

Catalogue of the papers and correspondence of

JOSEPH STANLEY MITCHELL FRS

(1909 - 1987)

Compiled by Timothy E. Powell and Peter Harper

VOLUME I

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General Introduction
Sections A - E

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GENERAL INTRODUCTION

PROVENANCE

The papers were received in September 1987 and July and November 1988 from the estate of Professor J.S. Mitchell.

OUTLINE OF THE CAREER OF J.S. MITCHELL

Joseph Stanley Mitchell was born in Birmingham on 22 July 1909. He was educated at local schools until the age of 12 when he won a scholarship to the King Edward VI High School. In 1926 Mitchell won a State Scholarship to Birmingham University and in 1928 an Entrance Scholarship to St John's College Cambridge. He took a First Class in each part of the Natural Sciences Tripos, specialising in physics in Part II. He had decided on a career in medicine at an early age and therefore also took the examinations in pre-clinical subjects which would allow him to take the Cambridge MB and BChir after completing his postgraduate clinical training. Mitchell returned to Birmingham in 1931 for this training. He was awarded the Cambridge MB and BChir in 1934 and after a period as house physician at the General Hospital, Birmingham, began research for his PhD on the irradiation of thin protein films under E.K. Rideal at the Colloid Science Laboratory at Cambridge. Mitchell was awarded his PhD in 1937. He was then elected to a Research Fellowship at St John's College.

In 1938 Mitchell began his first clinical work in radiotherapy, initially as Resident Radiological Officer at the Christie Hospital and Holt Radium Institute, Manchester, then as Assistant in Research in Radiotherapy in the Cambridge University Department of Medicine. This post was made permanent in 1943 with the opening of a Radiotherapeutic Centre at Addenbrooke's Hospital.

In 1944, at the request of J.D. Cockcroft, Mitchell joined the British and Canadian Atomic Energy Project at Chalk River, Canada. He was asked to investigate radiobiological hazards to those working with radiations and to direct the Project's medical programme. At the end of 1945 Mitchell returned to Cambridge to take up the Chair in Radiotherapeutics within the newly established School of Clinical Research and Postgraduate Teaching, and the Directorship of the Radiotherapeutic Centre at Addenbrooke's Hospital which had been set up in 1943.

In 1957 Mitchell succeeded Sir Lionel Whitby as Regius Professor of Physic. Despite the onerous administrative duties this imposed he remained active as Director of the Radiotherapeutic Centre and continued his full-time research in the Department of Radiotherapeutics, of which he also remained head. As Regius Professor Mitchell was instrumental in building up the School of Clinical Research and Postgraduate Teaching. He also argued for the establishment in Cambridge of a complementary pre-graduate clinical school in order that Cambridge medical students should not have to go to London teaching hospitals to receive their clinical training. His efforts were rewarded when in 1968 the Royal Commission on Medical Education recommended that a clinical school be established at Cambridge, largely on the basis of the strength of the existing Medical School. The School of Clinical Medicine opened its doors to students in 1976. Mitchell resigned from the Regius Chair a year early in 1975 to allow his successor W.J.H. (later Sir John) Butterfield to preside over the new School from the start and resumed his Professorship of Radiotherapeutics for a year. After retirement from the Chair Mitchell continued work, supported by funds from the Professor J.S. Mitchell Cancer Research Fund, and was an active researcher until his death in 1987.

Among the honours accorded to Mitchell were the CBE in 1951, election to the Fellowship of the Royal Society in 1952 (serving on Council 1955-57) and an Honorary D.Sc. from Birmingham University in 1958. He delivered the Dunham Lectures at Harvard University and the Withering Lectures at Birmingham University in 1958, the Silvanus Thompson Lecture at the Royal Institute of Radiology in 1968 and the Linacre Lecture at St John's College Cambridge in 1970. In 1967 Mitchell received the Pirogoff Medal of the USSR Academy of Medical Sciences. He was elected a Fellow of the Royal Colleges of Physicians, Radiology and Surgery and a Foreign Fellow of the Indian National Science Academy in 1974.

Mitchell's early research was carried out at the Colloid Science Laboratory under Rideal on the biophysics of protein monolayers. From the late 1930s he began to investigate ionising radiations, his first paper on this subject being published in 1940 ('Wave length effect in the reaction of human skin to x- and gamma-radiation', *Nature, Lond.* **145**, 105-107). On his move to Chalk River in 1944 to assist the British and Canadian Atomic Energy Project Mitchell began to study the biological effects of fast and thermal neutrons. His interest in this area led to his service on a number of Medical Research Council, Ministry of Supply and Ministry of Health committees which continued after his active research into biological effects of fast and thermal neutrons had ceased. While in Canada Mitchell also made one of his most significant contributions to cancer research - the recommendation (with J.V. Dunworth) that the radioisotope cobalt-60 was suitable for use in radiotherapy.

On his return to Cambridge and his appointment to the Chair of Radiotherapeutics Mitchell's research concentrated on attempts to develop radiotherapeutic techniques to cure cancer. In 1946 he began to investigate the use of radiosensitising drugs as anti-cancer agents. It appeared that certain drugs concentrated in malignant cells and rendered them more sensitive to ionising radiations. Mitchell's team found that synkavit, menadiol sodium diphosphate, seemed effective against certain tumours and clinical trials began in 1952. Mitchell then began work on the development of a radioactive drug by modifying the radiosensitising drug to enable it to carry its own source of radiation to the malignant tissue. The radiation source selected was tritium and trials with tritiated synkavit were started in 1959 and continued into the 1970s. The next step was to investigate whether an isotope more effective than tritium could be found and Mitchell was studying this at his death.

In 1946 Mitchell and his colleague L.H. Gray had prepared a paper for the Medical Research Council on the radiotherapeutic use of high energy beta and gamma radiations. In 1949 Mitchell's Department of Radiotherapeutics received one of the two 30 Mev synchrotrons funded by the Medical Research Council. Although the machine was not used to treat as many patients as was hoped, the synchrotron gave Mitchell and his team valuable experience of the effectiveness of high energy radiations. Later Mitchell pioneered the use of randomised trials to assess the efficacy of different kinds of treatment. The King's College Hospital London - Addenbrooke's Hospital Cambridge Breast Trial of therapy for 'early' breast cancer, which Mitchell helped organise, was one of the first of its kind and led the way to larger scale trials which have significantly improved the treatment of this form of cancer. Mitchell was also among the first to consider the part that psychological factors might play in the treatment of cancer.

DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the List of Contents. This large and comprehensive collection covers almost all aspects of Mitchell's professional career.

Section A, Biographical, consists principally of Mitchell's own biographical records of his career, and family and personal correspondence. It includes summaries by Mitchell of his research activities, and an album used for newspaper cuttings and other memorabilia relating to the Radiotherapeutic Centre and Department of Radiotherapeutics. At A.84 is the notice displayed in the Department proclaiming 'The aim of this department is to improve the treatment of cancer'.

