

Gorter, E. W.	(spontaneous magnetisation in Bohr magnetons)
Einarsson, T.	(Icelandic lavas)
Dubois, P. M.	(Blackett's carbon only)

Section C - Magnetism

C.84 'Rock Magnetism. References. Notes to be followed up, etc.'

Folder of notes on the literature, including theses and information by colleagues. Various dates 1955-56

Includes correspondence from: K.M. Creer, H.L.P. Jolly, R.L. Wilson.

C.85 'Indian Lavas'.

Folder of experimental graphs and observations on effects of heating and cooling on the magnetism of various specimens, by Blackett and another. Various dates 1955-56

C.86 'Tapping Tests'.

Folder of misc. calculations and experiments, begins April 1956, but mostly dated August 1956.

See also C.195 for a paper given by Blackett on this experiment.

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C.87-C.90 Work on new magnetic measuring instrument, designed by Blackett and D.J. Sutton.

See Lovell, Memoir, pp.91-92 and R.S. 71, R.S.72.

C.87 Laboratory notebook, labelled 'P.M.S. Blackett, February 1955. Vibration Instrument'.

Observations begin 2 February under the heading 'Rough Test of Vibrating Instrument as left by Sutton' and continue to March. All the graphs and calculations are in Blackett's hand, and pages numbered by him up to 72.

C.88 'R.M. Vibration Instrument'.

Folder of notes and drafts, by Blackett and Sutton, and two typescript drafts of their joint paper dated June 1955.

R.S.71.

C.89 'The separation of small quantities of magnetic materials'.

Several ms. and typescript drafts for Appendix 2 of R.S.72.

C.90 Folder of notes, drafts and calculations, mainly on 'Jumping distances' of particles of various rocks, used as preparatory material for paper (dated 1955) and later work (dated 1957).

Also included is brief correspondence with E.M.I. 1957, and 9 pp. notes by Blackett on 'Pick up Coil', n.d.

Section C - Magnetism

C.91-C.94 'R.M. Recent Reprints'.

Folder so described, containing:

C.91 Typed transcript of recording of the first of three Weizmann Memorial Lectures, given by Blackett at Rehovot, 16 December 1954.

Includes Introduction, concluding remarks and conferral of Fellowship on Blackett, by Chaim Pekeris.

(There are many blank spaces in the transcript, which was reworked and expanded for later publication.) 17 pp.

C.92 Press-cuttings of reviews of Lectures on Rock Magnetism (published version of the Weizmann Lectures) 1956-57.

R.S.72.

See also C.79-C.83, C.193

C.93 Misc. notes on the literature, reports and data sent to Blackett for information.

C.94 'Suggested programme for palaeo-magnetic research in the rock magnetism group of T.I.F.R.' [Tata Institute, Bombay].

Contains a review of work in progress and relations with other groups, particularly Blackett's group at Imperial College. n.d. c. 1957

C.95 Misc. correspondence with instrument makers and research laboratories re equipment and materials for experiments in magnetism.

Newport Instruments	1957
Philips Research Laboratories	1958
Mullard Ltd.	1958

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C.96-C,100 'Rock Magnetism. Physics 1961'.

Folder so described, dealing mainly with work 1958-61.

C.96 Notes, ideas, notes on the literature, including theses and papers submitted by colleagues and students. Work mainly done 1959-61, but includes some notes dated 1956.

C.97 Plans and notes for lectures given at Kyoto 1961, under the title 'On Distinguishing Field from Self-Reversed Rocks or On Determining the History of the Earth's Magnetic Field from Rock Magnetism'.

(The lecture was published in 1962 with a slight change of title. R.S. 90.)

Folder also includes 1 p. notes of 'Discussion' with colleagues at Tokyo, 1961.

See also C.207.

C.98 Correspondence 1958-59.

Bates, L. F.

Barnard, G. A.

Bernal, J. D. (comments on Blackett's work on continental drift)

C.99 Correspondence 1961.

Buddington, A. F. (ilmenites)

Carmichael, C. M. (ilmenites)

Grogan, R. M. (ilmenites)

Uyeda, S. (ilmenites)

Wohlfarth, E. P. (paper by Carmichael)

Nicholls, G. D. (" " ")

C.100 Correspondence 1961.

Dunham, K. C.

Holmes, A. (comments on Blackett's climatology paper)

Bozorth, R. M.

Blackman, M.

Irving, E.

Section C - Magnetism

C.101-C.102 'R.M. Lecture Notes, etc. 1958'.

Folder so described, containing:

C.101 Letter and paper on 'Fossil Magnetism', from E.R. Deutsch; 1 p. ms. notes by Blackett 'Rock Magnetism Conference. Introductory Remarks', n.d.

Ms. and typescript notes on thesis by G. Haigh on Deccan Trap lavas.

Comments on 'An Analysis of Rock Magnetic Data' (by Blackett, Clegg and Stubbs, R.S.79), with a ms. note by Blackett 'Blundell'. This is D.J. Blundell, whose covering letter, and additional material, are in C.107.

C.102 Blackett's notes and calculations.

C.103-C.105 'Geology and Continental Drift. Physics of Drift'.

Folder so described, containing:

C.103 5 pp. pencilled notes, diagrams and calculations by Blackett, dated 1.1.60. on various aspects of continental drift, headed:

'Continent and Ocean in static equilibrium'

'Effect of virtual convection current on continents assuming phase change structure'

'Dynamic lifting of continent by virtual convection current'

(p.1 has a date 'December 1939' but this is a slip of the pen for 1959, which Blackett often made.)

C.104 Blackett's notes, and information sent to him by others.

C.105 Correspondence 1953-58.

In chronological order:

Jones, O. T.	1953
Hopgood, C. H.	1954 (with papers and reports re his theory of displacement of earth's crust)
Carey, S. W.	1955
Einarsson, T.	1955 (Icelandic rocks)
Gussow, W. G.	1958

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C.106-C.124 Notes, working papers, drafts and correspondence relating to: 'Comparison of ancient climates with the ancient latitudes deduced from rock magnetic data', (Proc. Roy. Soc. Lond., A.263).

R.S.88

This paper was referred to as 'Climatology Paper' in many of the documents, and used by Blackett as a running title on his folders.

These folders, though incomplete and disordered, well illustrate Blackett's method of work. In addition to the large proportion of graphs, notes and calculations in his own hand, the correspondence shows his continuous search for information and new data from colleagues, and his incorporation of the latest findings into successive drafts and revisions of his paper.

Correspondence on special topics, e.g. corals, remains in the relevant folders among the working papers, where Blackett retained it; other correspondence is in his 'Correspondence' folders, C.114 - C.123.

C.106 'STEHLI'.

Notes, diagrams, related offprints on 'Permian climatic zonation', with special reference to paper by F.G. Stehli, Am. Jour. Sci., 1957.

See also C.243.

C.107 'SALT and Arid Area Maps'.

Notes and diagrams, some dated 1960.

'Antarctica'.

Notes, diagrams, etc. Correspondence with D.J. Blundell 1960, with information on Blundell's palaeomagnetic investigations and his comments on the paper by Blackett, Clegg and Stubbs R.S.79 (for the text of these comments see C.101).

C.108 'Rock areas by latitude measurement'.

Extensive graphs, tables and diagrams, some dated 1961.

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C.109 'CORAL REEFS 1. Maps'.

Maps, graphs, calculations, notes on the literature (especially articles by Dorothy Hill), some dated 1961.

Correspondence:

Dorothy Hill, April-July 1960 (N.B. the tone of this correspondence, and the fact that C.L. Forbes suggested to Blackett in January 1960 that he should write to D. Hill, do not suggest that they were already acquainted. See Lovell, Memoir, p.92.n.)

Colin L. Forbes (data for paper, comments on first draft, new data to be included in second draft) January 1960-February 1961.

C.110 'CORAL REEFS 2'.

Maps, graphs and calculations, based especially on the work of D. Hill; includes letters from her, February 1961, enclosing material for Blackett's paper at his request.

C.111 'COAL'.

Notes and graphs. n.d.

C.112 'Climatology Paper. Final Calculations'.

Mainly graphs, some dated 1960.

C.113 'Climate Paper. Final Calculations and Data'.

Some dated 1960.

C.114-C.123 'Climatology Paper. Correspondence' December 1959-May 1961

These letters deal specifically with points related to this paper: Blackett's requests for information and material, or for comments on drafts of the paper, or on related points arising from his earlier paper in collaboration with Clegg and Stubbs, R.S.79.

The correspondence is presented alphabetically.

For other correspondence related to Blackett's work on rock magnetism, see C.221-C.268.

Section C - Magnetism

C.114 Ager, D. V.
American Museum of Natural History
Association des services géologiques africains
Bain, G. W. (Blackett's carbon only)
Bernal, J. D.

C.115 Brown, S. H. (Blackett's carbon only)
Bullard, E. C.
Bureau de recherches géologiques et minières
Creer, K. M.
Crowther, J. C.
Dabrowski, A.

C.116 de Beer, G.
Demarest, M. (for TIME magazine)
Doell, R. R.
Edward Stanford Limited
Fischer, A. G.
Graham, J. W.

C.117 Griffiths, D. H.
Grogan, R. M. (Blackett's carbon only)
Harland, W. B.
Hawkes, L.
Hills, E. S.

C.118 Holmes, A.
Howell, L. G.
Ingels, B. D.
Irving, E. (Blackett's carbon only)
Janossy, L.

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C.119 Kalashnikov, A. G.
Kirwan, L. P. (Blackett's carbon only)
Krumbein, W. C.
Lotze, F.
McConnell, R. B.

C.120 McKee, E. D.
Menard, H. W.
Nicholls, G. D.
Revelle, R. R. (Blackett's carbon only)
Robie, J. W.

C.121 Runcorn, S. K.
Schove, D. J.
Seligman, G.
Slichter, L. B.
Stewart, F. H.

C.122 Stubblefield, C. J.
Teichert, C.
Teisseyre, R.
Termier, H.

C.123 Thellier, E.
Tuve, M. A.
UNESCO (Arid Zone Unit)
Wills, L. J.

C.124 'Climate Paper. Final drawings'.

Folder so described, containing:

First typescript draft for paper, dated May 1960.

Revised typescript with ms. corrections, November 1960.

Figures and diagrams.

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C.125-C.188 WORK ON MAGNETIC FIELD REVERSAL

This topic occupied much of Blackett's interest in rock magnetism; he delivered a paper on the subject at the International Conference at Kyoto, Japan, in 1961 and from about 1964 concentrated almost entirely upon it, with the help of his research assistants, notably Miss J.L. Langbein. The working papers are very extensive both in time and in the detail of the recordings, measurements, calculations and drafts.

The unpublished paper 'Some observations of the petrology of normal and reverse lavas', subtitled 'Progress Report on Work carried out since 1965' and dated July 1967, provides a brief account of the work and a guide to the detailed worksheets. It has therefore been taken out of chronological sequence and placed at the head of this section as item C.125, together with 'Table 1. Details of sites and samples' (included as a loose page) which lists the sites and the names of the collectors of samples. The working papers are presented in the order of the sites (15 in all) and many of the folders include correspondence with the collectors.

Although the 1967 paper refers to 'work carried out since 1965', some of the work began earlier (several folders and letters are dated from 1963) and Blackett maintained his interest and research on the problem after 1967. Items C.162 - C.188 deal with the continuation of the analysis, and also with additional samples analysed and measured in the period 1965-67 but not included in the 15 sites chosen for the 1967 paper.

Much of the work is in Blackett's hand and indicates his determination to give whatever time he could to scientific research despite his many political activities at this period (see Section E). The titles and descriptions in inverted commas are those he gave to folders, bundles of notes or data. Work in other hands has been identified wherever possible.

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The material is presented as follows:

C.125 - C.132	Texts, drafts and corrections of July 1967 paper.
C.133 - C.161	Working papers on field reversal 1962-67, preceding July 1967 paper.
C.162 - C.165	Working papers on field reversal not used in July 1967 paper.
C.166 - C.169	Working papers on field reversal intended as extension of work for July 1967 paper.
C.170 - C.188	Reworking of data, oxidation controversy and last research 1967-73.

Section C - Magnetism

C.125-C.132 Texts, drafts and corrections for Blackett's July 1967 paper

C.125 'Some observations of the petrology of normal and reverse lavas'.

Includes: 'Master copy' of paper, with annotations and corrections in Blackett's hand;

2 uncorrected photocopies of paper, one of which has tables lacking in the 'Master copy';

2 copies of 'Table 1', listing 15 sites and samples, one annotated.

C.126 Folder of 'Data Sheets'.

Collected data and summaries of findings on the 15 sites chosen for 1967 paper; almost all in Blackett's hand, some by J.L. Langbein.

C.127 'R.M. Report. Figures and Tables'.

Drafts, revisions and calculations for diagrams and appendices in 1967 paper.

C.128 'Final results. Data for paper'.

Notes, calculations, diagrams, all in Blackett's hand, some with various dates March-July 1967, one dated August 1966; includes Blackett's hand-drawn first draft of diagrams for paper.

Correspondence: R.L. Wilson.

C.129 'Dating'.

Notes and diagrams, one dated 29.10.66. and headed '9 problem dates included in Doell table'.

C.130 'Petrological Classification'.

Diagrams and tables on the chosen sites for 1967 paper, all in Blackett's hand, various dates 1966-67.

Includes letter from J.M. Ade-Hall, May 1966, and 2 papers by him: 'Preliminary Results of Petrological Examination of Roche Samples' (20/4/66) and 'A Qualitative Examination of a Sequence from the Deccan Plateau Basalts' (4/5/66) both annotated by Blackett.

Section C - Magnetism

C.131 Notes on probability and standard deviation, used for a note to an appendix for the paper; a draft of the note is included.

C.132 'R.M. Report. Comments on drafts'.

Extensive re-working of sections of the July 1967 paper, with accompanying notes, most in manuscript, some in heavily-corrected typescript. Many of the pages are in numbered sequences, but do not follow each other as a complete whole. Some bear various dates in August 1967.

Correspondence, with comments on, and additional material for the paper, from J.M. Ade-Hall (2 letters) and N.D. Watkins.

Section C - Magnetism

C.133-C.161 Working papers and data on field reversal (for 1967 paper)

C.133 'P.T.R.M.' [Partial thermo-magnetic remanent magnetism].

Folder so described, containing notes and diagrams, with some fuller drafts for papers or ideas for research. 1962-63

Includes: 'Implication of Relationship between Alternation, Redness and Size', 2 pp.

'Notes on Lewis's Results', 9 pp., April 1963.

2 drafts, each 10 pp. heavily corrected, with title 'Phenomological Analysis of Reverse Thermo-Magnetic Remanence', one dated 'August 1962'.

C.134 'R.P.T.R.M. Paper with Havard and Lewis'. [Reversed partial thermo-magnetic remanent magnetism].

Folder so described, of notes and research material.

Includes: 'Ade-Hall Electron Probe Results'.

'Titano-Magnetites'.

Report by C.M. Carmichael 'Linga Series of Indian Lavas', July 1962, 2 pp. annotated by Blackett.

D.S.I.R. report by M. Lewis on work in progress, mainly on reverse magnetism in Deccan Trap lavas, 10 pp., May 1963.

Misc. notes on the literature.

Misc. notes, diagrams and calculations.

Correspondence with E.A. Vincent, April 1963.

Note: The paper by Havard and Lewis referred to on the file-cover was published as 'Reversed partial thermo-magnetic remanence in natural and synthetic titano-magnetites' in Geophys. J., 10, 1965.

Section C - Magnetism

C.135 'Ade-Hall Electron Probe Paper'.

Folder so described, including typescript draft of paper by J.M. Ade-Hall 'Electron probe microanalyser analyses of basaltic titanomagnetites and their significance to rock magnetism', with corrections by the author amd some by Blackett, for publication in Geophys. J.

Offprints of papers by Ade-Hall and R.L. Wilson on natural and reversed magnetism of Mull lavas. 1963-64

C.136 'Mull. Dutt. Measurements'.