Section B, Cambridge, is the largest in the collection. The very substantial material is presented in four subsections: (1) the Department of Radiotherapeutics/Radiotherapeutic Centre; (2) Addenbrooke's Hospital; (3) University of Cambridge; and (4) Lectures. The first subsection documents establishment and general administration, accommodation, staffing and equipment (synchrotron, linear accelerator etc) of the Department and the Centre, the funding of Mitchell's research (especially the British Empire Cancer Campaign and Mitchell's own Cancer Research Fund), and the future of the Department after Mitchell's retirement in 1976. The second subsection documents Mitchell's wide-ranging involvement in hospital affairs as head of the Department and Centre and as Regius Professor of Physic. Of particular interest are the extensive records relating to the development of the new Hills Road hospital site which was of great importance to Mitchell because of his plans for the University Medical School. The third subsection presents Mitchell's Faculty Board of Medicine/Faculty Board of Clinical Medicine papers and his extensive Medical School files which document the development of the Postgraduate Medical School from his acceptance of the Regius Chair to the mid 1960s and the establishment of the pre-graduate Clinical School. This subsection also includes documentation of miscellaneous university boards, committees, departments, colleges and societies and Mitchell's university examining. Of particular interest are the papers relating to the development of medical psychology in the Department of Medicine and those relating to the Cambridge Graduates' Medical Club which include Mitchell's annual reports on the Medical School. The final subsection brings together Mitchell's departmental lectures (correspondence *re* arrangements, drafts, illustrative material etc) and documentation of courses and symposia for general medical practitioners and medical students organised in conjunction with the hospital and Medical School.

Section C comprises Notebooks, used by Mitchell for research notes, bibliographical notes, notes taken during visits and conferences, etc. Of particular interest are Mitchell's research notebooks, which cover the period 1926-81. They include some used by Mitchell at Birmingham and Cambridge as an undergraduate and during pre-clinical and clinical training, and later notebooks recording his work after the Second World War on radiosensitising and radioactive drugs. These are often very bulky holding substantial quantities of additional material either intercalated loose or clipped to pages of the volume. This material is integral to the notebooks as Mitchell used them to 'file' papers relevant to his current research activities and may include correspondence, reprints, photographs, figures and graphs, and manuscript and typescript notes.

Section D, Research, documents all aspects of Mitchell's research, other than that recorded in Mitchell's notebooks, from the early work under Rideal to his final clinical research project started in 1985. The bulk of the material was found in Mitchell's own folders and envelopes, sometimes with subject titles inscribed thereon. There are three subsections. The first is Mitchell's early (1930s)

research. This chiefly relates to his investigations carried out at the Colloid Science Laboratory in Cambridge. The second subsection documents his research into the biochemistry of ionising radiations, particularly with reference to the health risks involved, chiefly carried out 1941-49. It includes work carried out while in Canada. The third subsection is the largest. It relates to Mitchell's principal research activity - his effort to find a cure for cancer - and documents both his work as a scientist undertaking research into radiotherapeutic techniques and as a doctor treating patients with cancer. The material includes manuscript and typescript notes, reports by Mitchell and others, correspondence and memos, notes on the literature, data from experiments, patient records, notes on meetings with colleagues, protocols for and results of clinical trials etc. Also of interest is the material at D.98-D.104 relating to the sterilisation by radiation of foodstuffs and medicines. This arose out of ICI interest in this area in 1946. Mitchell felt the idea was worth pursuing and served on an informal group supporting such research.

Section E, Publications, lectures and broadcasts, brings together material for some of Mitchell's published papers, public lectures and broadcasts. It includes material on the 1984 WHO-IAEA compendium 'Cobalt-60 teletherapy' which Mitchell edited with M. Cohen. Also in this section are drafts, background material and correspondence relating to a planned book 'Principles in Radiotherapeutic Oncology', which Mitchell started but never completed. A set of Mitchell's published papers is to be found at E.147.

Section F, Societies and organisations, documents Mitchell's association with 38 British, overseas and international organisations. The organisation for which there is most documentation is the Medical Research Council. Mitchell saw extensive service for the MRC from 1946, sitting on numerous committees and panels to advise on radiation hazards and the medical applications of radiation, and attending a number of the British-US-Canadian Tripartite Conferences on the uses of nuclear energy. He also assisted, on behalf of the MRC, Danish investigations into thorotrast, a solution of thorium dioxide which had been widely used in Denmark for radiological investigations and which had been identified as a possible cause of illness in a number of patients. The MRC material includes committee papers, reports by Mitchell and others, notes and correspondence. The section also presents comprehensive documentation of the establishment and work of the Anglo-German Medical Society. Mitchell was a founder of the Society, formed in 1959 principally to promote contacts between academic and research doctors in UK and West Germany, and was President of the British Section to 1968. Other societies and organisations represented include the International Union Against Cancer, the Ministries of Health and Supply and the World Health Organisation.

Section G, Visits and conferences, presents a chronological sequence, 1946-86, of some of Mitchell's engagements, both in the UK and abroad. It includes Mitchell's attendance at the first four United Nations Conferences on the Peaceful Uses of Atomic Power, held in 1955, 1958, 1964 and 1971. He made many visits to Germany, some of which are documented in the material relating to the Anglo-German Medical Society in Section F and others in the Notebooks Section.

Section H, Correspondence, is a substantial section comprising Mitchell's correspondence files arranged alphabetically, and subsections of shorter scientific correspondence arranged chronologically and references and appointments. The principal alphabetical sequence includes extended exchanges with a number of friends, colleagues and former students including J.D. Abbatt and E.D. Allen-Price, concerning radioactivity in water supplies in West Devon, G.D.H. Bell, concerning collaborative research into mutations in plants, G.C. de Hevesy, a friend of Mitchell's from the 1940s, H. Langendorff, Director of the Radiological Institute at Freiburg University to which Mitchell was a frequent visitor, E. Marsden, concerning soil radioactivity, E.E. Pochin, who shared Mitchell's interest in radiological protection, and G. Stein of the Hebrew University of Jerusalem. Also included here is correspondence and lectures material of C.L. Smith, Assistant Director of Research in the Radiotherapeutic Centre, some of whose papers were inherited by Mitchell on his death.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

We are very grateful to Miss M.J. Crichton, Mitchell's secretary 1954-76 and 1983-87, for her invaluable assistance in preparing the papers for transport to Bath and for her advice and encouragement.

Timothy E. Powell
Peter Harper
BATH 1992

SECTION A

BIOGRAPHICAL

A.1-A.84

A.1-A.14

BIOGRAPHICAL AND BIBLIOGRAPHICAL

A.15-A.38

CAREER, HONOURS AND AWARDS

A.39-A.55

APPOINTMENT DIARIES

A.56-A.63

FAMILY

A.64-A.74

PERSONAL CORRESPONDENCE

A.75-A.80

MISCELLANEOUS BIOGRAPHICAL MATERIAL

A.81-A.84

NON-PRINT MATERIAL

BIOGRAPHICAL AND BIBLIOGRAPHICAL

- A.1 Memoir by D.H. Marrian, *Biographical Memoirs of Fellows of the Royal Society*, 34, 1988.
- A.2 *The Times* obituary, 24 February 1987.
Daily Telegraph obituary by I. Brown (with 4pp typescript draft).
- A.3 *Lancet* obituary, 14 March 1987.
Hospital Physicist's Association Bulletin obituary by J.L. Haybittle (with 3pp typescript draft).
- A.4 Typescript drafts of obituaries for the *British Journal of Radiology* by N.M. Bleehen and J.L. Haybittle (5pp) and M. Cohen (1p).
- A.5 Press profiles 'Man who heads fight against cancer', *Cambridge Evening News*, 1 July 1976 and 'Boy who vowed to beat cancer', *Birmingham Mail*, 28 July 1976.
- A.6, A.7 Curricula vitae.
- A.6 15 July 1944; 13 March 1949 (photocopy of staff file).
- A.7 c.1958; c.1971; c.1975.
- A.8, A.9 Requests for information from publishers of biographical source-books, 1974-86, with Mitchell's entries.
- A.8 1974-82.
- A.9 1983-86.

- A.10 Biographical information for Indian National Science Academy 1975. Mitchell was elected to the Academy in 1974 (see A.30).
- A.11 List of 'Papers published by Professor J.S. Mitchell 1932-1987', 'List of major publications' up to 1975, 'Professor Joseph Mitchell Cancer Research Fund List of Publications', 1977-81.
- A.12 Miscellaneous summaries of research activities: 'General statement concerning publications of J.S. Mitchell', 23 January 1959, 'Statement of main aspects of original work' c.1971, letter to L. Ehrenberg, 25 October 1973, on 'some developments in radiotherapy ... with particular reference to the work of my Department', 'Researches to date ... Clinical and laboratory studies in relation to the treatment of patients with cancer' post 1974.
- A.13 List of university and hospital 'Committees on which JSM served'; list of staff files of Department of Radiotherapeutics, Radiotherapeutic Centre and Department of Medicine, 1947-76, and of Mitchell's Research Laboratories, 1976-88; 'List of staff, research workers, visitors etc' at the Department of Radiotherapeutics and Radiotherapeutic Centre; index (incomplete) to Mitchell's filing system.
- A.14 Album used for newspaper cuttings, photographs and other memorabilia *re* Mitchell, the Radiotherapeutic Centre, the Department of Radiotherapeutics and the Professor Joseph Mitchell Cancer Research Fund. Includes loose material intercalated.

CAREER, HONOURS AND AWARDS

- A.15 Testimonials from K.D. Wilkinson and E.K. Rideal November 1935 supporting Mitchell's application for a Stokes Studentship.
- Note of Mitchell's election to fellowship of St. John's College Cambridge, *Nature*, 16 May 1936; notification of renewal of fellowship for a further three years, 28 January 1939.
- A.16 Letters from Sir Arthur Hall to J.A. Ryle, and J.S.B. Stopford to H.R. Dean, May 1937, offering advice on medical research centres at which Mitchell could gain experience in radiation therapy; notice of appointment as resident Medical Officer, Christie Hospital & Holt Radium Institute, 21 September 1937.

- A.17 Correspondence *re* renewal of Mitchell's Beit Fellowship at Cambridge for a fourth year, May 1938.
- Invitation from J.A. Ryle to Mitchell 'to join the Department of Medicine as Assistant in Research in Radiotherapy', 30 September 1938; conditions of appointment, 28 June 1939.
- A.18 Letter from K.D. Wilkinson, 8 February 1939, *re* Readership in Pharmacology at Birmingham, with draft of Mitchell's reply.
- The letter asks Mitchell for recommendations for suitable candidates and adds 'I suppose there is no possibility of your thinking of the job'. Mitchell's reply explains why he could not accept the post.
- A.19 Correspondence and papers *re* arrangements for move to Canada, 1944; note *re* maintaining contact with 'Tube Alloys' project in UK, May 1945.
- Mitchell was asked by J.D. Cockcroft to head medical investigations at the Montreal Laboratory of the National Research Council of Canada (the joint British and Canadian atomic energy project). He returned to Cambridge at the end of 1945.
- A.20 Letters of congratulation on appointment to Chair in Radiotherapeutics at Cambridge University, 14 February, and to Directorship of the Radiotherapeutic Centre of Addenbrooke's Hospital, 12 August 1946.
- Letter of appointment as temporary head of the Medical Department, Atomic Energy Research Establishment, Harwell, 5 June 1946.
- Letter of appointment as Honorary Physician of Addenbrooke's Hospital, 28 December 1946.
- A.21 Letter from Mitchell to R.H. Parker 'to let you know that I am no longer prepared to consider resignation from the Honorary Directorship of the Radiotherapeutic Centre', 23 February 1947.
- A.22 Election to Fellowship of the Royal Society, 1952.

- A.23, A.24 Appointment to Regius Chair of Physic, Cambridge University, 1957.
- A.23 Correspondence *re* appointment, including Mitchell's letter setting out the terms on which he would accept the appointment and letter of appointment from the Prime Minister's office; notice of appointment, *British Journal of Radiology*, **30** (1957).
- A.24 Letters of congratulation.
- A.25 Letter *re* arrangements for award of Cambridge University MD to Mitchell, July 1957.

Award of University of Birmingham Honorary DSc to Mitchell, 17 July 1958.
- A.26 Brief correspondence *re* offer of Chair in Radiotherapy at Birmingham University, November 1963.
- A.27 Election to Fellowship of Deutsche Röntgengesellschaft, 20 April 1967.
- A.28 Correspondence and papers, 1971-76, *re* extension of Mitchell's appointment as Honorary Consultant in Radiotherapy with United Cambridge Hospitals beyond the age of 65.
- A.29 Correspondence and papers, 1974-75, *re* Mitchell's appointment as Professor of Radiotherapeutics and Emeritus Professor of Physic.

Mitchell retired from the Regius Chair in 1975, before his term of office expired, in order to allow his successor, Sir John Butterfield, time in which to prepare for the opening of the School of Clinical Medicine in October 1976. The Chair in Radiotherapeutics was then re-established for Mitchell 1975-76.
- A.30 Election to Indian National Science Academy, 1974.
- A.31 Retirement from Chair of Radiotherapeutics, 1976. Includes manuscript notes for Mitchell's speech at his retirement party (held in 1978).

- A.32 Offer of 'Guest Professorship' in Department of Radiation Therapy, Catholic University Medical College, Nijmegen, February 1979.
- A.33 Seventieth birthday, 1979. Includes photocopies of profiles of Mitchell from *Strahlentherapie* and *Fortschritte auf dem Gebiete der Röntgenstrahlen Ergänzungsband*.

Seventy-fifth birthday, 1984.
- A.34 Election to Fellowship of Vereinigung Deutscher Strahlenschutzärzte, 15 June 1984.
- A.35-A.38 Mitchell's death.
- A.35 Letters of condolence.
- A.36 Order of service for Mitchell's funeral, Cambridge Crematorium, 27 February 1987.
- A.37 'Thanksgiving Service for Joseph and Mary Mitchell', Chapel of the Holy Spirit, Addenbrooke's Hospital, 10 April 1987.

Notice, order of service, 'Address' by Rev. Dr. F.W. Stephani, message from Sir John Butterfield read at the service.
- A.38 Miscellaneous correspondence *re* posthumous arrangements.

APPOINTMENT DIARIES

With the exception of A.55, a pocket diary, the following are all desk diaries. Most contain intercalated material, chiefly notices of meetings, functions and conferences and notes of appointments.

- A.39 1969.

A.40	1970.
A.41	1971.
A.42	1972.
A.43	1973. Loose papers intercalated include material <i>re</i> the celebration of the 30th Anniversary of the opening of the Radiotherapeutic Centre.
A.44	1974.
A.45	1975.
A.46	1976.
A.47	1977.
A.48	1978.
A.49	1980.
A.50	1981.
A.51	1982.
A.52	1983.
A.53	1984.

A.54 1985.

A.55 Pocket diary 1985-86.

FAMILY

A.56-A.60 Lilian Mary Mitchell (née Buxton), wife.

A.56 Testimonials from Edinburgh University, 1924.

A.57 Miscellaneous correspondence, 1976-82.

A.58 *British Medical Journal* obituary of L.M. Mitchell, 5 March 1983; notice of memorial service.

A.59 List of those receiving cards for the memorial service.

A.60 Letters of condolence.

A.61 Christopher G.B. ('Kit') Mitchell, son.

A.62 Janet Mitchell, daughter.

A.63 Other family material.