(Site 1. Collector: S.K. Dutt).

Worksheets of observations by J.L. Langbein (most October 1964), notes and calculations by Blackett, some dated 1967.

Notes on 'Dutt's Rock' and a letter (undated) by J.M. Ade-Hall.

C.137 'Mull A
Mull B. Copy of Measurement Sheets'.

(Sites 1 and 2. Collectors: S.K. Dutt, J.M. Ade-Hall).

Worksheets by J.L. Langbein on samples from both sites, September-October 1964.

C.138 'Mull Dyke and Baked Lavas A and B'.
'Iceland core'.

Includes: worksheets on 'Iceland core', by J.L. Langbein, dated March 1965, with later calculations by Blackett and McMurry;

later sets of worksheets on baked and unbaked Mull lavas all in Blackett's hand, some with various dates in July 1967.

C.139 'Mull B'.

(Site 2. Collector: J.M. Ade-Hall).

Includes: worksheets on Mull B samples, by J.L. Langbein, dated 1964;

notes and diagrams on the samples, by Blackett and Farrell;

data, calculations and notes on new specimens, all by Blackett, some dated April-May 1967;

letter from Ade-Hall, March 1967, to accompany experimental results, and three drafts of Blackett's reply;

related offprints (annotated).

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C.140 Small black notebook with Blackett's name inside front cover, with pages of notes numbered 1-12,+ 3 unnumbered pages.

The first page is dated 6/6/63 and has notes on Dutt's rocks in Ade-Hall's hand. The rest of the book is all in Blackett's hand, and consists of notes and diagrams on the magnetisation of Mull Dyke lavas, some with geographical notations and markers suggesting they were made on site by Blackett.

C.141 'Iceland. Sigurgeirson'.

(Site 3. Collector: Sigurgeirson).

Includes worksheets, some by J.L. Langbein dated January 1966 and some in Blackett's hand, undated.

Notes and calculations by Blackett, comparing the results and concluding 'Bad agreement JL and PMB. Alter final result'.

Copy, annotated by Blackett, of paper by J.M. Ade-Hall on Icelandic lavas, 1963..

C.142 'Papers. Wilson Haggerty Watkins. Study of Single Lava'. 1967

Misc. material, mainly drafts for papers by authors listed above, submitted to Blackett for comment or information, with some annotations by him.

Watkins's paper has a ms. note 'p.9 removed to draft paper'.

C.143 'Iceland. Post Glacial Lavas. Haggerty. Measured by P.M.B.'.

(Sites 4, 5, 6. Collector: S.E. Haggerty).

Worksheets, diagrams and calculations on various types of Icelandic lavas, all in Blackett's hand, various dates July 1966.

Note on the lavas by S.E. Haggerty and letter by him forwarding specimens to Blackett. 1967

Section C - Magnetism

C.144 'Iceland. Haggerty. Catalogue of samples. Results'.

(Sites 4, 5, 6).

Calculations and results, all in Blackett's hand, mostly dated December 1965.

Blackett's notes on the samples and results, December 1965.

Correspondence re samples, September-December 1965 from S.E. Haggerty, R.L. Wilson, P. Dagley.

C.145 'Haggarty (sic) I R + N'.

Worksheets on Icelandic lavas, 1 p. by J.L. Langbein, the rest by Blackett, various dates August-October 1965.

C.146 'Haggerty Series 2. R + N. Tertiary?'

Worksheets and calculations, all in Blackett's hand, undated.

C.147 'Iceland. Haggerty. Series 3. Tertiary R and N'.

Worksheets, all in Blackett's hand, undated.

C.148 'Columbia River Basalts'.

(Site 7. Collector: N. Watkins).

The samples are generally referred to as 'Columbia Plateau Basalts' on the notes and worksheets.

Includes: correspondence with Norman Watkins, sending samples and information, June 1963;

notes and comments on Watkins's results by E.W. McMurry, n.d.;

letter from Jennifer Langbein, August 1964, on 'Random Redness' of Columbia Plateau Basalts, and also announcing arrival of Roche samples (Site 9) with many calculations by Blackett on 'Redness', various dates June and August 1964;

misc. calculations on Columbia Basalts, various dates 1964, 1965, 1967;

worksheets on Columbia Basalts by J.L. Langbein, February 1965.

Section C - Magnetism

C.149 'Steens Mountain'.

(Site 8. Collector: N. Watkins).

Worksheets and notes on specimens by J.L. Langbein and Blackett, most dated August 1965.

C.150 'Roche'.

(Site 9. Collector: A. Roche).

Includes: correspondence with E. Thellier (1963) and A. Roche (1964-65) re samples and research projects;

worksheets by J.L. Langbein, most dated September 1964 (see her letter in C.148 above);

misc. calculations by Langbein and Blackett on various aspects of the Roche samples, various dates, May, August 1965, March 1966.

See also C.225, C.246.

C.151 'Asami results. July '64'.

(Site 10: Collector: E. Asami).

Includes: correspondence with Eizo Asami re Blackett's request for samples January, May 1965, with misc. offprints by Asami, annotated and underscored by Blackett;

comments on Asami's results in another hand (with calculations by Clegg) n.d.;

worksheets by J.L. Langbein, most dated July 1964;

misc. calculations by Blackett and Langbein on various aspects of Asami's specimens.

C.152 'Hawaii. Doell. all N'.

(Site 11. Collector: R.R. Doell).

Includes: worksheets by J.L. Langbein and Blackett, various dates March-August 1965, and some October 1964;

misc. calculations on various aspects of Hawaiian samples, almost all by Blackett, mainly 1965; 1 p. dated August 1966.

Section C - Magnetism

C.153 'Hawaii. Kauai. Measurements'.

(Site 11. Collector: R.R. Doell).

Includes: exchange of letters with Richard R. Doell, June 1964-August 1965 re exchange of samples, research methods and results. Some of the relevant research notes, e.g. codes of samples, lists of normal and reverse magnetisation, have been left accompanying the letters to which they refer. Several of the letters refer to Blackett's political activity and the scant amount of time available for research, but at the same time show his determination to continue scientific work and the excitement he derived from the results;

map of Icelandic lavas with extensive notes by Doell, perhaps sent October 1964 (see correspondence of that date, above);

misc. notes and calculations by Blackett on Doell's Kauai samples, some dated 1966 and 1967;

worksheets on Doell's samples by J.L. Langbein and Blackett, June 1965, with note by Blackett '17.7.67 Removed data sheet for app. of paper'.

C.154 'Hawaii. Tarling 1 and 2'.

(Site 12. Collector: D. Tarling).

Worksheets and calculations, almost all by J.L. Langbein, dated December 1964, January 1965, May 1965.

C.155 'Tarling. Hawaii results'.

(Site 12).

Worksheets and calculations by J.L. Langbein and Blackett, most dated July 1965.

C.156 'Sani Pass. Maseru. Stormberg Lavas. Results November 1964'.

(Site 13. Collectors: Van Zijl et al).

Includes: correspondence with Anton Hales (2 letters) and Jan van Zijl re samples, 1964-65;

worksheets and calculations by J.L. Langbein and Blackett on various aspects of Sani Pass and Maseru lavas, various dates October-December 1964.

Section C - Magnetism

C.157 'Deccan Lavas. List of specimens. Heating and cooling curves'.

(Site 14. Mahabaleshwar. Collector: Sahasrabudhe).

Folder has an additional ms. note 'see also theses by Haigh, Wearing, Havard'.

Various series of notes, graphs and data, all in Blackett's hand, including 'Summary of Data April 1963', notes for 'new paper' with comparison of results by Haigh, Wearing, Langbein, etc., and much other data on Linga rocks.

C.158 'India. Mahabaleshwar (M series) 1966'.

(Site 14).

Includes: worksheets on 'M series' all in Blackett's hand 1966;

calculations and tables of various aspects of 'M series', most dated 1966, 1967.

C.159 'Kinghorn'.

(Site 15. Collector: R.L. Wilson).

Worksheets by J.L. Langbein, most dated January- February 1965, offprint on Scottish carboniferous basalts by Wilson and Everitt, and some notes on the specimens by J.A. Clegg.

C.160 Blue Imperial College notebook, kept by G. Haigh, of experiments on thermal magnetisation.

Inside the front cover is a note by Blackett of figures from 'Haigh notebook'.

The experiments are undated, but one page of 'X-ray work at Birkbeck' is dated 'from 28.v.56.'

C.161 Blue notebook of colour photographs and diagrams of rocks analysed in July 1967 paper (with notes and descriptions by J.L. Langbein).

A list of slides of rock specimens in Blackett's collection is included on a loose page.

Section C - Magnetism

C.162-C.165 Notes and material on sites and samples collected but not used for July 1967 paper.

C.162 Folder of misc. notes on various sites.

Includes: ms. note on Tasmanian samples by J.M. Ade-Hall, 1963;

draft paper on volcanic rocks of Rift Valley, Kenya, no author or date;

Blackett's notes on the literature;

Blackett's graphs of normal and reverse magnetisation dated December 1964.

C.163 'Antrim Dykes etc.'.

Worksheets, all in Blackett's hand, one set dated August 1967. (Work on the Irish lavas had been suggested to Blackett by Anton Hales in his letter of 26 January 1965. See C.156.)

C.164 'Amba. Nipani'.

(This refers to two Indian sites, chosen for investigation by Blackett but not used in the July 1967 paper.)

Includes: Blackett's 'quick look at Amba and Nipani studies' dated May 1964 in which he analyses information and concludes on similarity of rocks;

'Random redness' analyses by J.L. Langbein, August 1964;

worksheets on Amba and Nipani rocks by J.L. Langbein, February 1965;

letter from J.L. Langbein, August 1964, on these and other specimens being analysed;

letter from J.M. Ade-Hall, January 1964, on his Electron Probe paper (see C.135) and his Mull lavas (see C.137-C.140).

C.165 'Recent lavas'.

Folder of misc. worksheets and calculations on other lavas, not used in 1967 paper.

Blackett's list of sites is on the cover of the folder. There are notes on rocks from Tristan da Cunha, Mauna Loa, Surtsey Island, Etna, Easter Island, Juan Fernandez, Massa Tierra Island, Iceland, etc.

Also included is a letter from K.M. Creer on Tristan da Cunha rocks, n.d.

Section C - Magnetism

C.166-C.169 Notes and material intended as extension of 1967 paper.

C.166 Blackett intended to expand his July 1967 paper by further data from 3 additional selected sites: Turkana (Collector: Brock), Iceland (Collector: R.L. Wilson), and Devonian (Collector: E. McMurry), bringing the total to 18.

A copy of Tables 1, 2 and 3 of the 1967 paper, with the additional results pencilled in by Blackett, is listed here as a separate item and guide to C.166-C.169 and C.182-C.185.

C.167 'Turkana'.

Folder of worksheets and calculations on the lavas, all in Blackett's hand.

Letter from P.K.S. Raja, to accompany specimens.

C.168 Lower Devonian Lavas.

Misc. notes and worksheets, most headed 'McMurry. Lower Devonian Lavas', some dated June, July 1968 and some re-workings, September 1972.

C.169 'Lewis. McMurry'.

Draft paper by M. Lewis, 'Some experiments on synthetic titanomagnetites', December 1966, with corrections and annotations by Blackett and 2 pp. ms. notes.

Draft paper by E.W. McMurry, 'Palaeomagnetic results from Scottish lavas of lower Devonian age', n.d. (c) 1967-68, with corrections and annotations by Blackett.

Note: Material relating to the third site chosen for the additional investigation, 'Iceland W.C.', was kept by Blackett with the 'reworked' folders, and appears in C.182-C.185.

Section C - Magnetism

C.170-C.188 Re-working of data, with special reference to the 'oxidation controversy'.

These folders deal with new research, or the re-working of previous samples and data, in an attempt to determine whether field reversal was attributable to changes in the earth's magnetic field, or was self-induced by magnetic interactions between differing iron/titanium oxides (the Fe-Ti relation referred to in the correspondence and documents below).

The work was mainly based on samples provided by J.M. Ade-Hall and R.L. Wilson at Liverpool University, with whom Blackett maintained regular links by correspondence and visits. See the relevant correspondence in C.221-C.268 below.

Blackett's ideas on the subject can be seen developing in C.170-C.171, and are set out humourously in C.172.

With the exception of tables of results, etc. sent to Blackett for information, all these notes, worksheets and classification of data are in his own hand, which becomes increasingly cramped in the later work.

See C.219 for lectures by Blackett on oxidation.

C.170 Correspondence with J.M. Ade-Hall, July and August 1967, with a detailed draft reply from Blackett outlining his ideas for further research on oxidation and some early results.

Also included is a related short ms. paper by P.J. Smith, annotated by Blackett.

C.171 'R.M. notes, etc. July 1968'.

Misc. notes on the literature or on conversations with colleagues, calculations and plans for research, the latter sometimes appearing as marginalia or comments in red ink.

Some of the notes are in sequence, others are loose pages; most have no date, but some have dates 1966, with 1 p. 'Random Thoughts!' January 1968.

The file includes a 2 pp. sequence of assumptions and deductions on oxidation and self-reversal dated 15.5.66, and a draft for 'Appendix' probably for July 1967 paper.

The folder gives a good impression of Blackett's methods of work.

Section C - Magnetism

C.172 2 pp. ms. notes, with many additions and revisions, of an examination of the field and self-reversal controversy expressed in parodic form as a legal case 'Core v/s Surface', described as 'Situation like last chapter but one of one of the detective stories by one of Oxford's Hon.D. Laws'. The pages are numbered 5 and 6 by Blackett and presumably formed part of a longer sequence which has not survived.

The notes include 'Case for prosecution of Earth's core' (i.e. self-reversal), 'The Core's Case for its Defence', and verdict of 'NOT PROVEN'.

There are also 2 quatrains of rhyming couplets by Bret Harte, copied out by Blackett.

There is no indication of place or date, or whether the 'case' was publicly delivered. The paper used is the same as for the 'Random thoughts' notes dated 1968 in C.171.

C.173-C.175 'Oxidation Controversy'. 1967-68

Notes and correspondence relating to paper by R.L. Wilson and N.D. Watkins, 'Correlation of petrology and natural magnetic polarity in Columbia Plateau basalts', Geophys. J., 12. Their findings were challenged by E.E. Larson and D.W. Strangeway in Geophys. J.

C.173 Copies of Larson and Strangeway's paper, and of Wilson and Watkins's reply, with 4 pp. ms. note by Blackett on the controversy dated 22.12.67., and other notes on the Steens Mountain result, and correspondence with R.L. Wilson, January 1968.

C.174 Letter from N.D. Watkins with data on Steens Mountain oxidation analyses, July 1968.

C.175 Misc. related offprints on same topic, almost all annotated or underscored by Blackett.

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C.176 'Single lava. CO64. Ade-Hall, July 1968'.

Folder so described.

Includes: correspondence from J.M. Ade-Hall on specimens, June and September 1968;

worksheets, graphs, calculations all in Blackett's hand, some dated June 1968.

The 'Single lava' is not identified, but may be the Canary Island specimen referred to by Ade-Hall in his letter of August 1967 in C.170.

See also C.185, note.

C.177-C.180 Reworking of Mull dykes and Antrim baked lavas.

C.177 Misc. worksheets and data on Antrim and Mull lavas, some referring to Ade-Hall's 'Electron Probe' work and to P.J. Smith's 'homogeneous titanomagnetite work' (see C.134-C.135, C.164 and C.170).

C.178 Misc. worksheets and data, calculations and tables, various dates, February-May 1970.

Includes: letters from R.L. Wilson and J.M. Ade-Hall enclosing specimens, September and December 1969.

These notes probably originally constituted a 'Mull Dyke 1' folder to accompany 'Mull Dyke 2' and '3' below.

C.179 'Mull Dyke 2. Worksheets. Data 7.2.70'.

Extensive worksheets, all in Blackett's hand, marked 'N.S.' or 'New Set', various dates January-February 1970.

Duplicated draft of Ade-Hall's 1962 paper 'The Relationship between Petrology and Remanent Magnetisation in the Dutt Mull Basalt Collection', with many ms. annotations by Blackett.