PERSONAL CORRESPONDENCE

A.64	1945, 1946	A.70	1985 (1)
A.65	1957-64	A.71	1985 (2)
A.66	1965-70, 1973	A.72	1985 (3)
A.67	1974-78	A.73	1986-87
A.68	1979-81	A.74	Nd
A.69	1982-84		

MISCELLANEOUS BIOGRAPHICAL MATERIAL

A.75, A.76	Passports		
A.75	1946	A.76	1956
A.77	Correspondence <i>re</i> Cambridge Liberal Association, 1964, and South East Cambridgeshire Liberal Association, 1984-85. Mitchell was re-elected President of the S.E. Cambridgeshire Association in 1984.		
A.78	Brief correspondence <i>re</i> Animal Cancer Treatment Fund, 1976.		
A.79	Correspondence and papers <i>re</i> the Medical and Scientific Campaign for Soviet Jewry, 1977, and the International Campaign - Orlov & Shcharansky, 1984.		
A.80	Miscellaneous memorabilia.		

NON-PRINT MATERIAL

See also A.14

- A.81-A.83 Photographs
- A.81 'Opening of Univ. Dept Radiotherapeutics & MRC Building by The Queen.
28 May 1962'.
- 'BCRU [British Committee on Radiological Units] special meeting at NPL on
27 September 1978'. With key. Mitchell is not present.
- Mitchell with H.D. Franke, Cambridge, September 1979.
- A.82 Photographs of Mitchell, nd.
- A.83 Radiotherapeutic Centre staff. With key. Nd.
- A.84 Notice reading 'The aim of this department is to improve the treatment of
cancer' (5 $\frac{3}{4}$ " x 18" wooden board).
- This notice was displayed in the Department of Radiotherapeutics from
1946.

SECTION B

CAMBRIDGE

B.1-B.1054

B.1-B.337

DEPARTMENT OF RADIOTHERAPEUTICS/
RADIOTHERAPEUTIC CENTRE

With an introductory note.

B.338-B.584

ADDENBROOKE'S HOSPITAL

With an introductory note

B.585-B.881

UNIVERSITY OF CAMBRIDGE

B.882-B.1054

LECTURES

DEPARTMENT OF RADIOTHERAPEUTICS/RADIOTHERAPEUTIC CENTRE

The Department of Radiotherapeutics (with the Radiotherapeutic Centre) was the focus of Mitchell's clinical work, teaching and research from his return to Cambridge at the end of the Second World War to his official retirement thirty years later.

In a note on the work of the Department written in 1973 (B.26) Mitchell provides an account of the historical background:

'The first official reference to the Department of Radiotherapeutics of the University of Cambridge was in the Report of the Inter-Departmental Committee on Medical Schools (The Goodenough Report), 1944, page 127, para.60. The relevant part of this is as follows:

"The Council of the Senate has suggested that research and training units for specialists might be formed in experimental medicine, radiotherapy, and psychiatry, basing these units on an association between the hospital and the strong departments already existing in the University in the fundamental sciences of biochemistry, pathology, biology, physics and experimental psychology. So far as the latter departments are concerned, no university in Great Britain could offer greater advantages. The clinical side of the work would demand a large measure of help from Addenbrooke's Hospital. We hope that the University and the governors of Addenbrooke's Hospital will collaborate in establishing, as soon as facilities permit, the three units mentioned above."

The Chair and Department of Radiotherapeutics was started in January 1946. At a meeting in (?) 1944 in Professor [H.R.] Dean's room to which I was invited, the founding of the Chair and department was discussed in some detail. At the suggestion of the late Professor D. Keilin, it was agreed that the scope of its work should include the study of the chemotherapy of cancer. This was in line with my own thinking. I was then told that the Department would be started when I returned to Cambridge after the war.

The Radiotherapeutic Centre of Addenbrooke's Hospital had been founded on 1st March 1943 with myself as Medical Officer on the hospital staff and the late D.E. Lea as Honorary Physicist. I had, of course, worked in Addenbrooke's Hospital as a member of Professor J.A. Ryle's Department since I returned to Cambridge from Manchester in October 1938.

The Chair of Radiotherapeutics was a personal Chair for one tenure only. When I became Regius Professor of Physic in 1957, it was agreed that I should remain Head of the University Department of Radiotherapeutics and Honorary Director of the Radiotherapeutic Centre, in addition to becoming Head of the R.P.P.'s Department of Medicine, and the Chair of Radiotherapeutics was suppressed by Grace.'

The documentation is principally correspondence and papers exchanged with university and hospital authorities, colleagues and others relating to matters of departmental administration, the funding of Mitchell's research and the future of the Department on Mitchell's retirement in 1976. For convenience administrative matters relating to Mitchell's post-retirement research are included in this subsection at B.327-B.337.

The material is presented as follows:

B.1-B.62	Establishment and general administration
B.63-B.82	Accommodation
B.83-B.103	Staff
B.104-B.205	Equipment and supplies
B.206-B.215	Radiation protection
B.216-B.314	Funding of research
B.315-B.337	Future of the Department of Radiotherapeutics

Establishment and general administration

B.1, B.2 Early history.

B.1 Manuscript note by Mitchell on staff relations in the X-ray Department, Addenbrooke's Hospital, c.1942.

Letter appointing Mitchell Medical Officer in charge of the Radiotherapeutic Centre to be established at Addenbrooke's, 25 February 1943, with terms of appointment.

'Report of a conference held at Addenbrooke's Hospital, Cambridge, on Friday, March 26th 1943, regarding the future treatment of cancer in the Eastern counties.'

'Second report of the committee appointed by the Faculty Board to consider the conditions necessary for the development of a school of clinical research and postgraduate teaching', nd.

B.2 Memorandum by Mitchell on the requirements of a university department for the study of radiotherapy.

Manuscript draft dated 22 August 1944, typescript draft, manuscript notes etc.

B.3-B.19 Departmental administration, 1945-75.

Mitchell's correspondence with the University central administration *re* finances, equipment, accommodation, etc.

- B.3 1945 August-November.
- B.4 1946 January, February. Includes correspondence *re* establishment of Professorship of Radiotherapeutics.
- B.5 1946 March-August.
- B.6 1946 October-December.
- B.7 1947 January-April. Includes note by Mitchell on the 'Development of the Department of Radiotherapeutics', dated 21 March.
- B.8 1947 May, June. Includes note by Mitchell on the 'Research Interests of the Department of Radiotherapeutics', 7 May.
- B.9 1947 July-December. Includes note by Mitchell for university pamphlet on facilities for study and research at Cambridge, 4 August.
- B.10 1948 January-April.
- B.11 1948 May-September. Includes agreement with National Radium Commission *re* loan of radium, 25 September.
- B.12 1949.
- B.13 University imprest accounts for Radiotherapeutics, 1947-49.
- B.14 1952, 1954.
- B.15-B.17 Contents of Mitchell's folder divided into three for ease of reference: correspondence and papers relating to preparation of quinquennial estimates, principally for 1957-62.