C.180 'Dykes paper. Collected results 3'.

Misc. graphs and working papers.

Preprint of paper by Ade-Hall and R.L. Wilson on 'Opaque petrology and natural remanence polarity in Mull (Scotland) Dykes', with some annotations by Blackett, and a brief note from Ade-Hall, November 1969.

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C.181 'M. Series. Measured 1970'.

(a re-working of data from Site 14, Mahabaleshwar, India)

Worksheets and calculations, all in Blackett's hand, most dated May 1970.

C.182-C.185 Work on Western Iceland (WC).

This, which had been intended to be used as Site 17, Collector: R.L. Wilson, in the proposed extension to the July 1967 paper, represents Blackett's last piece of scientific research. See also C.166, C.176.

C.182 Extensive correspondence with R.L. Wilson, April 1971-July 1973. The correspondence shows Blackett's continuing wish to maintain an active interest in rock magnetism, and to participate in research. He undertook petrological analyses of Western Icelandic rock samples for Wilson, and exchanged results and information throughout 1972. Here, as in earlier work, Blackett insisted on some form of coding so that the work was done 'blind' to avoid any possibility of biased findings; tables and data to accompany specific letters have been left as received.

In his letters of May and July 1973, Blackett admits his inability to complete the task or undertake any further research, and concludes: 'I certainly won't undertake any more petrological work - in fact I won't do any more experimental work at all'.

C.183 Extensive worksheets, calculations, graphs, etc. on Western Icelandic rocks sent from Liverpool by R.L. Wilson, all in Blackett's hand, various dates January-September 1972.

C.184 Recent papers and research data sent by Wilson at Blackett's request to bring him up to date on work in progress.

C.185 'Iceland 6.10.72.'

Extensive folder of worksheets and calculations, tables, notes on the literature, comparisons of 1967 and 1971 collections of Icelandic specimens, all in Blackett's hand (except for brief explanations to accompany samples, in R.L. Wilson's hand).

Includes: 5 bundles of worksheets, various dates, November 1971-October 1972. The sheets are in the order of the numbered specimens as Blackett kept them, which does not necessarily correspond to chronological order;

C.185 continued

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C.185 continued

sheets of notes, calculations and codings, various dates, January, March, September 1972;

notes on the literature and plans for research, n.d. probably late 1971.

Note: some of the worksheets contain data marked 'CO' and dated 1967; see C.176.

C.186 Misc. items relating to Blackett's Rock Magnetism Group at Imperial College.

Includes synopsis of course (n.d.), lists of reprints, 1956, list of Ph.D. Theses, 1954-61, report on work of group 1957-60, notes, correspondence and text of research report 1965-66.

C.187 Administrative correspondence re members of group, equipment, theses, etc. (not indexed) 1964-66.

See also A.23.

C.188 Misc. offprints on the oxidation controversy, all annotated by Blackett.

Section C - Magnetism

C.189-C.220 LECTURES AND PAPERS ON ROCK MAGNETISM 1953-72

The material is presented chronologically as far as possible with cross-references to working papers, correspondence or other related items elsewhere in the collection.

All items are autograph manuscript unless indicated otherwise.

Section C - Magnetism

C.189, C.190 2 lectures given at Rome, January 1953, both heavily corrected mss. in poor condition, first lecture 6 pp., second lecture 4 pp.

P.1 (with title) of first lecture is missing; second lecture is titled 'Measurement of Magnetism of Rocks'.

C.191 'Rock Magnetism 1. Delhi, January 1953'.

Brief headings for lecture, 1 p. only.

C.192 'Rock Magnetism. B.A. Oxford, September 1954'.

Headings and notes for lecture given at British Association meeting, 6 pp. with many underscorings, additions, notes of points to be discussed with colleagues, and followed by pages of notes perhaps taken at other lectures or arising from talks at meeting.

C.193 'Rock Magnetism. Rehovoth, 1954 1', and 'Rock Magnetism 2. Rehovoth. Rough notes'.

Brief headings only for Weizmann Memorial Lectures, later expanded and published as Lectures on Rock Magnetism, 1956.

R.S.72.

Also included are contract with publishers, press-cuttings of reviews of book, brief editorial correspondence.

See also C.79-C.83, C.87-C.90, C.91-C.92.

C.194 Notes for three lectures.

'Rock magnetism, Mexico City 31/8/55'.
Headings, diagrams, brief notes for talk, 3 pp.

(included with above) 'Kapitza Institute, June 4, 1958 R.M. and C.D.' (Rock Magnetism and Continental Drift).
Headings and notes, using similar material, 3 pp.

'Cambridge. Geophys. Colloquium, May 7 1956'.
Headings, diagrams and notes, some on continental drift, but mainly on field reversal, 4 pp.

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C.195 'Effects of Vibration on some igneous rocks, September 1956'.

Typescript and ms. draft for paper describing 'tapping' experiment, 5 pp. + 2 pp. figures and graphs.

See also C.86 for working papers on this experiment.

The work arose from the paper on 'Self-reversals in British rocks' by C.W.F. Everitt, a typescript draft of which, annotated by Blackett, accompanies the document.

C.196 'Rock Magnetism. Synopsis of lectures at the the B.A. September 1956'.

Typescript with ms. corrections, 4 pp.

C.197 'The Magnetism of Rocks', talk given on BBC "Science Survey", 9 December 1954. Galley proofs and copy of The Listener in which the talk was printed under the title 'Have the Continents Drifted?'

C.198 'The Magnetism of Rocks', typed draft of above, with later substantial ms. corrections and additions and note 'BBC 1955/56', 9 pp.

C.199 'The Magnetism of Rocks', second copy of above with a few further ms. corrections and a note 'Rundfunk 1956 after BBC script', 10 pp.

C.200 'Rock magnetism and Continental Drift'.

Typed draft, 6 pp., for talk at Royal Institution (p.1 has ms. note 'R.I'), n.d. [1956].

Second copy of above with ms. note on p.6 verso, not in Blackett's hand, of 'Exhibits in the library', to accompany talk.

C.201 'Rock Magnetism and Continental Drift. Lindau, June 1956'.

Headings, notes and diagrams for talk, ms. 4 pp.

1 p. notes on 'R.M. references before 1940'.

C.202 'Gesteinmagnetismus und Kontinentale Trift'.

German translation of C.200 prepared for press after delivery of Blackett's talk, 28 June 1956, at Lindau.

Section C - Magnetism

C.203 'Note on the relative improbability of (a) field reversals and (b) no field reversals. 8.3.58.' (2 copies)

A 2 pp. note, perhaps for discussion with Blackett's own research group; the second copy, inscribed 'Everitt' in Blackett's hand, has corrections and additions in red ink by another.

C.204 'Magnetic Ageing of some Indian basalts' with ms. notes 'original', and date 'October 1956'.

Heavily corrected typescript, 17 pp.

C.205 'The Magnetic Properties of some Indian basalts', with ms. note 'October 1956 corrected January 1959'.

Copy of above with further substantial ms. corrections and additions, 17 pp.

C.206 'R.S. 12 May 1960'.

1 p. brief notes and headings for summary of paper 'An analysis of rock magnetic data' by Blackett, Clegg and Stubbs (R.S.79) read at Royal Society; a copy of the printed summary accompanies the draft.

C.207 'On distinguishing self-reversed from field-reversed rocks'.

Paper read at the International Conference on Magnetism and Crystallography, Kyoto, Japan, October 1961 (R.S.90).

The folder includes:

Blackett's 'First Draft 33 pp.' with title 'On deducing the history of the earth's field from rock magnetism studies', sub-titled 'Draft for Lecture, Tokyo 1961'.

Offprint of Kyoto Lecture (R.S.90), with marginal scorings by Blackett. (Text varies from draft above).

Copy of programme of meeting (Blackett chaired the morning session), with ms. alterations.

Brief editorial correspondence re publication of Conference proceedings.

See also C.97.

Section C - Magnetism

C.208 — 2 lectures given at Tata Institute, Bombay, 1962.

Lecture I, 'On rock magnetism and continental drift, 12.1.62.' includes the discussion after the lecture, typescript, 13 pp.

Lecture II, 'Reversely magnetised rocks', typescript, 7 pp.

C.209 — 'The Problem of Reversely Magnetised Rocks. Newcastle, July 1962'.

Ms. notes with many corrections in pencil and in red ink. pps. 1, 2, 3, 7, 8, 9 numbered by Blackett, with 4 unnumbered pages of diagrams and calculations.

C.210,C.211 — 'Rock Magnetism and History of Earth's Magnetic Field. The Cherwell-Simon Memorial Lecture, Oxford, 30.5.63.'

Ms. notes with many corrections and revisions in pencil and in various inks. 4 numbered pages + 1 unnumbered.

'The Problem of Reversely Magnetised Rocks, Oxford, 1963'.

This is the draft for the Cherwell-Simon lecture, based on the notes but omitting the introductory section. Heavily corrected ms., 9 pp.

C.212 — 'Tata Institute, 19.12.63. Problem of Reversely Magnetised Rocks'.

Ms. notes with pencil additions, 2 pp.

C.213 — 'Problem of Reversely Magnetised Rocks. Bristol, 1963'.

Ms. notes, 2 pp.

C.214 — 'Rock Magnetism and Continental Drift. P.M.A. Celebrity Lecture, 31 October 1963'.

Lecture delivered at Sheffield, typescript, 21 pp. (probably a transcript from a shorthand or taped version).

Section C - Magnetism

C.215 Discussion on Continental Drift organised by the Royal Society, held at the Royal Institution, London, 19 and 20 March 1964.

Blackett initiated the meeting in collaboration with Bullard and Runcorn, and contributed an introductory paper. 7 pp., heavily corrected ms.

Copy of notice of meeting and abstracts of papers, and of the published version of Blackett's introduction.

See Lovell, Memoir, p.93 for the view that 'this symposium was influential in changing attitudes'.

R.S.104.

C.216 2 lectures given at Pekin, September 1964:

'Rock Magnetism and Continental Drift', 4 pp.

'Reversely Magnetised Rocks and the History of the Earth's Magnetic field', 6 pp.

C.217 'Our wandering continents'.

(Eighth Hugh Macmillan Lecture, February 1966).

Envelope of photographs, and list of slides only.

R.S.109.

C.218 'NATO Advanced Study Institute: Continental Drift, Sea Floor Spreading and Plate Tectonics, 10-14 April 1972'.

Notes and headings for talk, 2 pp.

C.219 Lectures 2 and 3 of a series, n.d.

'Lecture 2. The proportion of the Remanent Ferromagnetic oxides ... in Rock Magnetism', heavily annotated ms., 5 pp.

'Lecture 3. Discussion of Experimental Observations', 2 pp.

See C.170-C.188 for working papers on oxidation.

C.220 'R.M. Notes for Lectures N.Z.' n.d.

Notes and headings, 6 unnumbered pages.

Section C - Magnetism

C.221-C.268 CORRESPONDENCE ON ROCK MAGNETISM 1952-74

Blackett kept his correspondence on rock magnetism in roughly chronological order, in very bulky folders, separate from his other letters. The original bulky folders have been split into more manageable proportions, but the chronological order has been retained since it reveals the development of his ideas through his own and others' researches, and the urgency with which he pressed on a project which interested him. Sometimes Blackett would remove material of special interest or relevance and interfile it with the related datasheets or working papers; such letters have been left in place, and a note made on the relevant items in earlier entries. Blackett also kept in a special folder correspondence specifically related to his major paper on climatology (R.S.88): see C.114-C.123.

In the folders below, extensive correspondence with an individual has been kept together, with terminal dates and some indication of content. (See especially the entries for J.M. Ade-Hall, E.C. Bullard, S.K. Runcorn, R.L. Wilson.) With these exceptions, the material is presented chronologically, thus enabling the development of Blackett's thinking, and the peaks of his activity in this field of research, to be followed.

The correspondence is particularly heavy for 1964-66, when Blackett was actively pursuing the research for the unpublished paper of 1967. During this period he was in constant touch with colleagues, requesting samples, discussing results, methods and equipment, preparing papers and the like; there is also a small amount of administrative correspondence about grants, degrees, appointments, etc. for his research students.

The ensuing decline of Blackett's active research is also reflected in the correspondence. His last letter to C.W.F. Everitt, February 1974, is very interesting in this respect (C.268).

continued

Section C - Magnetism

A brief indication is given in the catalogue entries of any material of particular scientific or personal interest, and all correspondents are listed in the general index.

Note: Additional correspondence on rock magnetism appears in C.81-C.82, C.98-C.100, C.105, C.114-C.123, and passim among the related working papers.

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C.221	1952	
	J. Hospers	(2 letters)
	D.H. Griffiths	on remanent magnetism of varved clays
	E.C. Bullard	on T. Nagata's findings
	J.A. Clegg	8 pp. ms. letter, annotated by Blackett, sent from Manchester and describing rock magnetism experiments with the Manchester magnetometer, December 1952 (Clegg later joined Blackett at Imperial College and was his principal collaborator.)
C.222	1953	
	E. Irving	on measurements at Jodrell Bank
	S.K. Runcorn	(2 letters) on current geophysical research in Cambridge
	H. Manley	letter annotated by Blackett and accompanied by references and ms. notes by Blackett on Manley's thesis
	T. Nagata	
C.223	1954	
	E. Thellier	(Blackett's carbon only)
	E.C. Bullard	on paper by Clegg
	E.P. Wohlfarth	(2 letters) on magnetic anisotropy, and cobalt crystal
C.224	1955	
	E.W. Gorter	
	W.J. Pugh	(Blackett's carbon only, requesting specimens)

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C.225 1956

E. Thellier — (May-July) on Roche's specimens (see also C.150, C.246)

E. Asami — on basalt lavas (copy of his paper, with covering note)

Also included here is material re International Conference on Rock Magnetism, held at Imperial College, 1-3 November 1956; programme, abstracts of papers given, list of participants, and a list of participants at Symposium on Electromagnetic Phenomena in Cosmical Physics, Stockholm, 27-31 August 1956.

C.226 1958

S. Akimoto — on own and Nagata's researches on Antarctic rocks, rhombohedral crystals, ferromagnetites

Included here are the Minutes of the Conference on Palaeomagnetism held in Russia, 15-17 April 1958, heavily annotated by Blackett.

C.227 1959

R.H. Dicke

A.P. Millman — on purchase of X-ray scanning microanalyser for Ore Microscopy Group at Imperial College, and collaboration in its use (correspondence continues to February 1960)

C.228 Scientific and personal correspondence with S.K. Runcorn, 1960-66.

This folder was kept as a separate item by Blackett.

The scientific material relates to rock magnetism studies, research projects and workers. It includes also information on conferences, publications, departmental and university affairs and the like.

Letters bearing on specific questions in Blackett's current research were kept with the relevant working papers, and are listed with them in C.72-C.188 above.

See under Runcorn in the general index.

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C.229, C.230 1960

C.229	K.C. Dunham	(2 letters, one December 1959) on Rookhope Borehole
	G.D. Nicholls	
	F.M. Broadhurst	(Both these letters protest against an impression, given by Blackett at a talk in Department of Physics, Manchester University, that geologists were opposed to the idea of continental drift. Blackett wrote letters of apology in reply.)
C.230	A.K. Parker	(request from C.U.P. for book on continental drift - declined by Blackett as premature and still controversial)
	K.W. Graham	enclosing paper and photographs on portable rock drill
	S.K. Runcorn	on 'geological and geophysical departments in the States which you would find worth visiting'
	I.Y. Ashwell	

C.231-C.233 1961

C.231	A.F. Buddington	
	V. Vacquier	enclosing chapter contributed by him to book on continental drift
	E.C. Bullard	on geophysics research in USA
	S.K. Runcorn	
C.232	P.H.S. Stubbs	(Blackett's carbon only, on paper by Stubbs)
	J.D.A. Zijderveld	
	T. Nagata	
	A.V. Cox	on Columbia basalts

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C.233	K.C. Dunham	(2 letters) on Rookhope Borehole
	D.H. Lindsley	
	D.N. Wadia	
	C. Emiliani	(Blackett's carbon only, on oxygen dating)
	J.W. Graham	
C.234	1963	
	C.M. Carmichael	on Linga series
	E.C. Bullard	(2 letters) on recent papers
	E. Thellier	
	R.L. Wilson	
	R.L. Johnson	
	E. Irving	
C.235	1962-65	

Folders of correspondence with Royal Astronomical Society, mainly re papers submitted by Blackett on behalf of members of his Rock Magnetism Group for publication in Geophysical Journal. The papers involved include those by J.M. Ade-Hall, R.L. Wilson, P.J.Smith, A.D. Havard, M. Lewis, V.L.S. Bhimasankaram and others, on various rock analyses referred to in the working papers, and are accompanied by covering or supporting letters by Blackett giving his opinion about their value.

Some similar letters forwarding or acknowledging papers by these colleagues also remain in the general correspondence folders, where Blackett left them.

Section C - Magnetism

C.235A Correspondence on collaboration with Russian scientists, 1964-65.

Following a letter from Professor P.N. Kropotkin in March 1964, suggesting collaborative work between Russian and British scientists on the problem of continental drift, Blackett wrote to some of his colleagues, and to the Secretary of the Royal Society.

Included also are details of a visit to Imperial College by a delegation of Russian scientists in February 1965, at which it was hoped to discuss the matter.

C.236-C.248 1964

C.236	R.L. Wilson	January-December 1964. General correspondence on research, publications, appointments, etc.
C.237	S.K. Runcorn	January-September 1964; includes proposed programme for NATO Advanced Study Institute conference on 'The Magnetism of celestial bodies' to be held at Newcastle, April 1965.
C.238	J.M. Ade-Hall	January-September 1964 (Ade-Hall was at Ife University, Ibadan during this period); correspondence on research, publications, loan of proton magnetometer.
C.239	R.L. Grasty	January-December 1964.

C.240 Correspondence with colleagues in India re collection and analysis of samples, and also training of Indian students to collaborate with Blackett and to continue Rock Magnetism studies in India. Correspondents include:

M.W. Chaudhari, Maharaja's College, Jaipur

S. Balakrishna, Osmania University, Hyderabad

B.C. Roy, Geological Survey of India, Calcutta

M.F. Soonawala, and M.S. Mehta, University of Rajasthan, Jaipur

P.W. Sahasrabudhe, Tata Institute of Fundamental Research, Bombay

V.S.L. Bhimasankaram, Osmania University, Hyderabad

Section C - Magnetism

C.241 P.J. Burek and D. Vogelsang, January-December 1964, on German basalts.

A.L. Hales — January-August 1964, on S. African lavas

J. Sutton — (Blackett's carbons only)

N. Kawai

A.P. Millman — on pyrrhotite

J. McG. Bruckshaw — (Blackett's carbon only)

C.242 E.C. Bullard — February-September 1964

C.243 E. Thellier — on Roche lavas

R.M. Blunden

Scott Williams Inc. — (purchase of samples)

L. Kuion

K.M. Creer — (Blackett's carbon only)

A.N. Hunter

P.V. Sharma

D. Williams — (Blackett's carbon only)

T.S. Westoll — (Blackett's carbon only) on Stehli's work
see also C.107

C.244 Correspondence with J.C. Trevor, March-May 1964, on early references to continental drift.

Includes 6 pp. letter from Trevor of detailed notes and references, written after hearing one of Blackett's lectures on the subject. The folder also includes a typescript of Blackett's introductory talk at the Royal Society Symposium (see C.215) and carbons of his letters to A.R. Hall and L. Kellner.

Section C - Magnetism

C.245	J. Edwards	
	D.W. Powell	on tertiary dykes
	Nature Richard Thomas and Baldwin	
C.246	E. Irving	
	R.K. Verma	(Blackett's carbon only)
	A. Roche	on samples sent to Blackett
	N.D. Watkins	
	R.R. Doell	on Hawaiian lavas
	C.F.A. Pantin	
C.247	D.A. Valencio	
	E. Orowan	on continental drift
	T. Sigurgeirsson	(Blackett's carbon only)
	E. Refai	on German basalts (Blackett's carbon only)
	B. Gregor	
	W.B. Harland	with brief reference by Blackett to beginning of Rock Magnetism work in China
C.248	D.W. Strangeway	
	D.W. Collinson	
	D. Tarling	on Hawaiian basalt
	W-Y Chang	(carbons only, sending equipment and designs to Peking)

Section C - Magnetism

C.249-C.254 1965

C.249	R.L. Wilson	
	General correspondence on current research, plans to visit China to obtain specimens, publications, proposed new rock-dating unit at Liverpool. (Several letters bear Blackett's annotations). January-November 1965.	
C.250	D.W. Powell	January-May (letters annotated by Blackett)
	E. Asami	
	A.L. Hales	(Blackett's carbon only)
	A. Roche	(Blackett's carbon only)
	P.J. Smith	
C.251	M.W. McElhinny	on geophysics in Rhodesia
	E.C. Bullard	
	M.W. Hardas	
	S.K. Banerjee	
	S.K. Dutt	April, on rock magnetism studies in Bihar, and Blackett's earlier Vibration instrument
C.252	R.R. Doell	April, suggesting collaborative studies with Blackett
	C.W.F. Everitt	
	K.M. Creer	
	N.D. Watkins	(letters annotated by Blackett and some marked 'Important')
	P.W. Sahasrabudhe	
C.253	W. Bullerwell	
	Science Journal	(request for article on field reversal)
	E. Irving	(Blackett's carbon only, refers to his early magnetometer)
	R.K. Verma	

Section C - Magnetism

C.254 D.T. Donovan

J.A. Miller

D. Vogelsang on Thai ores

R.L. Grasty

C.255-C.260 1966

C.255 Correspondence with R.L. Wilson, January-October (includes correspondence with other members of Wilson's group re appointments, research, etc.), on research in progress, applications for new projects, paper describing 'Icelandic palaeomagnetic project' undertaken by Wilson and others in 1965 and discussed in correspondence 1965 and 1966

(see also C.256 for Blackett's correspondence with J.M. Ade-Hall, 1966)

Other correspondents include:

P.J. Smith

J.W. Graham

M.G. Rutter

J. Edwards

Sir O. Graham Sutton

C.256 Correspondence with J.M. Ade-Hall, March-July 1966

C.257 Cutrock Engineering Co. (Blackett's carbon only)

F. Fitch on East African rocks

V.L.S. Bhimasankaram: includes particulars of seminar on 'The Crust and The Mantle of the Earth', Osmania University, Hyderabad, April 1966

Andhra University (Ph.D. examination)

B. Choubert on early French researches on Continental Drift

Section C - Magnetism

C.258 Correspondence with R.R. Doell and A.V. Cox, February-November, on Hawaii rocks, and on Doell's visit and lecture to Blackett's Imperial College group.

C.259 D.W. Powell

S.A.F. Murrell

P.W. Sahasrabudhe & C.R.K. Murty — on petrological researches at Tata Institute, Bombay, March-November

T. Nagata

C.260 K.M. Creer — (Blackett's carbons only)

W.D. Farrell — (Blackett's carbon only)

Jennifer Grasty — (Jennifer Langbein, who had been Blackett's research assistant 1958-65, married Robert L. Grasty)

A.B. Reid

K.A. Chowdhury

E.C. Bullard

C.261-C.262 1967

C.261 Correspondence with R.L. Wilson and J.M. Ade-Hall. Mainly on Mull, Icelandic and other lavas, related to Blackett's re-working of some of his data.

See also C.170-C.188.

Includes a letter sent to Wilson by André Larochelle on his palaeo-statistics papers.

C.262 W.O'Reilly

S. Haggerty

E.W. McMurry

V.L.S. Bhimasankaram

B.M. Funnell

Section C - Magnetism

C.263 1968

J.M. Ade-Hall

E.C. Bullard — statement of current opinion on continental drift

C.264 1970

J.M. Ade-Hall

D.H. Tarling

C.265-C.266 1971

C.265 W.D. Farrell

J.M. Ade-Hall

P.J. Smith

C.266 Folder on research project 'Palaeomagnetism of East Africa', funded by Natural Environment Research Council and sponsored by Blackett. The project ran 1965-70, several investigators taking part.

Folder includes 2 copies of the 'Final Report' with descriptions of the work, list of publications, etc., and letter of thanks for his support from A. Brock to Blackett, 1971.

C.267 1972

E.W. McMurry — (Blackett's carbon only)

J.M. Ade-Hall

K.M. Creer — Blackett's undated typescript and ms. draft of a letter suggesting possible new research project for 'speeding up the diffusion process by some other physical agent than heat'.

Includes notice of NATO Advanced Study Institute conference on Plate Tectonics, held at Newcastle, April 1972, with a ms. note by Blackett 'I will go'.

See C.218 for notes for a talk given at the conference.

Section C - Magnetism

C.268 1974

Correspondence with C.W. Francis Everitt.

In his reply, Blackett writes (February 1974): 'I am still interested in the origin of the Earth's magnetic field and I still have interest in diversed (sic) magnetisation but agree with the general view that these reversals are wholly dependent on the reversals of the Earth's core', and 'I am still just as puzzled as I was many years ago'.

Section C - Magnetism

C.269-C.285 WORK ON HIGH TEMPERATURE PLASMAS, CONTROLLED FUSION REACTION AND PINCHED DISCHARGES

Work on thermonuclear reactions at Imperial College was begun by G.P. (Sir George) Thomson in 1945-46. Its nature and development are clearly explained in a Note by Thomson contributed to the Minutes of the Governors' Meeting, 25 February 1958, which appears as C.269 below. See also D.200, Thomson's letter and note to Blackett of June 1946 in which he explains his early ideas for a torus.

Blackett's own interest in the use of a magnetic field in fusion reactions seems to date from 1958. As always, he pressed on the research, producing copious notes and narratives incorporating new material as it came to hand, testing and checking his own and others' calculations and using the results for lectures, discussions, etc. His lectures at the Tata Institute, Bombay, in February 1958 (C.271) represent his first presentation of the work of the Imperial College team, many of the notes and working papers being additions to and revisions of this.

The reports by R. Latham and J.A. Nation in C.275 set out the conclusions of the work done in 1958-59.

None of the notes in this section go beyond 1959; though Blackett lectured on 'Controlled fusion reactions' in 1961 (R.S.85) there is no surviving material relating to that occasion.

Section C - Magnetism

C.269 Note by Sir George Thomson on history of thermonuclear reaction work at Imperial College (extract from Minutes of Governors' meeting, 25 February 1958) - see introductory note above.

See also D.200, Thomson's letter and memo. on the 'toroid', June 1946.

C.270 Letter, February 1958, to Blackett from R. Latham, leader of the group at Imperial College, describing work to date and enclosing photographs dated 23.10.57; with notes on Condenser Bank by another.

C.271 'Controlled fusion reaction'.

Lectures given at the Tata Institute, Bombay, February 1958; typescript, 48 pp. including 3 tables.

C.272 'Imperial College Condenser Bank'.

Ms. narrative, tables, notes and calculations, in ink with extensive corrections and emendations in pencil. 20 pp., many in multiple versions.

C.273 Folder of notes 'Pinched Discharges. New material to be added to typescript'.

Misc. bundles of notes: 'Effect of axial magnetic field on Dynamic Pinch', 9 pp., 'Notes on use of I.C. Condenser Bank', 4 pp. dated 4.3.58, 'Pinch in screw with solenoid', dated 3.3.58, 'I.C. Bank Numerical Data', 'Contracting pinch', 4 pp., etc.

C.274 Typed sections of paper on Imperial College Condenser Bank, all with ms. corrections, etc., entitled: 'Note on use of Imperial College Condenser Bank', 3 pp., 5 March 1958.

'Method of obtaining very high temperatures ...', 3 pp.

Misc. tables, 5 pp.

Section C - Magnetism

C.275 Misc. reports on the work, 1958.

Includes:

'Thermonuclear research in Great Britain', report by R. Latham on meeting of London Physical Society at Imperial College, 17-18 September 1958, 20 pp. typescript.

Programme for first of monthly colloquia on plasma physics at Imperial College, 24 October 1958.

'Report on linear pinch devices' by R. Latham and J.A. Nation, 1 December 1958.

Draft of report prepared for CERN Study Group on Fusion, with ms. corrections by the authors and by Blackett and a copy of the version published in Nuclear Instruments and Methods, 4, 1959.

Duplicated report of 4th meeting, CERN Study Group on Fusion (R. Latham's report on the work at Imperial College is on pp.28-31). August 1959.

C.276 Misc. comments and corrections on draft papers, by Blackett and others.

C.277-C.284 Working papers and notes on plasma physics

These are presented in Blackett's named folders where these survive, or with his headings. Dates are rarely given on the mss. and the work is often fragmentary.

C.277 Notes on 'Shock Tube plasma' by Blackett and by H.J. Pain (Imperial College).

C.278 Folder labelled 'Inductance with Hard Magnetic Core'.

Misc. bundles of notes, and graphs.

C.279 Folder labelled 'Skin Effect and Stability'.

Photographs, calculations and misc. bundles of notes on the subject, one bundle dated 7.8.58., and one an extended 'Note on the "Negative Skin Effect" and Alpon's "Inverse Skin Effect"', 7 pp. + 2 pp. figures of narrative and ideas for experiments.

C.280 Notes on Joule heating.

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C.281 Ms. notes and calculations, entitled:

'Zeta', 5 pp.

'Constant Current', 4 pp.

'Stability of Cylindrical Point'

'Time Decay of Solenoidal Current in Torus'.

C.282 Ms. notes and drafts, entitled:

'Controlled Fusion Reactions. Quebec, September 1958'. 1 p. ms. notes for lecture, including section on Geneva Conference 'no solution in sight'.

Notes on 'Variable length solenoid' dated 19.1.59.

'Linear Argon Pinch. Notes Easter 1959', 7 pp.

C.283 Folder labelled 'Bombay lecture 1958. My notes'.

Fragmentary notes and calculations, probably for C.271.

C.284 Folder labelled 'H.T. Physics. Summer 1958. My notes'.

Photographs, fragmentary notes and calculations.

C.285 Folder of offprints, articles, press-cuttings, etc. used as research material, some annotated by Blackett.

Includes illustrations for article on 'Experiments on the Growth Rate of Surface Instabilities in a Linear Pinched Discharge' by a member of the Imperial College team.

Section C - Magnetism

C.286-C.289 Miscellaneous research notes

C.286 Folder labelled 'Electrostatic charges'.

2 pp. ms. notes on 'Decay Time of Electrostatic charges', with note on the electrification of nylon, by P.S.H. Henry, dated 26.4.55. to accompany offprints on the subject.

C.287 Pages 15-18 of a talk on the conservation of parity, typescript with ms. corrections.

C.288 Notes and calculations by Blackett and another (probably G. Haigh).

C.289 Folder labelled 'Shock waves'.

Ms. notes and calculations, some dated 1961.

SECTION D SECOND WORLD WAR AND GOVERNMENT COMMITTEES D.1 - D.218

This designation subsumes Blackett's activities on various defence projects and as a member of government committees before the outbreak of war in 1939, and his continuing service in similar capacities after its conclusion, as well as 'war work' in the stricter sense.

As has been pointed out (Lovell, Memoir, pp.50-69), Blackett conducted research for and contributed to the work of all three Services, in addition to his development of 'Operational Research' as a non-specific technique of investigation. The folders below attempt to present the material under headings related to committees, projects or areas of activity, within a roughly chronological order, though the rapidity of Blackett's movements sometimes makes this unattainable. 'Operational Research' has been treated as a separate section (D.83 - D.125) because of its continuing value as an investigative method on which Blackett lectured and conducted correspondence for many years.

As with the working papers in Sections B and C, correspondence, lectures or talks which accompanied the research notes have been left in place.