- B.18 1962, 1965-68. Correspondence 1962 *re* takeover on to university funds of activities hitherto financed by Medical Research Council.
- B.19 1971-73, 1975, nd. Includes note by Mitchell on the Department, 21 March 1973 and undated note on general organisation and research.
- B.20-B.26 Radiotherapeutic Centre administration, 1945-76.
- Mitchell's correspondence with University central administration and Addenbrooke's Hospital *re* accommodation, equipment, staff, costs, etc.
- B.20 1945 August-December.
- B.21 1946.
- B.22 1947-48.
- B.23 1949. Includes Mitchell's acceptance of Honorary Directorship of Radiotherapeutic Centre, August.
- B.24 1951-57. Includes information for Annual Report to Ministry of Health for 1952.
- B.25 1960-69.
- B.26 1970-76. Includes note by Mitchell on work of the Radiotherapeutic Centre, 30 September 1974.
- B.27-B.34 Radiotherapeutic Centre patient records, 1949-75.
- Correspondence, committee papers, administrative schemes, tables, etc *re* the keeping of patient records.
- B.27 Patient statistics, 1938-67.

- B.27A 'Statistics Consultations, Treatments etc'. Contents of Mitchell's folder so inscribed, various dates 1949-68.
- B.28-B.31 'Records'. Contents of Mitchell's folder so inscribed divided into four for ease of reference, various dates c.1950s-68.
- B.32 Correspondence and papers *re* revision of medical records system, 1960.
- B.33, B.34 'R.T.C. Medical Records'. Contents of Mitchell's folder so inscribed divided into two for ease of reference, 1971-75.
- B.35, B.36 Isotopes, 1965-68.
Duplicated papers *re* administration and costs of radioisotope work. 2 folders.
- B.37-B.45 30th Anniversary of Opening of Radiotherapeutic Centre at Addenbrooke's Hospital, 1973.
- B.37, B.38 Correspondence and papers *re* arrangements. 2 folders.
- B.39 Lists of those invited.
- B.40-B.44 Letters of acceptance, regret, thanks etc. 5 folders.
- B.45 Copy of lecture by Sir George Godber on 'Cancer and the Community'.
- B.46 Lists of papers by members of the Department of Radiotherapeutics, various dates, 1946-74.
- B.47-B.49 Annual Reports of the Department of Radiotherapeutics, 1947-67. Not a complete sequence. 3 folders.

B.50-B.62 Departmental stencils 1952-76, nd.

A chronological sequence of Department of Radiotherapeutics/
Radiotherapeutic Centre duplicated circulars, memoranda, information
sheets. 13 folders.

Accommodation

B.63 Correspondence and papers *re* accommodation for Radiotherapeutic Centre
and Department of Radiotherapeutics, 1945-49, 1951.

Principally *re* the temporary use of accommodation at "Kenmare",
Trumpington Street.

B.64-B.67 Correspondence and papers *re* Radiotherapeutic Centre extension at
Addenbrooke's Hospital, 1944, 1947-51.

B.64 1944, 1947. Includes manuscript and typescript drafts of memorandum by
Mitchell on the requirements of the Department and Radiotherapeutic
Centre, 7 October 1947.

B.65 1948.

B.66 1949.

B.67 1950-51.

B.68 'New building planning file July-December 1950'. Contents of Mitchell's
folder so inscribed.

B.69-B.71 'New building planning file 1951'. Contents of Mitchell's folder so inscribed
divided into three for ease of reference.

B.72-B.74 'New building planning file 1952'. Contents of Mitchell's folder so inscribed
divided into three for ease of reference.

B.75-B.81 Architects' plans, specifications for Radiotherapeutic Centre extension. 7 folders.

B.82 Official opening of the new extension, 15 May 1953.

Staff

B.83-B.85 Correspondence and papers *re* Radiotherapeutic Centre staff, 1943-46.
Includes information about patient numbers.

B.83 1943.

B.84 1944.

B.85 1945-46.

B.86-B.90 Correspondence and papers *re* Department of Radiotherapeutics staff, 1947-48, 1962-75.

Material 1972-75 relates to staff concerns in respect of the development of the School of Clinical Medicine and the future of the Department when Mitchell retired in 1976.

B.86 1947-48.

B.87 1962-69. Includes staff lists.

B.88 1970-72.

B.89 1973. Includes notes of meeting, 12 December, to discuss effects of proposed School of Clinical Medicine on assistant staff in the Department.

- B.90 1974-75. Includes staff lists, and draft estimates for the Clinical School for 1975-76.
- B.91-B.96 Correspondence and papers *re* Department of Radiotherapeutics 'Policy Meetings', 1964-71.
- These were meetings of senior staff to discuss accommodation, equipment, expenditure and personnel.
- B.91 1964. Chiefly *re* annual statement of needs for new developments for 1965-66.
- B.92 1965. Includes list of departmental equipment and agendas and minutes of meetings.
- B.93 1966. Includes agendas and minutes of meetings.
- B.94 1967.
- B.95 1968-69. Includes agendas of meetings.
- B.96 1971 and *nd.*
- B.97-B.103 Correspondence *re* requests to visit or work in Mitchell's laboratory, arranged in a chronological sequence, 1946-77.
- B.97 1946, 1948-49, 1951.
- B.98 1952, 1954-55. Includes material *re* visit of Russian doctors to Cambridge, 31 October 1955.
- B.99 1956-59.

- B.100 1960, 1962-63.
- B.101 1965-69. Includes material *re* visit of German doctors to Cambridge, 4 May 1967.
- B.102 1970-73.
- B.103 1974-77. Includes material *re* visit of Russian doctors to Cambridge, 26 May 1976.

Equipment and supplies

- | | |
|--------------|--|
| B.104-B.134A | Synchrotron |
| B.135-B.154 | Linear Accelerator |
| B.155-B.169 | Research reactor |
| B.170-B.180 | Roche Products Limited |
| B.181-B.186 | Grand Island Biological Company |
| B.187-B.194 | 'Customs & Excise forms & import licences' |
| B.195-B.205 | Shorter correspondence |

Synchrotron

- B.104-B.123 Correspondence and papers *re* installation, operation and maintenance of 30 MeV synchrotron at Addenbrooke's Hospital, 1948-59.

The synchrotron was built by the English Electric Company, with funding from the Medical Research Council for the equipment and its housing at Addenbrooke's.

- B.104 1948.
- B.105 1949 January, February.

- B.106 1949 March.
- B.107 1949 April.
- B.108 1949 May. Includes report on visit to English Electric to see progress made on the 30 MeV synchrotron.
- B.109 1949 June. Includes notes of meetings at Stafford (English Electric) and Cambridge.
- B.110 1949 July, August. Includes notes of discussion meeting at Stafford.
- B.111 1949 September. Includes report on reliability test of 30 MeV synchrotron electronic equipment and notes of meeting on synchrotron donuts.
- B.112 1949 October-December. Includes procedure for assembling and dismantling synchrotron magnet and preliminary operating instructions for synchrotron generator.
- B.113 1950. Includes notes of meetings at MRC headquarters and Stafford.
- B.114 1951 January-June.
- B.115 1951 August-October. Includes notes on visits to Stafford.
- B.116 1951 November, December. Includes copy of Brown Boveri *Mitteilungen* on the betatron.
- B.117 1952 January-June. Includes notes of meetings on synchrotron development.