It should be noted that the folders listed below describe only such documents as survive of Blackett's work during this period, and do not claim to be a complete record. Nothing remains, for example, of his wartime correspondence other than that for 1942 (D.126 - D.147) and the letters interfiled with the working papers. Furthermore, because of the national importance of the work, and the public interest which was increasingly shown in it, Blackett re-worked the material on several occasions for writings or lectures, or in response to outside enquiries. The original order of the papers was therefore considerably disturbed and some material is likely to have been removed and not always returned.

Section D - Second World War and Government Committees

The material is presented as follows, each sub-section being preceded by an introductory note:

D.1 - D.10	Correspondence and papers Miscellaneous projects in preparation for war	1936-40
D.11 - D.37	Photo-electric and proximity fuzes Working papers, correspondence, reports, Committee papers	1937-42
D.38 - D.58	The Mark XIV Bombsight Reports, committee papers, correspondence	1940-45, 1973
D.59 - D.78	Bombing policy Working papers, drafts, reports, correspondence	1941-46, 1962
D.79 - D.81	Convoys and Anti U-boat Campaign Reports, correspondence	1942-43, 1959
D.82	Miscellaneous wartime papers	
D.83 - D.125	Operational Research Working papers, drafts, reports, lectures, correspondence	1940-74
D.126 - D.147	Correspondence	1942 only
D.148 - D.160	Chiefs of Staff Subcommittee on future weapons	June 1945
D.161 - D.183	Joint Technical Warfare Committee (successor to the above)	Oct. 1945-April 1947, 1959, 1964, 1972
D.184 - D.205	Advisory Committee on Atomic Energy (ACAE)	Aug. 1945-April 1949
D.206 - D.208	Harwell Power Committee	May-Oct. 1946
D.209 - D.216	R.A.F. Aircraft Research Committee	1946-52
D.217, D.218	Guided Weapons Advisory Committee	1947-52

Section D - Second World War and Government Committees

D.1-D.10 CORRESPONDENCE AND PAPERS 1936-40

These consist of reports by Blackett and others, and of correspondence, mainly related to various projects in preparation for war, such as the use of bombers, the detection of aircraft and submarines, the proximity fuze, the organisation of coastal radar stations, and the like.

D.1-D.4 2 papers by Blackett on air defence, 1936

D.1 'Note' on air defence, offence and propaganda, dated 18 July 1936, 3 pp. typescript with ms. annotations.

D.2 'A note on the defensive use of bombers', dated 16.12.36, 4 pp. typescript.

D.3 Copy of letter of comment on above from R. Saundley to A.P. Rowe, 12.3.1937.

D.4 Letter of comment on D.1 from H.T. Tizard, November 1939.

D.5 Misc. correspondence re preparation for wartime activities. 1938-39

2 letters from H.T. Tizard, November 1938, May 1939, on various projects, especially Blackett's work on fuzes.

Letter from E.V. Appleton on 'pulse' and 'wave' methods of radio location, and their exploration by the Tizard Committee. March 1939

Letter from A.E. Woodward-Nutt on German 'gliding bombs'. April 1939

D.6 Correspondence with Air Marshal Sir Victor Goddard.

3 letters, April, July, August 1939, mainly on methods of improving bombing accuracy in the event of war. Enclosed with the letter of 24 April is a memo. 'Project of general directions for the anti-Hitler propaganda in case of war by means of leaflets', no signature or date, with some marginal scoring by Blackett.

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D.7 Correspondence, mainly with Sir John Cockcroft, on personnel for teams for coastal defence radar chains. July-Sept. 1939

Blackett's letter of 19 September especially recommends 'A.C.B. Lovell, a very energetic and lively person ... I think he would be a very good man for you and he very much wants to come'.

D.8 'Note on an Economic Intelligence Service in Connection with Air Warfare', prepared by Economics Research Section, University of Manchester, and sent to Blackett with covering letter by John Jewkes. Oct. 1939

D.9 Work on 'Shock Tube'.

2 typescript descriptions of the project and its functioning, 3 pp. and 9 pp.

Includes misc. diagrams, calculations and working papers which are in the hand of William Cochrane who worked at various research establishments, mainly TRE Malvern (Cochrane's own papers are deposited at the University of Glasgow: CSAC Handlist no.26/3/75).

D.10 2 reports by E.J. Williams.

'Report on a method for measuring the speed of an aeroplane' (by gradient of electromotive force). April 1940

'Report on detection of submerged submarines from aircraft' (by electromotive force). n.d.

These reports were written from R.A.E. Farnborough. Lovell, (Memoir, p.56) states that 'Blackett recruited E.J. Williams from Aberystwyth to R.A.E. and worked with him for a time on the magnetic field detection of submarines'.

(For further material on E.J. Williams, see the index of correspondents.)

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D.11-D.37 WORK ON PHOTO-ELECTRIC AND PROXIMITY FUZES 1937-42

The material is presented as follows:

D.11-D.25	Reports, correspondence and working papers.	Aug. 1937-Aug. 1940
D.26-D.33	Committee of Imperial Defence. Sub-committee on Air Defence Research, Fuze Sub-committee Committee papers and reports	Oct. 1937-May 1939
D.34-D.37	Ministry of Supply. Advisory Council on Scientific Research and Technical Development Fuze Committee and Proximity Fuze Sub-committee	March 1940-July 1942

D.11-D.25 Reports, correspondence and working papers

The folders consist of exchanges with Government Committees and research establishments (mainly R.A.E. Farnborough) and with Metropolitan-Vickers (Manchester) re feasibility, manufacture and testing of photo-electric and proximity fuzes. (See letters from H.T. Tizard in D.5 and D.12 about arrangements for Blackett's work on these devices).

The material is presented chronologically as far as possible. Blackett's very bulky folders have been split into smaller units for ease of reference.

Section D - Second World War and Government Committees

D.11 Air Ministry note of 'Professor Blackett's proposal for detonation of anti-aircraft bombs ... by photo-electric means' and of a meeting to discuss it. August and October 1937.

D.12 Letters from D.R. Pye and H.T. Tizard on photo-electric bomb work at Farnborough and Metropolitan-Vickers, February-April 1938.

D.13 Letters re photo-electric work at Farnborough, April 1938-March 1939, from B. Lockspeiser.

D.14 Letters from D.R. Pye re manufacture of proximity fuzes at Metropolitan-Vickers, March, September 1939.

Includes papers: 'Time Fuzes for bombing the bombers', heavily annotated by Blackett, with 3 pp. ms. notes by him, 'Night Attacks. H.T.T.' [Tizard] and 1 p. ms. comments on the Time Fuze paper.

D.15 Misc. working papers and background data on effectiveness of photo-electric bomb, some annotated by Blackett, September 1939.

D.16 Correspondence re design and manufacture of photo-electric bomb by Metropolitan-Vickers, August 1939-January 1940, mainly with George McKerrow, up to first 'Progress Report' on production of bombs, January 1940.

D.17 Minutes of meeting at Metropolitan-Vickers on photo-electric bombs (November 1939) and correspondence with B. Lockspeiser, February 1940, disagreeing with minutes and including Blackett's draft 'Note on the use of a stabilised sight for use with the P.E. Bomb', annotated and revised.

See also D.38-D.58, Mark XIV Bombsight.

D.18 Extensive drafts and corrections for above paper with working papers, diagrams, etc., and R.A.E. Instruction forms on 'Stabilized drift sight', January-February 1940.

D.19 Continuing correspondence, reports, etc. from Metropolitan-Vickers, March 1940.

D.20 Memorandum of meeting on photo-electric fuze at Fort Halstead, 26.4.1940.

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D.21 Continuing correspondence, reports, etc. from Metropolitan-Vickers, June 1940. Includes several copies of statement on the history of the 500 lb. bomb design by Metropolitan-Vickers, and the 250 lb. bomb design by R.A.E. (prepared 10 June 1940).

D.22 Continuing correspondence, reports, etc. from Metropolitan-Vickers, July-August 1940. Includes reports on the photo-electric fuze and its testing, prepared 10, 17, 30 June and annotated by Blackett, and Report on 'Ground Proximity Fuzes' by McKerrow and Sillars.

D.23 Correspondence with A.D. Crow re criticism of Metropolitan-Vickers implied in minutes of Ministry of Supply Proximity Fuze Committee and disputed by Blackett, July 1940.

D.24 Correspondence re meetings on proximity fuzes, 4, 22, 24 August 1940. Work on the fuzes was continued by E.M.I.

D.25 Misc. diagrams, etc. related to the project. n.d.

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D.26-D.33 Committee of Imperial Defence.
Sub-committee on Air Defence Research. Fuze Sub-committee.

The Fuze Sub-committee was set up 'to explore the possibility of new methods of fuze design and to make arrangements for the necessary investigations to be carried out at Government Research establishments or elsewhere'. The Chairman was A.C.G. Egerton, and the members were: P.M.S. Blackett, C.S. Wright, G.O. Boase, D.R. Pye, J. Oliphant. The Joint Secretaries were W. Elliot and D.M. Newitt.

Committee papers, reports, agenda and minutes of the above, presented in numerical order, with dates.

D.26	A.D.R.(F) 23	This is a paper by Blackett 'Some remarks on the accuracy of anti-aircraft fire', 4 pp., October 1937, with his later ms. comments and amendments.
D.27	A.D.R.(F) 24	December 1937
D.28	A.D.R.(F) 26	October 1937. Comments by staff of Royal Aircraft Establishment, Farnborough, on Blackett's paper A.D.R.(F) 23 above, with many ms. notes, comments and calculations by him.
D.29	A.D.R.(F) 29	November 1937
	A.D.R.(F) 33	November 1937
	A.D.R.(F) 34	December 1937. Interim Report.
D.30	A.D.R.(F) 36	December 1937. This is a reply from Blackett to an enquiry by the Chairman, with later ms. annotations 'This is certainly not true! PMSB'.
	A.D.R.(F) 37	January 1938
	A.D.R.(F) 38	January 1938
	A.D.R.(F) 39	February 1938
	A.D.R.(F) 40	March 1938
D.31	A.D.R.(F) 41	July 1938
	A.D.R.(F) 42	July 1938
	A.D.R.(F) 43	July 1938
	A.D.R.(F) 44	October 1938
	A.D.R.(F) 45	December 1938

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D.32	A.D.R.(F) 46	January 1939. Discusses and accepts Blackett's estimates of anti-aircraft fire.
	A.D.R.(F) 47	May 1939 (Secretary's note only).
	C.574	Committee papers and Sub-committee Memorandum for main Committee, December 1939, heavily corrected by Blackett.
D.33	A.D.R.(F) 48	May 1939. Report on 'Progress made to March 1939 on the recommendations of the Interim Report of the Fuze Sub-committee'.

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D.34-D.37 Ministry of Supply. Advisory Council on Scientific Research and Technical Development.

Fuze Committee, and Proximity Fuze Sub-committee.
Chairman: Major-General E.M.C. Clarke, Secretary: S.A. Wood.

Committee papers and reports, agendas and minutes of both the above. The sequence covers meetings and activities of the Fuze Committee and incorporates minutes, etc. of the Proximity Fuze Sub-committee which were submitted to the main Committee.

D.34 Committee papers for meetings on 6 March, 24 April, 17 May, 3 July, 14 August 1940.

D.35 Papers re Conference on Anti-Aircraft Gunnery, held 9 August 1940, with lists of participants and of papers to be presented, some annotated by Blackett.

D.36 Brief correspondence with E.T. Paris re Blackett's resignation from Fuze Committee because 'I am so busy with Admiralty matters now that I will not have time to attend very often, and further I am not now very closely associated personally with Fuze matters', February 1942.

D.37 Fuze Committee papers, December 1941-January 1942. Numbered FZE/41-43, 47-64.

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D.38-D.58 THE MARK XIV BOMBSIGHT 1940-45, 1973

This refers to the Mark XIV continuously set vector bombsight, sometimes referred to as the 'Blackett sight'. It was developed at R.A.E. Farnborough, from an idea of Blackett, during his connection with the Establishment for the work on fuzes, and subsequently further developed and tested there and at other Establishments. Folders D.17, D.18 above contain the early drafts, working papers and graphs of test performances of the sight, which Blackett himself referred to as a 'stabilised sight' but which is called 'Blackett sight' on the R.A.E. documents in those folders.

Folders D.38-D.50 below consist mainly of official reports and papers, typescript or stencilled, on the testing, development and use of the Mark XIV sight in British and US aircraft, and on German devices. The material is presented chronologically and is itemised in some detail in view of the statement by Lovell, Memoir, p.55, that 'the relevant R.A.E. files have been destroyed'.

Folders D.51-D.57 contain miscellaneous committee papers and reports, many annotated by Blackett, on various aspects of bombing tactics and the U-boat campaign, as well as of bombsight design. They run from December 1939-February 1941.

Blackett himself clearly felt that the work had had some importance, since he wished to include some account of it in a proposed autobiography in 1973 (see D.58).

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D.38-D.50 Reports and papers on Mark XIV Bombsight

D.38 Report on Blackett Sight after trials in Wellington bomber from Aeroplane and Armament Experimental Establishment, Boscombe Down, 21 October 1940.

Report on 'Wellington V Bombsighting', Boscombe Down, December 1940.

D.39 Note on 'Enemy Dive Bombsight' from R.A.E., April 1941.

D.40 Trials of Mark XIV Bombsight. Report no.1, Boscombe Down, 7 July 1941.

D.41 Trials of Mark XIV Bombsight. Report no.2. Night Trials, Boscombe Down, 19 July 1941.

D.42 Report on 'Introduction of the Mark XIV Bombsight to the United States'. n.d., but deals with visits by N.H. Fresson and F.H. Scrimshaw, October 1941.

D.43 Paper 'Brief survey of bombsight and automatic pilot equipment in American aircraft consigned to the United Kingdom', May 1942.

D.44 Paper 'Tests on Bombsight T.1' (American version of Mark XIV), October 1942.

D.45 Paper 'Sideslip in straight flight', R.A.E., December 1942.

D.46 Paper 'Mark XIV sight for A/S [anti-submarine] bombing from about 1500 feet', 8 February 1943 (2 copies).

D.47 Paper 'Aiming Allowances for Beam Attack of Ships with Armour Piercing Bombs using a Mark XIV Bombsight', 2 April 1944.

D.48 Paper 'Pattern Bombing when Target Markers are used', 6/6/44.

D.49 Paper 'The Calculation of the Chance of an Effective Attack in Individual and Formation Bombing', 10 pp., n.d. (probably prepared for Blackett's work on Operational Research, but kept with above).

D.50 Papers on Mark XIV Bombsight, bombing range results, maintenance and recommendations, prepared by Coastal Command and dated 11 March 1945.

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D.51-D.57	Committee papers and reports on various aspects of bombing tactics, U-boat campaign, bombsight design, etc.	1939-41
D.51	22nd meeting, Bombing Committee, Air Ministry	21 December 1939
D.52	Conference on Bombsight Design, R.A.E.	22 December 1939
D.53	R.A.E. Report on testing of Mark XI bombsight	July 1940
D.54	13th meeting, Anti-Aircraft and Coast Defence Committee (Blackett's name is here identified as 'A.A. Command')	22 August 1940
D.55	24th meeting, Bombing Committee, Air Ministry	28 August 1940
	Meeting at War Office (note only)	12 September 1940
D.56	17th meeting, Anti-Aircraft & Coast Defence Cttee.	24 September 1940
	19th meeting, " " " " "	7 October 1940
	20th meeting, " " " " "	8 November 1940
	Reorganisation of A.A. Command	9 November 1940
D.57	Note on radio beams in defence (p.2 only)	31 December 1940
	Note on improvements in night illumination	7 January 1940
	Memo. on interception of bombers (annotated by Blackett)	January 1940
	Meeting on training, A.A. Command	17 February 1941

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D.58 Folder inscribed 'Mark XIV Bombsight'

This contains drafts and material for an account of the work on the Mark XIV to be included in an autobiography which Blackett was contemplating in 1973.

Includes:

3 pp.ms. draft 'The Genesis of the Mk 14 Bombsight';

p.3 only of ms. narrative beginning 'Before I entered into the field of bombsighting I had many moral scruples, before I did all I could to improve the accuracy of the bombsights of the RAF owing to my general objection to bombing of cities as well as other strong military targets';

4 pp. very heavily corrected typescript draft 'The Mk. XIV bomb sight';

3 pp.ms. and typescript draft, with same title;

photocopy of pp.37-39 of Webster and Frankland, The Bombing Offensive, Vol.IV, annotated by Blackett;

correspondence 1969 and 1973 with Director, National Maritime Museum.

In his letter of 1 November 1973 Blackett explains: 'I am writing up a good deal about my activities during the war, particularly certain parts of operational research and I felt I would like to mention the Mk 14 Bomb Sight as this was conceived and designed by a young colleague of mine at Birkbeck College and was a great success'. Later he says: 'I am only interested in what we did in 1943 ...' but this would appear to be a slip of the pen.

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D.59-D.78 PAPERS ON BOMBING POLICY 1941-46, 1962

These include the period of the confrontation on bombing policy involving Tizard, Blackett and Cherwell (see Lovell, Memoir, pp.64-65) and also material preceding and following it. Blackett worked over these papers on more than one occasion after the events; in particular he made considerable efforts in 1962 to locate certain missing reports (see D.76-D.78 for correspondence on this subject), but it is clear that the remaining material is still incomplete.

See under Tizard in the Index of correspondents for other material on these matters.

D.59 Offprint of Operational Research. Recollections of Problems studied 1940-45 (R.S.65) with ms. note 'see pps.100 and 101' in which bombing policy is discussed.

D.60 1 p. ms. note by Blackett dated 26/9/42 with a list of documents originally in his possession on the subject. Only papers A (D.65), B (D.63) and E (D.66) survive.

D.61 Memo. on effect of bombing on civilian morale in Germany, 9 pp., unsigned, 15 August 1941 (perhaps prepared by Tizard).

D.62 1 p. note of a meeting on bombing policy, unsigned. 16.2.42.

D.63 'Note on the use of the bomber forces', n.d. signed PMSB, 3 pp. This is 'B' of D.60 above.

D.64 'Note on the use of the bomber force' by Admiral J.H. Godfrey (Director, Naval Inteligence) on which Blackett was asked to prepare a paper. 8.4.42.

D.65 'Effect of bombing policy', Blackett's report on the effect of proposed air offensive on Germany, circulated with above.

This is a photocopy of the original report which Blackett obtained in 1962, and is Paper 'A' of D.60.

D.66 2 copies of 'Estimation of bombing effect' (3 pp.) by Tizard, sent to Cherwell 20 April 1942, and a copy of Cherwell's reply, 22 April 1942. These are 'E' of D.60.

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D.67-D.69 Ms. notes by Blackett for reports to committees.

D.67 1 p. on 'Enemy Air Raid Casualties' c. June 1943.

D.68 3 pp. on shipping losses, headed 'Most Secret'.

D.69 4 pp. on German air strength, dated 6 October 1942.

D.70 Official notes and reports on bombing policy and effects, July-November 1942.

Includes: note by Blackett, 10 November 1942;

extract from minutes of C.O.S. meeting on estimated effect of Anglo-American bomber offensive, 18 November 1942.

D.71 Copy of A.U. (43) 96, memo. dated 29 March 1943 by Marshal A.T. Harris (Air Officer Commanding-in-Chief, Bomber Command) strongly deprecating plan to divert air power from bombing Germany to the anti U-boat campaign. The memo. is annotated by Blackett and accompanied by 2 pp. ms. notes amplifying his comments and putting forward his own contrary view.

Blackett's formal memo. in reply to Harris's paper could not be traced when he enquired in 1962 (see D.76-D.78), but a copy had been taken by S.W. Roskill and was passed on to Blackett by him. The memo. 'Bombing of U-Boat bases', tentatively dated 30.3.43, is included here and another copy remains in D.76.

D.72. Misc. documents, tables and estimates on German air force strength 1939-43 (sent to Blackett June 1943) and on effect of Allied air attacks.

D.73 Heavily corrected draft of paper submitted to Sir Stafford Cripps (Minister of Aircraft Production), 7 pp., and a typescript copy, dated 27 March 1944;

Letter to Cripps, 31 March 1944.

The paper begins: 'You asked me to let you have a note as to the anxieties I expressed to you about the use of our Bomber Force in connection with Overlord', and is sent from DNOR [Director of Naval Operational Research, the title of Blackett's post from 1944].

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D.74 'The effect of air power in a land offensive', copy of paper by Sir John Slessor (then C.-in-C. RAF Mediterranean and Middle East), 3 pp., 18 June 1944.

D.75 Copy of 2nd draft of official report on 'Bombing Policies and Directifs 1939-45', 1946, with some marginal scorings by Blackett.

D.76-D.78 Later correspondence on Bombing Policy, 1962

This arose in connection with various writings and lectures of Blackett on operational research and its value in wartime problems.

D.76 Correspondence with S.W. Roskill re location of Blackett's wartime reports. Roskill was able to supply a copy of 'Bombing of U-boat bases' (see D.71 above), a further copy of which is included here. 1962

D.77 Correspondence with Director, Operational Research Admiralty on same subject. Blackett's query produced a copy of his paper 'Effect of bombing policy', see D.65 above. 1962

D.78 Correspondence with other Government records offices on subject. 1962

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D.79-D.81 PAPERS ON CONVOY SIZE AND ANTI U-BOAT CAMPAIGN 1942-43, 1959

These relate to the period of Blackett's attachment to the Admiralty as Chief Adviser on Operational Research (C.A.O.R.) (January 1942-1944), later as Director, Naval Operational Research (D.N.O.R.) (1944-45); they are signed either with his name or the initials of his office.

For further papers on Operational Research, see D.83-D.125.

D.79 Papers for a meeting on 'Size of Convoys', 15 March 1943.

Includes Blackett's report: 'Progress of analysis of the value of escort vessels and aircraft in the anti U-boat campaign'.

This report, dated 5 February 1943, has a prefatory page whose second paragraph reads:

> 'The paper has been submitted and discussed in detail with Lord Cherwell during the various stages of its preparation. The responsibility for facts and figures rests, however, with Professor Blackett.'

Blackett's Paper B, 'What is to be done?' has ms. revisions by Blackett and in another hand.

D.80 Photocopies of reports on convoys, air escorts and the U-boat campaign, compiled for Blackett as C.A.O.R. 1942, 1943; several bear the signature of E.J. Williams.

These photocopies were taken for Blackett at his request from the Department of Operational Research, Admiralty, in 1959.

D.81 Correspondence with Director, Operational Research, re above, May-October 1959, in connection with an article by C. Hitch of the Rand Corporation, disputing the efficacy of British Naval Operational Research.

See also D.109, D.115.

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D.82 MISCELLANEOUS WARTIME PAPERS

2 papers, c. 1943:

'The Government and the war', typescript, 7 pp.

'Combined operations and a Great General Staff', typescript, 2 pp.

Both these papers contain criticism of Churchill as Prime Minister, and are dated only on internal evidence. They are unsigned and may not be by Blackett.

'Extracts from a letter from Professor Egerton', typescript, 2 pp., n.d.

On research projects on fuzes, short rocket projectiles, magnetic detectors, currently in progress in USA.

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D.83-D.225 OPERATIONAL RESEARCH (O.R.) 1940-74

Blackett became known as the 'virtual founder' of O.R. studies in Britain (though he makes clear in R.S.65 and elsewhere that this was not the literal truth) because of the great impetus given to the subject by the outbreak of war and the many new weapons, techniques and devices then rapidly being introduced. His early studies of radar for A.A. Command (D.83) led to the development of an O.R. unit for Coastal Command, and then to his appointment as C.A.O.R. and D.N.O.R. at the Admiralty, where he worked especially on convoys and the anti U-boat campaign (see D.78-D.81 above, and D.84).

Blackett lectured extensively on the subject to Service personnel throughout the Second World War. After the War, he continued to lecture, though less frequently, and also wrote up some of his material for general publication. He returned to the subject on several occasions, notably in 1961 (see D.109) and at the end of his life (see D.110).

See also J.54, J.60 for references to Blackett's service at the Admiralty on Operational Research.

The material is presented as follows:

D.83 - D.96 Papers, Reports, lectures during Second World War

D.97 - D.112 Lectures and writings after the war

D.113 - D.125 Correspondence on O.R. 1944-74

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D.83-D.96 Papers, reports and lectures on O.R. during Second World War

D.83 'Note on chance of hitting with G.L. Controlled fire' (G.L. = Gun-laying radar).

3 pp. typescript dated 10 November 1940 with ms. 'note' added, 20 December 1940, amending some of the information.

This is one of the reports on 'rounds per bird' prepared on the effectiveness of radar in London's air defence, during Blackett's service with A.A. Command as Scientific Adviser to General Sir Frederick Pile. See Lovell, Memoir, pp.56-58.

See also J.35 re Blackett's appointment.

D.84 'Scientists at the Operational Level.
Notes on Statement to Admiralty Panel on 16.9.41. on the function of an Operational Research Section (O.R.S.)'

These are based on the talk given to senior staff at the Admiralty, in which Blackett explains how 'the scientist can encourage numerical thinking on operational matters, and so can help to avoid running the war by gusts of emotion'.

The talk and document led to Blackett's appointment as Chief Adviser Operational Research with effect from 10 December 1941. See also A.16.

When the document was published by Blackett in 1962 (R.S.91) (see D.101, D.102) Blackett gave the date as December 1941. Lovell, Memoir, p.60, n, corrects this to 31 October 1941, but it will be seen that the date was in fact 16 September 1941.

Included here is a letter agreeing to allow Blackett 'the full services of Dr. Bullard as your Deputy'. The letter is dated 23 April 1942 and stipulates that Bullard should continue certain other work as 'we need somebody of Bullard's calibre to hold things together'.

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D.85 'A Method of Analysing Operations of War'.

7 pp. typescript with ms. note '1st draft. CC. ORS', with an autograph note from 'H.T.T.' (Tizard) to whom it had been sent for comment, and who recommended its circulation.

This is an earlier and shorter version of D.86, which is the paper as circulated.

D.86 'A note on certain aspects of the methodology of operational research', May 1943.

Typescript, 13 pp. 3 copies, with a covering letter addressed 'Admiralty', beginning: 'I would like to bring the attached notes to the attention of O.R. sections .....'

(notes and drafts for the appendices may be found in D.94)

Published in 1948 as R.S. 92, see D.101, D.102.

D.87 Lecture on 'Science and the U-boat War', D.N.O.R., May 1943.

17 pp. typescript, with additional maps and diagrams.

D.88 Misc. shorter ms. notes for lectures on same subject:

'ORG. May 43. Operational Research and the U/B campaign'

'U/B Campaign. ADRDE', n.d., 3 pp.

'Examples of Operational Analysis', n.d., 2 pp.
(includes notes on 'Effect of White Camouflage', introduced by Blackett for Coastal Command Aircraft).

Included here is a Coastal Command report on Anti-submarine measures, September 1941, kept by Blackett with the above.

D.89 'Theory of Large Changes'.

Ms. draft, n.d., beginning: 'In a former paper I have attempted to outline some methods ... for analysing the complex material provided by real operations of war'. The reference is presumed to be to D.86 and the present paper on 'large changes' gives examples drawn from the U-Boat war and air attack to the end of 1943, and is therefore tentatively dated then.

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D.90 'Operational Analysis; its relation to Intelligence and Plans'.

7 pp. ms., heavily revised, with a note 'Talk given to Combined Intelligence Sub-Committee, Washington, 13.12.43'.

See also J.22.

D.91 'Some notes on the relationship between the sciences'.

Includes: 17 pp. autograph manuscript, extensively revised;

7 pp. typescript version, with ms. note 'Date uncertain. Possibly 1943/44 derivation from Ops. Res. papers';

3 pp. ms. plan for the paper;

Blackett's notes on papers and books by others;

Letter of comment on the paper signed 'G', with ms. note by Blackett ' Writer unidentified. Probably when I was in Washington in winter of 1943' (see D.90);

Letter from 'Henry' [H.R. Hulme] sent from Bletchley, February 1942, discussing a paper by Blackett and other matters.

D.92 Ms. notes for lectures.

'T.R.E. Operational Research March 1943', ms. 5 pp.

'May 1 1944. RAF Staff College' and 'August 7 1944 ditto', ms. 1 p.

'RAF Staff College 17.11.44'., ms. 1 p.

D.93 Ms. note for lectures.

'A.S.E. 16.3.45', ms. 1 p.

'RAF Staff College. 23.4.45', ms. 7 pp. with note at head '[Went rather flat! next time should be more controversial!]'

'R.N. Staff College. The Navy of the Future', ms. 2pp. n.d. but probably 1945.

'Notes for lecture', ms. 2 pp. n.d. but probably 1945.

D.94 Misc. examples of estimates and calculations illustrating O.R. techniques, used by Blackett for official wartime lectures and papers.

Includes Appendices to D.86.

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D.95 Background material and information obtained by Blackett re various wartime operations, mainly 1942, 1944.

D.96 Brief notes and quotations on military affairs, collected by Blackett and illustrating his impatience with official attitudes.

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D.97-D.112 Lectures and writings on Operational Research 1945-73

These folders contain Blackett's lectures and papers on the history and application of O.R., given after the Second World War. Many are relatively short, but some were published as contributions to the history of the subject, and some were deliberately controversial when Blackett felt that scientific methods, wrongly applied, were endangering peace (see especially D.109).

The material is chronologically presented; all papers are autograph manuscript unless otherwise stated. D.110 - D.112 include offprints and printed matter used as background material, often with Blackett's annotations and underscorings.

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D.97 'Technique of Operational Research'.

Lecture first given to 'Marshall Society' and Cambridge Branch, Association of Scientific Workers, 16.11.45.

Heavily revised and amended ms. of lecture, with note of later deliveries at Manchester University 1947, and Liverpool 1949.

D.98 'The Relationship between the Scientist and the Administrator'.

London School of Economics, 1 March 1946.

D.99 'The Scientist and the Administrator'. n.d., with note 'Based on address at London School of Economics 1.3.46.'

D.100 Ms. notes for lectures.

'Eaton 10.5.46.' 1 p. notes only.

'Ops. Research B.T.L. 1946 October 1st, N.Y.'
1 p. notes only.

'Science and War. Manchester Museum. 2.11.46.'

'Notes. M.I.T. Discussion January 1948'.
1 p. notes only.

D.101, D.102 'Operational Research' (Advmt. Sci. Br. Ass., 5, 1948)

Notes, drafts and background material.

R.S.91, 92.

D.101 Draft ms. including heavily-revised copies of D.84 and D.86 and an offprint of the published version.

D.102 2 papers by C.H. Waddington.

'A note on the organisation of "Applied Science" with particular reference to the livestock industry'. n.d.

'What is operational research?' (typescript of letter published in Nature, Lond., 161).

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D.103 'Operational Research'. 1949-50

Blackett's contribution to the first issue of Operational Research Quarterly, 1, no.1, March 1950.

Typescript and offprint of published article.

Includes correspondence with Chairman of Manchester Joint Research Council re meetings on O.R. held September-December 1949. Blackett presided at first meeting and led joint discussion at final meeting.

R.S.93.

D.104 'Operational Research'.

Transcript of informal talk, including discussion following lecture, given to a Royal Statistical Society Group. n.d. or place.

Typescript with ms. corrections.

'Liverpool. 1.3.49.' 1 p. notes only.

'Operational Research. Wolverhampton. 9.7.51.'

Offprint of review by Blackett of 'Methods of Operations Research' by P.M. Morse and G.E. Kimball, Physics Today, November 1951.

D.105 'Operational Research. Recollections of problems studied, 1940-45'. Brassey's Annual, 1953.

R.S.65.

Includes: invitation to write article, and correspondence with editor, Adm. H.G. Thursfield, December 1951-September 1953;

correspondence re security clearance for material in article, 1953;

letter from L.G. Bayliss with comments on Blackett's article and a copy of Bayliss's paper 'The origins of operational research in the army, October 1945', August 1953;

offprint of Blackett's article as published.