- B.118 1952 July-December. Includes notes of meeting on synchrotron guns and donuts.
- B.119 1953. Includes notes of meeting on synchrotron guns and donuts.
- B.120 1954-55.
- B.121 1956-57. Includes outline 'history of synchrotron' 1949-56.
- B.122 1958.
- B.123 1959.
- B.124-B.128 Synchrotron housing. Architects' drawings. 5 folders.
- B.129-B.134 Miscellaneous correspondence and papers *re* synchrotron found separately from main sequence B.104-B.123, 1946-52 and nd.
- B.129 1946 (1). Mitchell's manuscript notes *re* betatron and paper MRC 46/186 (with L.H. Gray) on 'The therapeutic applications of high energy beta and gamma radiations, with especial reference to betatrons for voltages up to 50 MEV and the present state of development of linear accelerators'.
- B.130 1946 (2). Includes technical report on the medical cyclotron prepared by Mitchell, Gray and J.W. Boag for MRC Committee on the Medical and Biological Application of Nuclear Physics Clinical Sub Committee, MRC 46/172.
- B.131 1947-48. Includes proposed programme of research on nuclear physics in medicine at the Royal Cancer Hospital, London, note on visit to Telecommunications Research Establishment, Malvern by D.J. Allen-Williams and R.K. Appleyard in respect of MRC synchrotron physical investigations, note on targets wanted for the MRC beta-synchrotron to be used by the Department of Radiotherapeutics, Cambridge, and 'Some considerations affecting the design of a 30 MeV betasynchrotron for the Department of Radiotherapeutics, Cambridge University'.

B.132 1949-51. Includes note on 'Electron extraction from the synchrotron. Present achievements at T.R.E', Malvern, 11 May 1950, 'Draft of a paper on the synchrotron' by Mitchell, R. Braams, C.L. Smith and D.J. Allen-Williams, 23 June 1951, and note of a visit by R. Braams to the Göttingen betatron on 19 and 20 July 1951.

B.133 1952. Information *re* 2 MeV electrostatic generator.

B.134 Nd.

B.134A Photographs.

Linear Accelerator

B.135-B.154 Correspondence and papers 1949, 1956-75, 1985.

In 1959 the MRC financed the transfer to Cambridge of an Atomic Energy Research Establishment, Harwell, 15 MeV linear accelerator which replaced the synchrotron. It was used in clinical and laboratory research and a limited number of routine treatments. In 1974 a 20 MeV linear accelerator was installed in Addenbrooke's Hospital (new site) with National Health Service funding.

B.135 1949. Minutes of meeting of Central Health Services Council Standing Cancer and Radiotherapy Advisory Committee, 28 October; note of a meeting held at the Ministry of Health, 16 December.

B.136 1956 July. Includes two papers on linear accelerators presented at 8th International Congress of Radiology, Mexico City and information about the Brown Boveri betatron.

B.137 1956 August. Includes report on maintenance of 4 MeV Linear Accelerator at Medical Research Council Betatron Research Unit.

B.138, B.139 1956 November. Information *re* Metropolitan-Vickers 4 MeV Linear Accelerator. 2 folders.

- B.140 1956 November, December. Includes memorandum of meeting at AERE Harwell, 2 December.
- B.141 1957 January-March. Includes memorandum on electron microscopes, 19 February and report on visit to Mullards Research Laboratories, 26 February.
- B.142 1957 April-November.
- B.143 1958 January-April.
- B.144 1958 June-December. Includes paper on 'Techniques and early results of treatment of carcinoma of the larynx and pharynx by supervoltage radiation' for British Institute of Radiology Annual Conference, December and paper on 'The treatment of carcinoma bronchus by supervoltage therapy' for 'Cancer Congress 1958'.
- B.145 1959 January-October. Includes information about the Vickers 4 MeV X-Band Linear Accelerator.
- B.146 1960-61, 1963. Includes technical report on transfer of linear accelerator from Harwell to Cambridge.
- B.147 1964, 1966-67. Includes 'Report on the progress of work with the 14 MeV linear accelerator from 1st June 1964 - 30th May 1967'.
- B.148 1970 March-August. Includes 'Research programme for which the 15 MeV Linear Accelerator at Cambridge will be used'.
- B.149 1970 September-November. Includes information about MEL SL 75-20 Megavoltage Linear Accelerator.
- B.150 1971 July-December.
- B.151 1972 January-September.

- B.152 1973 January-June.
- B.153 1974-75, 1985. Includes 'Physical Aspects of the Clinical Use of the Philips' 20 MeV Linear Accelerator at Cambridge' by R.L. Thomas, 1975 or later.

- B.154 Photographs.

Research reactor

- B.155-B.169 Correspondence and papers *re* Mitchell's interest in obtaining a reactor for research in radiotherapeutics 1955-63, 1973.
- B.155 1955, 1957.
- B.156 1958. Includes minutes of meeting of the National Institute [for Research in Nuclear Science] Special Committee for Research Reactors, 21 January and programme of Symposium on Clinical Uses of Nuclear Reactors, MIT, 19 March.
- B.157 1959.
- B.158 1960 January-February (1). Includes Mitchell's 'Report on the need for a nuclear reactor for research and teaching in Cambridge'.
- B.159 1960 February (2)-November. Includes note prepared by Vickers-Armstrongs of meeting at Addenbrooke's *re* Triga nuclear reactor, 9 March.
- B.160 1961 January-April.
- B.161 1961 May-December. Includes American Machine & Foundry Company *Newsletter re* nuclear research reactor at University of Washington in Seattle.

B.162 1962-63, 1973 and nd. Includes 'Research, development and training program using the Triga reactor' and Mitchell's manuscript notes.

B.163 Pye Limited technical drawings:

General arrangement of 100 KW Educator Reactor, Manchester University.
Cast concrete and process pit.
Pictorial views of reactor.
Details of location of experimental tank
Reactor core.
Functional diagram of control system.
Schematic flow diagram.

B.164-B.169 Miscellaneous background information. 6 folders.

Roche Products Limited

B.170-B.180 Correspondence and papers, 1946-75.

B.170 1946	B.176 1954
B.171 1947-48	B.177 1955
B.172 1949	B.178 1956-59
B.173 1950-51	B.179 1960-69
B.174 1952	B.180 1970
B.175 1953	

Grand Island Biological Company

B.181-B.186 Correspondence and papers, 1965-71.

B.181 1965	B.184 1968-69
B.182 1966	B.185 1969-71
B.183 1967	B.186 Includes price and reference manual

'Customs & Excise forms & import licences'

B.187-B.194 Contents of Mitchell's folder so inscribed, 1947-60, 1966-70.

B.187	1947-49	B.191	1952
B.188	1948-49	B.192	1953-55
B.189	1950-51	B.193	1957-60
B.190	1951	B.194	1966-70

Shorter correspondence

B.195-B.205 Shorter correspondence *re* equipment and supplies, 1945-78.

B.195 'Therapeutic Gamma ray Sources and Ra. Beryllium Sources'. Contents of Mitchell's folder so inscribed. 1945-50.

B.196 1946-47 (1).

B.197 1946-47 (2).

B.198 'H.V. Generator'. Contents of Mitchell's folder so inscribed. 1946, 1948.

B.199 1951-58.

B.200 Supply of mice with tumours for experiment on chemo-therapeutic agents and x-radiation, 1952.

B.201 Electron microscope, 1957.

B.202 1962-69.

B.203 Oxygen chamber, 1962-65.

B.204 1972-74, 1977-78.

B.205 Nd.

Radiation protection

B.206-B.210 'Radiation Protection Officer - Correspondence - internal' (1).

Contents of Mitchell's folder so inscribed, 1957, 1959-69.

B.206 1957, 1959-61 B.209 1968

B.207 1963-66 B.210 1969

B.208 1967

B.211-B.213 'Radiation Protection Officer - Correspondence - internal' (2).

Contents of Mitchell's folder so inscribed, 1970-77.

B.211 1970 B.213 1972-77

B.212 1971

B.214, B.215 'Radiation Protection Officer - Correspondence - external'.

Contents of Mitchell's folder so inscribed, 1963-75.