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D.106 'Operational Research. Sydney. 1953'. 1 p. ms. notes.

'Operational Research. Notes of a lecture given by P.M.S.B. to Institute of Physics, 17 March 1953'.
Typescript with ms. corrections and a ms. note 'Sydney'.

D.107 Ms. notes for lectures.

'Operational Research. Leicester. November 1953'.
1 p. notes only.

'Chatham House. June 1954'. 6 pp.

'R. Statistical Society. Birmingham. November 1954'.
1 p. notes only.

D.108 Notes for lectures given in India.

'Operational Research' (Offprint from Defence Science Journal, October 1955).

'Operational Research. Delhi. December 1956'.
2 pp.

'Calcutta'. n.d. 1 p. notes only.

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D.109 'Operational Research and nuclear weapons'.

Lecture given to Royal United Services Institution (R.U.S.I.), 22 March 1961, and published in the Journal of the Institution, Encounter and Studies of War.

R.S.97.

In this paper Blackett reviewed the achievements of O.R. in the war, and commented unfavourably on the writings of the Rand Corporation [USA] O.R. studies, and in particular the article by C. Hitch criticising British Naval O.R. (see D.81, D.115).

Folder includes 17 pp. typescript of introduction to lecture as delivered, and correspondence, February-May, with colleagues, all commending Blackett's wartime work and the stand he took in the lecture/publications above, and deploring some of the current trends in American scientific and defence thinking.

Some of the letters contain detailed comments on Blackett's paper, and carry Blackett's annotations, underscorings, etc.

Correspondence (in chronological order):

D. Gabor

S. Zuckerman

J.R. Newman

C.P. Snow

B.H. Liddell Hart

D.W. Waters (on early maritime 'operational research')

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D.110 Misc. notes and background material, mainly re-workings by Blackett of earlier accounts of his wartime activities and of Studies of War, perhaps for autobiographical work.

Includes a 1 p. ms. plan for an account of Blackett's contributions to O.R., listing his principal activities and writings. n.d. but c. 1973.

D.111 Articles, press-cuttings, etc. on operational research, some annotated by Blackett.

D.112 Misc. offprints, some signed and annotated, of some of Blackett's publications on O.R. and defence.

Includes a typescript bibliography, prepared by Blackett, of his publications on O.R., defence, disarmament and related topics. This covers only 1948-63, and omits many lectures and reports.

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D.113-D.125 Correspondence on Operational Research 1944-74

The material is presented chronologically.

A brief indication is given of any material of particular personal or historical interest, and all correspondents are listed in the general index.

D.113	(unidentified), on Blackett's convoy-size paper.	1944
	C.H.O'D. Alexander	1945
	E.C. Baughan	1945
	W.J. Slim (invitation to lecture)	1946
	W. Kaempffert	1947
D.114	H.R. Hulme (comments on papers by Blackett)	1948
	C. Gordon	1958
D.115	Correspondence with Charles Hitch and Sidney Dell re an article by Hitch, published in Review of Economics and Statistics, XL, August 1958, criticising British Naval O.R. during the Second World War.	1959

After correspondence with Blackett, a reply to Hitch's article was prepared by Sidney Dell, and a rejoinder by Hitch (copies of both are included) but neither was published.

This episode led Blackett to obtain copies of the wartime papers on convoy size (D.81) and to refer to the matter in his R.U.S.I. lecture (D.109) and subsequently in Studies of War (H.93-H.95).

D.116	From P. Rosbaud (effect of Allied bombing policy on Germany).	1960
D.117	J. Connell (2 letters)	1960
	Earl Halsbury (conferral on Blackett of Hon. Life Membership of Operational Research Society, as 'the virtual founder of Operational Research').	1960
	J.B. O'Connell (request for article for Think Magazine).	1963

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D.118 M. Hales (history of O.R.) 1971

N. Falconer (history of O.R.) 1972
see also D.120

D.119 A.N. Frankland (history of O.R.) 1972

C.H. Waddington (history of O.R.) 1972
(and one letter 1957)

S.J. Morrison (history of O.R.) 1973

D.120 Correspondence with N. Falconer. 1973-74 1973-74
Includes several drafts of Falconer's paper 'On the size of convoys', with many ms. comments by Blackett, and on subsequent developments of O.R.

D.121 Correspondence with D.J. White on similar project. 1973

D.122 Correspondence with I. Evans 1974
re Evans's unpublished article 'The Beginnings of Operational Research', a photocopy of which (20 pp. typescript) is included.

Evans had been a member of Blackett's A.A. Command Research Group in 1940, and in his letter to Blackett of 22 January 1974 he discusses his article, and other writings on Army Operational Research Group.
See D.123 below.

D.123 Compiler's note: After correspondence arising from the information in D.122, Dr. Evans very kindly made available a photocopy of a report written by him and N.F. Mott in June 1941.

The document 'Report on Analysis of Balloon Calibrations with Mark I/EF on Matted Sites', is 1 p. typescript dated 1.6.41., with 4 figures attached dated 6.6.41. Dr. Evans writes in a letter of February 1978: 'It has historical interest in that when A.O.R.G. was formed as the linear descendant of Blackett's Group, it was designated A.O.R.G. Report no.1'

Because of its historical interest the document is included here as a separate item.

Evans's own papers, including the original of the above document, are deposited at the Imperial War Museum.

D.124 Not used.

D.125 J.W. Abrams (history of O.R.) 1974

C.G. Storey 1974

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D.126-D.147 CORRESPONDENCE 1942 ONLY

Of Blackett's extensive and varied wartime correspondence, only that for 1942 survives, though some exchanges remain with the working papers.

The correspondence below is presented alphabetically, with a brief indication of content of particular interest. All correspondents are listed in the general index.

Incomplete though the record is, the range of Blackett's activities at this period is well shown, and includes his official service engagements, his concern to keep in touch with his department at Manchester University and to plan its future (D.144-D.147), and his personal assistance to various colleagues and acquaintances.

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D.126 American Embassy (sub-marine warfare)

D.127 G. Barnes

G. Baron, also J.M. Nuttall, J.S.B. Stopford (on a reported 'televisor' invention)

E.C. Baughan

D.128 Brabazon of Tara (Maud Committee)

W.L. Bragg (Blackett's original only)

D.129 A.F. Capon (submarine warfare)

J. Chadwick (appointments)

J.D. Cockcroft (includes Blackett's letter nominating Cockcroft for Nobel Prize)

-. Combe (Blackett's carbon only)

D.130 C. Connolly

G.E. Creasy

J.G. Crowther

D.131 H.C.T. Dowding

Sir Fred Edward-Collins

W.M. Evans

J.M. Ford (Blackett's carbon only)

Sir Bruce Fraser (submarine detection)

D.132 H.M. Garner (depth charges)

J.H. Godfrey (includes copies of Blackett's letters to M.H.A. Newman about his appointment to Bletchley)

D.133 J.B.S. Haldane (also J.M. Nuttall)

Lord Hankey (bombing policy)

S. Haynes

D.134 A.V. Hill (various exchanges of letters)

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D.135 L.J. Jones

Sir Philip Joubert (submarine warfare and bombing policy) (Blackett's carbon only)

H.L. Lang

B. Lockspeiser (depth charges)

D.136 C.E.H. Medhurst

A.C. Menzies (discrepancy of A.A. claims of aircraft shot down)

D.137 D.M. Newitt (reported invention)

J. Passant

Sir Frederick Pile (addressed to 'Dear Magician')

E.D.P. Pinks (reported invention)

S.H. Piper

J. Plesch

D.138 E.F. Relf

W.J. Richards (Blackett's carbon only)

Sir Malcolm Robertson (appointment)

D.139 A.P. Rowe (various exchanges of letters)

D.140 W. Saraga

C.K. Shaw (reported invention)

R.E. Stradling (on Bernal's report on effects of air raids)

M. Surdin

D.141 H. Hamshaw Thomas (on Bernal's report on effect of air raids, described as 'completely unreliable and misleading')

H.T. Tizard (various exchanges of letters)

F. Twyman

D.142 J.G. Wilson

F.W. Winterbotham

W. Wynter-Morgan (Blackett's carbon only)

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D.143 Misc. shorter correspondence, re appointments, employment of foreign scientists, or shorter personal matters.

Not itemised or indexed.

D.144-D.147 Manchester University, 1942

Correspondence on research, appointments, post-war organisation, etc. The correspondence, though limited, shows Blackett's continuing concern to keep in touch with his department and university despite the heavy claims of wartime activities.

D.144 Report on D.Sc. submission

H. Graham Cannon (on course organisation)

W. Ehrenberg

H.J. Fleure

D.R. Hartree

D.145 L. Jánossy (and W. Rosenberg)

J.M. Nuttall (Blackett's carbons only. Nuttall was Blackett's deputy in Manchester during the war)

E.J. Simon (on post-war university organisation)

D.146 S. Tolansky (also J.G. Crowther) on appointments, and Tolansky's first publication on his Fabry-Perot interference fringes

D.147 S.A. Trivedi

L.T. Winkler (also J.G. Crowther and M. Polanyi)

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D.148-D.160 CHIEFS OF STAFF SUB-COMMITTEE ON FUTURE WEAPONS 1945

The Committee was set up under the Chairmanship of Tizard to report on future technical developments in weapons of war. Atomic weapons were excluded from its terms of reference.

Members of the Committee were: J.D. Bernal, P.M.S. Blackett, C.D. Ellis and G.P. Thomson. The Committee reported in June 1945, and in October 1945 a revision was initiated by the Joint Technical Warfare Committee of the Chiefs of Staff Committee 'in the light of later knowledge about atomic energy' (see D.161-D.183).

Items D.149-D.157 below contain reports, discussion papers and ideas contributed by members of the Committee or by others on various specialised areas relevant to the Committee's work. Blackett retained and annotated copies of these papers, and also prepared his own notes for the Committee's report (D.158-D.160) in which he marshalled and presented some of the material.

The papers are preceded (D.148) by an undated draft by Blackett on a similar topic, probably written in 1942, in response to a Note from the First Sea Lord, Admiral Sir Dudley Pound. Blackett's draft, though incomplete, shows his interest in future weapons and the allocation of defence spending at a considerably earlier date than the setting-up of the Sub-committee.

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D.148 2 pp. pencilled draft for the opening sections of a paper, beginning:

> 'After the war, a decision will have to be taken by the Government as to the total fraction of the national resources which are to be allocated to the armed forces.'

The ms., which is undated and incomplete, accompanies extracts from a Note prepared for Chiefs of Staff Committee, 15 November 1942, by First Sea Lord. The note, initialled 'D.P.' (Sir Dudley Pound), refers to 'a number of scientific and technical matters of vast proportions and great complexity' and suggests:

> '... the formation of an ad hoc scientific commission to obtain an objective scientific analysis of this policy and its affect (sic) on other operations. I suggest the commission should consist of Sir Henry Tizard, Professor Bernal, Dr. L.B.C. Cunningham, Sir Charles Darwin, Professor Blackett and that the Prime Minister should be asked to allow Lord Cherwell to preside over this body'.

Also included is an extract from Chief of Staffs Committee meeting 319, in which Pound put forward the suggestion and was answered by Portal that 'he did not think that an examination of the problem by a group of scientists would be of any advantage'. This document is dated 18 November 1943, but must refer to 1942. Pound died in October 1943.

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D.149-D.157 Blackett's folder labelled 'Papers for Tizard Committee', containing reports and discussion papers sent to him by other members of the committee, or by outside sources, and containing material which he used in preparing his own 'Notes for Tizard Report' (D.158-D.160).

Note: These documents are all on poor quality wartime paper and are in fragile condition. Many still bear the security categories applicable at the time they were written, and Blackett's notes and underscorings.

D.149 'Notes on Future Armament Policy. TWC' (Tizard Weapons Committee).

4 pp. typescript with ms. annotations by Blackett. Unsigned but with note 'Bernal' by Blackett. (Very fragile.)

D.150 'Some thoughts on technical warfare in 15-20 years' time'.

5 pp. typescript signed A.P. Rowe. 5 March 1945.

D.151 'Future Naval weapons. Their application and influence on naval warfare'.

3 pp. typescript. n.d. or signature.

D.152 'Future of air warfare. Memorandum by Sir George Thompson (sic)'.

8 pp. typescript. n.d.

D.153 'Development of naval weapons, craft and devices in the next 10 to 15 years'.

17 pp. typescript with ms. annotations by Blackett. Unsigned, but with note 'Keystone', by Blackett.

D.154 'Communications and counter-communications'.

2 pp. typescript, signed G.E. Hughes, 17 April 1945, and with ms. heading by Blackett 'Tizard Committee paper'.

D.155 'Future Potentialities of weapons of war'.

11 pp. + 1 p. Appendix typescript, dated 24 March 1945.

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D.156 1 p. typescript with ms. heading by Blackett 'Strategy of Research and Development. C.D. Ellis' (The concluding and only surviving page of a longer report.)

D.157 'Towed charge as A/U weapon'.

3 pp. typescript by W.H. McCrea dated 7 March 1945 from D.N.O.R. (Blackett's office).

D.158-D.160 Blackett's report to the Committee, based on the above

D.158 'Relation between technical and numerical superiority'.

3 pp. typescript with ms. corrections by Blackett, draft for pp.3-4 of his 'Report' (see D.159 below).

D.159 'Notes for Tizard Report'.

2 copies, each 4 pp. typescript, one with ms. annotations by Blackett and a note added at a later date 'PMSB?' (Blackett had presumably forgotten he had written this paper though his authorship is confirmed by D.158 above.)

D.160 2 pp. ms. notes for above, headed 'Notes for Tizard Report', incorporating items from the material in D.149-D.157 above, with a note of the relevant paper to be used or quoted.

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D.161-D.183 JOINT TECHNICAL WARFARE COMMITTEE (TWC) 1945-1947

This was a Sub-committee of the Chiefs of Staff Committee, instructed 'to proceed with the revision of Sir Henry Tizard's Ad Hoc Committee's report on the future development of weapons of war in the light of later knowledge about atomic energy which will be made available to them'.

The material consists mainly of Blackett's own notes, drafts and background research for papers or for discussion at meetings. It also includes similar documents sent to him by colleagues or interested parties. Some correspondence, with scientific, Service or government colleagues has been left in the folders, itemised and indexed.

The official invitation to serve on the Committee 'to consider this important topic' is dated 6 October 1945 (D.161), but Blackett had already assembled material and drafted short papers on various relevant aspects, and continued to do so. Items D.162-D.166 are papers and notes of this kind on the implications of atomic warfare, brought together by Blackett August-September 1945 before the Committee was formally set up. Some of the later notes are headed 'TWC 46' and 'ACAE' (Advisory Committee on Atomic Energy, see D.184-D.205) and represent Blackett's reflections prompted by papers or discussions at these committees.

Problems of atomic (later nuclear) weapons became the principal subject of concern, and on two occasions Blackett openly took a dissenting view from official decisions on the manufacture of an atomic bomb by Britain, and on international control of atomic weapons.

The minority papers which he wrote and circulated on both these occasions are documented in the folders below. The drafts and notes, and the correspondence which accompanies them, help to elucidate the dates of composition and circulation of the papers, and the comments they evoked at the time.

D.167, D.168 refer to Blackett's memorandum of November 1945 'Atomic Energy. An Immediate Policy for Great Britain', which was reproduced in M.M. Gowing, Independence and Deterrence, London 1974, Vol.I, pp.194-206.

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D.174-D.181 refer to the paper on international control of atomic energy, which Blackett considered impractical and indeed undesirable in view of American superiority in atomic weaponry at the time. This paper was presented to the Prime Minister (Mr. Attlee) and was subsequently circulated as a 'Gen 75' Committee paper. In particular, the correspondence in D.174 makes it clear that the paper was submitted to the Prime Minister in November 1946, three months before it appeared as a 'Gen 75' paper in February 1947 (see Gowing, op.cit., pp.115, 183).

See also J.3, correspondence with C.R. Attlee, and D.201, Blackett's letter to Stafford Cripps, referring to another meeting he had had with the Prime Minister to discuss atomic energy policy in February 1947.

For Blackett's later writings and lectures on the subject, see Section F, Nuclear Weapons and Disarmament.

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D.161 Invitation from Sir Leslie Hollis to 'participate' in discussions to revise the report of Tizard Committee on weapons of war, 6 October 1945.

D.162 Papers on 'Questions of physical fact', re atomic bombs.

4 pp. and 5 pp. n.d.

D.163 'Implications of atomic power'.

8 pp. typescript with ms. note by Blackett 'DRAFT. 24.8.45' and 'Secord' (Campbell Secord) presumably the author of this paper. See also D.208.

D.164 'Effect of the Atomic Bomb on warfare'.

7 pp. + 1 p. Appendix typescript with ms. annotations, and a ms.addition to the Appendix, dated 4 September 1945, sent from office of D.N.O.R.

D.165 'Future of Atomic Energy'.

8 pp. typescript, with ms. annotations by Blackett, dated 23 September 1945, not signed.

D.166 'Effect of atomic bomb on the defensive strength of the U.S.S.R. in the next few years'.

2 pp. typescript, with ms. annotations, signature and date, September 1945, all by Blackett, with 'Appendix 2' on 'Number of atomic bombs required to have a decisive effect in a major war'.

D.167 'Atomic Energy. An immediate policy for Great Britain'.

This is a copy of Blackett's Memorandum of November 1945, which was reproduced in M. Gowing, Independence and Deterrence, London 1974, Vol.I, pp.194-206. The copy was probably made in 1972, typescript 10 pp. with ms. notes and annotations by Blackett and a ms. note 'will appear in Gowing's book'.

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D.168 2 letters of comment on the draft of the above, one of them beginning 'I think the presentation of the matter of the paper is unduly provocative and you are more likely to effect a sale if you water it down'. October 1945.

D.169-D.170 Misc. ms. notes and drafts by Blackett on atomic power. n.d. c. 1945.

D.169 3 pp. note 'International Security Problem'

D.170 1 p. note on international control

1 p. misc. notes re Halban, I.C.I., Montreal, etc.

1 p. misc. notes re Joliot, and European involvement in atomic production

D.171 Misc. notes and queries by Blackett, some headed T.W.C. (46), and A.C.A.E.

D.172 Misc. notes and drafts for papers, many fragmentary. Some refer to problems of international control and may relate to Blackett's later paper on the subject (D.174-D.181).

D.173 Letter from Sir Philip Joubert requesting advice and comment on his paper on a 'counter to the atomic rocket' (the paper is not included). October 1945.

Undated note that 'Chadwick is to discuss further with Bush [Dr. Vannevar Bush] and Groves [Gen. L.R. Groves] the general principles on which proposed scientific statement is to be based'. 1 p. incomplete.

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D.174-D.181 Documents relating to Blackett's paper on policy on international control of atomic energy. 1946-47

D.174 Correspondence with H.M. Government re paper.

Includes: Blackett's copy of letter to Prime Minister (C.R. Attlee) asking for interview, in which he says 'I have recently been in America ... and have had an opportunity of very many conversations and discussions. As a result, I have rather definitely changed my views about what can be hoped to be achieved in relation to control'. 21 October 1946.

Blackett's copy of letter to P.M. 'I enclose the note I promised you on the problem of formulating a policy in the event of a breakdown of the Atomic Energy Commission'. 11 November 1946.

Letter from Minister of Food returning memo. sent 'in November of last year'. 16 April 1947.

This correspondence makes it clear that Blackett's memo. was available in November 1946, 3 months before it appeared as a 'Gen 75' paper.

See also J.3, correspondence with C.R. Attlee and others.

D.175 Correspondence with N.F. Mott deprecating Blackett's views against international control of atomic energy as 'absolutely disastrous'. November 1946.

Correspondence with Air Marshal Tedder on same subject, March 1947, with continuation of argument in later 6 pp. addendum by Blackett.

D.176-D.181 Texts of the paper 'On the Formulation of British Policy in regard to Atomic Energy'.

D.176 Copy dated 11.11.46, in Blackett's hand, typescript 9 pp. with 3 pp. Appendices and ms. corrections by Blackett and another, and ms. heading 'Copy 3'.

D.177 Copy dated 'February 1947' in Blackett's hand. This is another copy of above, with some different annotations and corrections.

D.178 A slightly different and shorter version, typescript 9 pp. with 1 Appendix only, dated 'April 47' with a note 'incomplete' both in Blackett's hand.

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D.179 Another version combining features of both D.176 and D.178, typescript 6 pp. with Appendices 1 and 3. n.d.

D.180 Another copy of D.179, with three Appendices (lacks p.1).

D.181 'Memorandum of February 1947 by Professor P.M.S. Blackett'.

A copy, probably taken in 1972, with ms. annotations by Blackett and a ms. note at the head 'not released in Gowing's book'.

D.182 Later correspondence on atomic energy and Blackett's writings from:

Richard Goold-Adams	1959
Robert Neild	1964

D.183 Correspondence with Margaret Gowing re her history of atomic energy and Blackett's papers, etc. reproduced or referred to therein. 1972.

Includes 2 pp. ms. notes and comments on the draft of the book.

In his letter of 22 May 1972, Blackett asks whether his paper can be made available for publication, explaining that 'I am considering the possibility of publishing a volume of my collective papers, essays, lectures, etc.'

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D.184-D.205 ADVISORY COMMITTEE ON ATOMIC ENERGY (ACAE)
August 1945-April 1949

This was the 'Anderson Committee', set up in August 1945

'(a) to investigate the implications of the use of atomic energy and to advise the Government what steps should be taken for its development in this country for military or industrial purposes;

(b) to put forward proposals for the international treatment of this subject'

The folders also include material related to ACAE's Subcommittee on Nuclear Physics established in December 1945 'to make recommendations regarding research in nuclear physics in this country as a whole'.

ACAE was dissolved in January 1948, and the Subcommittee was reconstituted as the Nuclear Physics Committee responsible to the Ministry of Supply. Its Chairman was Sir James Chadwick; Blackett was Vice-Chairman.

See M. Gowing, Independence and Deterrence, 2 Vol., London 1974, passim.

The material consists of correspondence, reports, Blackett's notes of meetings, etc. Because they reflect various aspects of an important historical episode, they have been presented in some detail, and follow chronological order as far as possible. All correspondents are listed in the general index.

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D.184 Correspondence re Committee.

Letter of appointment to Committee, 17 August 1945

Letter re Committee from Philip Noel-Baker, August 1945

Letter dissolving Committee, from Prime Minister (C.R. Attlee), 6 January 1948

Included here is Blackett's carbon of his letter to Stafford Cripps, 22 August 1945, commenting on the membership of the Committee which had had its first meeting on the previous day.

D.185 Copy of memorandum to Sir James Chadwick by UK scientists at Montreal, with their recommendations for any proposed UK nuclear physics research establishment, and their views on the composition of the Advisory Committee. August 1945.

D.186 Letter from Sir Francis Simon on costs of projects and plants in US and UK, and notes by Blackett, September 1945.

D.187 Ms. notes by Blackett on ACAE papers, 1945.

D.188 Minute and letter by S. Zuckerman re effects of atomic bomb explosions in Japan, 9 October 1945.

D.189 Paper by M. W. Perrin 'Implications arising from German interest in T.A.', 4 pp. + 1 p. 15 October 1945.

D.190 Letter from J. Chadwick re visits to Russia, and his (duplicated) note on work of Nuclear Physics Sub-committee.

Copy of further memo. to Chadwick from UK scientists protesting against proposed organisation at Harwell (unsigned), December 1945.

Included here is a 1p. document, n.d. and unsigned, on 'the conditions that Montreal people are asking should be fulfilled by the British atomic energy project' [before 30 March 1946], with ms. notes by Blackett.

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D.191 Correspondence re Committee.

Letter re membership of Nuclear Physics Sub-committee, December 1945.

Letter from E.C. Bullard re uranium 235 and 238, December 1945.

Lengthy (duplicated) letter from Simon to Akers re status and functions of the Technical Committee, lack of information from US, etc. January 1946.

Ms. notes by Blackett of conversations re Harwell, etc., January 1946.

Letter from E.C. Bullard, January 1946.

D.192 Important letter from M.L. Oliphant re Technical and Anderson Committees, commenting very unfavourably on progress to date, its operation under the aegis of the Ministry of Supply ('a colossal mistake'), loss of personnel 'through the policy of dalliance', and Blackett's presumed acquiescence or responsibility in view of his Socialist policies.

Blackett has numbered sections of the letter, and his ms. notes for a reply are attached, together with ms. 'Notes on conversation with J.D.C.' [Sir John Cockcroft], January 1946.

D.193 Typed extract from the Report of the meeting in Moscow, 27 December 1945, of the Foreign Secretaries of UK, US, and USSR to discuss 'The establishment by the United Nations of a Commission for the control of Atomic Energy', sent to Blackett February 1946; with ms. notes by him.

D.194 Letter and memo. from Sir Charles Darwin on location and staffing of nuclear physics establishments, especially re Cambridge, February 1946.

D.195 Draft report of Nuclear Physics Sub-committee on 'Nuclear Physics Research: University Programmes', sent to Blackett for comment, February 1946.

D.196 Copy (duplicated) of further letter from Simon to Akers re lack of information, and relative costs of plutonium and a separation plant. February 1946.

Letter and notes on uranium prospecting from E.C. Bullard, March 1946.

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D.197 2 letters from Lord Cherwell, May 1946, re 'red tape' obstructing research projects, especially those of M.L. Oliphant.

D.198 Correspondence with M.L. Oliphant, May 1946, especially re his project for cyclotron at Birmingham University and report (September) on Synchrotron, and press-cutting.

D.199 Official notes between Cockcroft and Franks re details of Harwell administration, May 1946.

Misc. agenda, etc. for meetings A.C.A.E.

D.200 Letter and memo. from G.P. Thomson, on the toroid, June 1946.

D.201 Blackett's carbons of 2 letters to Stafford Cripps.

Letter of 17 February 1947, in which Blackett mentions a meeting with the Prime Minister a few days previously on 'the general atomic energy policy' (see D.174-D.184, J.3), membership of ACAE (Blackett had always wanted Tizard to be a member), and Blackett's recent visit to India.

Letter of 11 March 1947 on 'the atomic energy set-up in India', Indian independence, etc.

D.202 Letter from Roger Makins (now Lord Sherfield) on the history of the voting procedure in the Security Council of the United Nations, April 1947.

Notice of meeting of Nuclear Physics Sub-committee at Malvern, October 1947.

D.203 Correspondence with M.W. Perrin, on the disparity between Perrin's and Hinton's dates for any substantial contribution to national power supplies from atomic energy, December 1947-January 1948.

Minutes of Nuclear Physics Committee, July 1948. This explains the new constitution, terms of reference, membership, and specialist Panels of the Committee, consequent upon the dissolution of the A.C.A.E. (Anderson Committee).

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D.204 3 copies of 2 pp. statement on the atomic bomb, addressed to the American people by 'a group of the scientists who have proposed and developed the atomic bomb'. n.d. or signature, but ms. note by Blackett 'Peierls'.

D.205 Correspondence re return of Blackett's Atomic Energy Committee papers to Ministry of Supply. April 1949.

Includes lists of documents returned.

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D.206-D.208 HARWELL POWER COMMITTEE May-October 1946

This was set up by A.E.R.E. Harwell 'to advise on the basic scientific and technical problems involved in the utilization of atomic energy for power purposes, and to advise on the necessary research programme'.

D.206 Invitation to serve, list of members, correspondence re first meeting (chaired by Blackett), 28 May.

D.207 Correspondence re meeting of 2 July, and ms. notes of discussions.

Programme, list of visitors, etc. for Nuclear Physics Conference, Harwell, 18-19 September 1947.

D.208 Papers prepared for Harwell Power Committee, on economic and technical aspects of atomic power, by Campbell Secord (Cabinet Office), with 2 letters from him enclosing earlier drafts of papers, July 1946.

Untitled paper dated 3 September. 11 pp. + Appendices A, B, C, D (page 1 (index) is missing).

'A national energy policy', dated 17 October, 6 pp.

'Atomic strategy and foreign policy'. 5 pp., with ms. annotations by Blackett. See also D.163.

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D.209-D.216 RAF AIRCRAFT RESEARCH COMMITTEE September 1946-October 1952

The Committee was established by the Aeronautical Research Council in October 1946 'to study the basic problems of R.A.F. aircraft and their operation, and to advise the Council on research needed to solve these problems'.

Blackett was Chairman of the Committee, which had official and independent members. The senior Secretary was J.L. Naylor.

The ARC also established a Sub-committee to handle similar problems of Naval research (N.A.R.C.), of which Blackett was Chairman. No papers remain specifically related to this Sub-committee, though there are references to meetings, overlapping interests, etc. in the correspondence in this section.

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D.209 Preliminary correspondence and papers re setting up of Committee, invitation to Blackett to serve as Chairman, membership of Committee, etc. up to 1st meeting (28 January 1947).

A list of the proposed original membership is included here, as are Blackett's notes of the meeting of A.R.C. on 29.10.46. at which the Research Committee was set up.

Correspondence, in chronological order, September 1946-January 1947:

S. Goldstein

H. Roxbee Cox

J.L. Nayler

H.R. Pitt

A.L. Hodgkin

H.M. Garner

O.H. Wansborough-Jones

B. Lockspeiser

D.210 Correspondence and papers, January-March 1947, with secretaries and members, covering meetings on 28 January, 25 February, 4, 25 March, 22 April.

D.211 Correspondence and papers, April-December 1947, with secretaries and members, covering meetings 17 June, 29 July, 21 October, 25 November.

D.212 Correspondence and papers, 1948.

With secretaries and members, covering meetings 24 February, 25 March, 25 May, 25 June, 27 July (cancelled), 21 September, 26 October, 15 December (postponed), and various changes in the membership of the Committee.

Blackett's Chairman's letter of 5 July to the A.R.C. sets out the Committee's 'unanimous conclusion that an immediate start should be made, as an urgent matter, on research aircraft to fly at supersonic speeds, the aim being to reach a figure considerably greater than M = 1.'

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D.213 Correspondence and papers, 1949.

Covering meetings 25 January, February, 22 March, May, 28 June, 22 July, 26 October, 29 November, and various visits paid by Committee to research and manufacturing establishments, and to various joint meetings.

D.214 Correspondence and papers, January-May 1950.

Blackett resigned from the RAF and the Naval Aircraft Research Committees as from May 1950, his place being taken by Professor A.A. (now Sir Arnold) Hall and Sir Melville Jones.

The correspondence deals with his resignation, and with meetings of 25 January, 28 February, 28 March, and April.

D.215 Correspondence and papers, September-November 1951.

In September 1951, Blackett was asked if he could 'help them out' by resuming the Chair of the RAF ARC for seven months, following the appointment of Professor A.A. Hall as Director of R.A.E. Farnborough. Blackett accepted despite protesting that his 'knowledge of aircraft problems, never very great, is decidedly rusty'.

Correspondence covering meetings 25 September, 23 October, 27 November.

D.216 Correspondence and papers, February-October 1952.

Blackett was invited to continue as Chairman for a further year (to April 1953) but continued only until October 1952.

Correspondence covering meetings 22 January, 26 February, 25 March (postponed), April, 24 June, 22 July, September.

Includes invitation (July) to become Independent Member of Air Warfare Research Committee.

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D.217, D.218 GUIDED WEAPONS ADVISORY COMMITTEE February 1947-December 1952

The Committee was set up by the Ministry of Supply 'to advise on the conduct of scientific and engineering work for guided weapons'.

D.217 Preliminary correspondence with B. Lockspeiser re proposed Committee, and official letter of invitation to serve. February-May 1947.

D.218 Correspondence with secretaries and officials re meetings, papers, and return of secret Committee reports and papers, June 1947-December 1952.

Includes lists of documents held and returned by Blackett.