B.214 1963-66 B.215 1967-75

Funding of research

B.216-B.288 British Empire Cancer Campaign

B.289-B.293 Department of Radiotherapeutics Research Fund

B.294-B.304 Professor Mitchell's Cancer Research Fund

B.305-B.314 Shorter correspondence

British Empire Cancer Campaign(later *Cancer Research Campaign*)

B.216-B.288 Correspondence and papers, 1943-81. Principally *re* the work of the Cambridge University Committee of the British Empire Cancer Campaign.

The Committee assessed locally originating requests for funding on behalf of the London headquarters of the Campaign. The documentation reflects the importance of the Campaign as a source of funding for Mitchell's research and provides some record of a wider range of cancer research in Cambridge. From 1961 when Mitchell became chairman of the Committee he kept the papers for its annual meetings as a separate sequence.

B.216-B.255 General correspondence and papers, 1943-67, 1972-81.

B.216	1943-46	B.236	1960 November-December
B.217	1947	B.237	1961 January-May
B.218	1948	B.238	1961 June-December
B.219	1949-50	B.239	1962
B.220	1951	B.240	1963 January-June
B.221	1952	B.241	1963 August-December
B.222	1953	B.242	1964 January-May
B.223	1954	B.243	1964 July-December
B.224	1955 January-June	B.244	1965 January-May
B.225	1955 July-December	B.245	1965 June-November
B.226	1956	B.246	1966
B.227	1957 January-May	B.247	1967
B.228	1957 July-December	B.248	1972
B.229	1958 January-June	B.249	1973
B.230	1958 July-December	B.250	1974 (1)
B.231	1959 January-June	B.251	1974 (2)
B.232	1959 July-December	B.252	1975
B.233	1960 January-May	B.253	1976
B.234	1960 June-September	B.254	1977-81
B.235	1960 October	B.255	Nd.

- B.256-B.285 Committee papers 1961-65, 1970-77.
- Mitchell was chairman of the Cambridge University Cancer Research Committee of the British Empire Cancer Campaign for the period covered by the papers.
- B.256 Special meeting, 27 February 1961.
- B.257 Annual meeting, 18 July 1961.
- B.258 Annual meeting, 12 July 1962.
- B.259 Annual meeting, 13 July 1963.
- B.260 Annual meeting, 14 July 1964.
- B.261 Annual meeting, 13 July 1965.
- B.262 Annual meeting, 14 July 1970.
- B.263 Annual meeting, 13 July 1971. 3 papers only re Mitchell's Department.
- B.264-B.268 Annual meeting, 27 June 1972. 5 folders.
- B.269-B.273 Annual meeting, 26 June 1973. 5 folders.
- B.274-B.277 Annual meeting, 25 June 1974. 4 folders.
- B.278, B.279 Annual meeting, 17 June 1975. 2 folders.

- B.280 Annual meeting, 22 June 1976.
- B.281-B.285 Annual meeting, 21 June 1977. 5 folders.
- B.286-B.288 Annual reports of the Department of Radiotherapeutics to the British Empire Cancer Campaign.
- B.286 Circulation lists.
- B.287 Printed reports: 1950-51, 1951-52, 1953, 1955.
- B.288 Printed reports: 1958, 1959, 1963, 1965, 1966.

Department of Radiotherapeutics Research Fund

- B.289-B.292 Correspondence from University central administration re payment of research student supervision fees into Departmental Research Fund, 1954-71.
- | | | | |
|-------|---------|-------|---------|
| B.289 | 1954-59 | B.291 | 1965-69 |
| B.290 | 1960-64 | B.292 | 1970-71 |
- B.293 Other grants 1953-54, 1957.

Professor Mitchell's Cancer Research Fund

- B.294-B.304 Correspondence and papers 1965-66, 1974-87.
- | | | | |
|-------|---------|-------|---------|
| B.294 | 1965-66 | B.300 | 1983 |
| B.295 | 1974-75 | B.301 | 1984-85 |
| B.296 | 1976-77 | B.302 | 1987 |
| B.297 | 1978-79 | B.303 | Nd (1) |
| B.298 | 1980-81 | B.304 | Nd (2) |
| B.299 | 1982 | | |

Shorter correspondence

- B.305 Bequests 1964-65, 1981.
- B.306 Ernest and Minnie Dawson Cancer Trust 1968, 1978-79.
- B.307 International Atomic Energy Agency 1960.
- B.308 Leverhulme Trust 1975-77, 1982.
- B.309 Eli Lilly and Company 1946-47, 1949.
- B.310 Medical Research Council 1956, 1962-63, 1971.
- B.311 Nuffield Foundation 1960.
- B.312 Rockefeller Foundation 1948, 1957.
- B.313 Wellcome Trust 1965.
- B.314 World Health Organisation 1977-78.

Future of the Department of Radiotherapeutics

In 1975 the Medical Research Council established a new Unit of Clinical Oncology and Radiotherapeutics at Cambridge with N.M. Bleehen as Director. At the same time the Cancer Research Campaign endowed a University Chair in Clinical Oncology for Bleehen. These developments provided for the continuation after Mitchell's retirement in September 1976 of Cambridge's longstanding interest in radiotherapeutics and for collaboration between the new Unit and the MRC Laboratory of Molecular Biology under the direction of S. Brenner.

Mitchell continued his personal research, until his death in 1987, in the Research Laboratories of the Cambridge University School of Clinical Medicine funded by his own Cancer Research Fund. See B.294-B.304.

The material is presented as follows:

B.315-B.326	Clinical Oncology
B.327-B.337	Research Laboratories of the School of Clinical Medicine

Clinical Oncology

B.315-B.326 Correspondence and papers *re* establishment of MRC Unit of Clinical Oncology and Radiotherapeutics 1972-76.

B.315 1972	B.321 1974 July (1)
B.316 1973 January-March	B.322 1974 July (2)
B.317 1973 April-June	B.323 1974 August, September
B.318 1973 July-December	B.324 1974 October-December
B.319 1974 January	B.325 1975
B.320 1974 February-May	B.326 1976

Research Laboratories of the School of Clinical Medicine

B.327-B.334 Correspondence and papers *re* establishment, administration, research programmes, funding, etc. of the Research Laboratories, 1976-84.

B.327 1976 January, February	B.331 1976 July, August
B.328 1976 March	B.332 1976 September-November
B.329 1976 April, May	B.333 1977
B.330 1976 June	B.334 1978-84

B.335, B.336 Correspondence and papers *re* Home Office licences to perform experiments on living animals, 1977-84. 2 folders.

B.337

Annual report 1986-87 of the Research Laboratories, April 1987.

Mitchell died in February 1987 and the report was written by his colleague, I. Brown.

ADDENBROOKE'S HOSPITAL

Addenbrooke's Hospital is the district general hospital for Cambridge and the surrounding area, and is also the teaching hospital associated through the Medical School with the University of Cambridge. For many years the hospital occupied a central Cambridge site on Trumpington Street but the need for more space became so pressing after the Second World War that an entirely new site on Hills Road on the southern boundary of the city was purchased so that all the hospital facilities for Cambridge could be provided on the one site.

As head of the Department of Radiotherapeutics and Radiotherapeutic Centre and as Regius Professor of Physic Mitchell had a wide ranging involvement in hospital affairs. This is reflected, for example, in the extensive sequence of general correspondence and papers and the records of the committees on which he served or whose papers he received.

The new Hills Road site was of particular importance to Mitchell because of his plans for the development of the Postgraduate Medical School. A part of the new site was reserved for the Medical School and the first buildings there comprised the Medical Research Council's Laboratory of Molecular Biology and the Department of Radiotherapeutics which were officially opened in May 1962. Mitchell's files on the new site provide extensive documentation of these developments and the later transfer of the Radiotherapeutic Centre from Trumpington Street to the Hills Road site.

The material is presented as follows:

B.338-B.367	General correspondence and papers
B.368-B.437	Committees
B.438-B.464	Appointments
B.465-B.563	'Addenbrooke's New Site'
B.564-B.584	Miscellaneous hospital administration

General correspondence and papers

B.338-B.365 Correspondence and papers *re* hospital administration, Mitchell's own department, etc., 1948-84.

B.338	1948	B.352	1965-67
B.339	1949-50	B.353	1969 (1)
B.340	1951-52	B.354	1969 (2)
B.341	1953	B.355	1970
B.342	1954	B.356	1971
B.343	1955-56	B.357	1972 (1)
B.344	1957-58	B.358	1972 (2)
B.345	1959	B.359	1973
B.346	1960	B.360	1974 (1)
B.347	1961	B.361	1974 (2)
B.348	1962 (1)	B.362	1975
B.349	1962 (2)	B.363	1976
B.350	1963 (1)	B.364	1978
B.351	1963 (2)	B.365	1979-84

B.366, B.367 Correspondence with East Anglian Regional Health Authority, 1974-84.

B.366	1974-76	B.367	1977-84
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Committees

B.368-B.377 Board of Governors 1948-49, 1954-73

B.368	1948-49	B.373	1961
B.369	1954-55	B.374	1962
B.370	1956-59	B.375	1963
B.371	1960 (1)	B.376	1965, 1968-70
B.372	1960 (2)	B.377	1972-73

B.378-B.387

Medical Committee 1948-72

B.378	1948	B.383	1957-58
B.379	1949	B.384	1960-62
B.380	1950-51	B.385	1963-65
B.381	1952-54	B.386	1969-70
B.382	1955-56	B.387	1971-72

B.388-B.391

Consultant Staff Committee 1948-75

B.388	1948-49	B.390	1955
B.389	1950-54	B.391	1957, 1962-63, 1969, 1975

B.392-B.394

Medical Records Committees 1948-61

B.392	1948	B.394	1953, 1957, 1961
B.393	1949-50		

B.395

Awards Committee 1949, 1962-63

B.396

Building Committee 1949, 1956, 1959-62.

B.397

General Purposes Committee 1951, 1960-63.

B.398-B.411

School of Radiography Committee 1951-57, 1967-73

B.398	1951	B.405	1967
B.399	1952 (1)	B.406	1968
B.400	1952 (2)	B.407	1969
B.401	1953 (1)	B.408	1970
B.402	1953 (2)	B.409	1971 (1)
B.403	1954-55	B.410	1971 (2)
B.404	1956-57	B.411	1972-73

B.412	Planning Liaison Committee 1952-63	
B.413	House Committee 1961-62	
B.414	Nurses Education Committee 1961-63	
B.415-B.417	Medical Staffing Review Committee 1962-63	
	B.415 1962 (1)	B.417 1963
	B.416 1962 (2)	
B.418-B.421	Radioisotope Sub-Committee 1964-69	
	B.418 1964-66	B.420 1968
	B.419 1967	B.421 1967-69
B.422-B.424	Radiological Safety Committee 1965-76	
	B.422 1965-72	B.424 1974-76
	B.423 1973	
B.425	Future Policy Sub-Committee 1968	
B.426-B.433	Division of Radiology, Radiotherapy, Nuclear Medicine and Medical Physics 1972-77, 1980-81.	
	B.426 1972	B.430 1975
	B.427 1973 (1)	B.431 1976
	B.428 1973 (2)	B.432 1977
	B.429 1974	B.433 1980-81
B.434-B.436	Regional Radiotherapy Advisory Committee 1974-76	
	B.434 1974	B.436 1976
	B.435 1975	

B.437 Hospitals' Medical Committee 1974-78.

Appointments

B.438 University Haematologist 1957-59.

B.439-B.444 Consultant Psychiatrist 1957-60. 6 folders.

B.445-B.453 Consultant General Physician 1962. 9 folders.

B.454-B.464 Miscellaneous 1955-76.

B.454	1955, 1957-58	B.460	1969
B.455	1959-60	B.461	1970
B.456	1961	B.462	1971
B.457	1962 (1)	B.463	1972-73
B.458	1962 (2)	B.464	1975-76
B.459	1963		

'Addenbrooke's New Site'

Contents of Mitchell's boxes so inscribed: correspondence and papers *re* accommodation for Department of Radiotherapeutics, MRC Laboratory of Molecular Biology and Postgraduate Medical School on the site of the new Addenbrooke's Hospital, Hills Road Cambridge. 1956-74.

Correspondents include hospital and university authorities, funding bodies, architects and suppliers and Mitchell's medical and scientific colleagues.

B.465-B.485

Correspondence and papers, 1956-59.

B.465	1956 June-September	B.476	1959 July
B.466	1956 October, November	B.477	1959 August (1)
B.467	1957 January-June	B.478	1959 August (2)
B.468	1957 July-December	B.479	1959 September (1)
B.469	1958 January-March	B.480	1959 September (2)
B.470	1958 April-October	B.481	1959 October (1)
B.471	1958 November	B.482	1959 October (2)
B.472	1958 December	B.483	1959 November
B.473	1959 January	B.484	1959 December (1)
B.474	1959 February-April	B.485	1959 December (2)
B.475	1959 May, June		

B.486-B.495

'New buildings for Departments of Radiotherapeutics and Medicine - Appeals'. Contents of Mitchell's folder so inscribed: correspondence and papers *re* fundraising for his departments and the Postgraduate Medical School in Cambridge.

Mitchell's letter of 8 July 1957 to the Vice-Chancellor of Cambridge University (B.486) sets out his 'proposals and plans for carrying out the duties of the Regius Professorship of Physic'.

B.486	1957 July	B.491	1958 June-September
B.487	1957 August	B.492	1958 November, December
B.488	1957 September	B.493	1959 January
B.489	1957 October-December	B.494	1959 February-July
B.490	1958 January-March	B.495	1959 September

- B.496-B.519 Correspondence and papers, 1960-61.
- | | | | |
|-------|------------------|-------|-------------------------|
| B.496 | 1960 January (1) | B.508 | 1960 November, December |
| B.497 | 1960 January (2) | B.509 | 1961 January |
| B.498 | 1960 February | B.510 | 1961 February |
| B.499 | 1960 March | B.511 | 1961 March |
| B.500 | 1960 April | B.512 | 1961 April |
| B.501 | 1960 May | B.513 | 1961 May |
| B.502 | 1960 June, July | B.514 | 1961 June |
| B.503 | 1960 August (1) | B.515 | 1961 July |
| B.504 | 1960 August (2) | B.516 | 1961 August (1) |
| B.505 | 1960 September | B.517 | 1961 August (2) |
| B.506 | 1960 October (1) | B.518 | 1961 September |
| B.507 | 1960 October (2) | B.519 | 1961 October-December |
- B.520 'Addenbrooke's Rebuilding News', March, June and September 1961.
- B.521 'Report on the Board of Governors' Proposals for Hospital Building 1961/71', Addenbrooke's Hospital, Cambridge, 29 May 1961.
- B.522-B.543 Correspondence and papers, 1962-65.
- | | | | |
|-------|-------------------------|-------|-------------------------|
| B.522 | 1962 January, February | B.533 | 1963 May |
| B.523 | 1962 March (1) | B.534 | 1963 June |
| B.524 | 1962 March (2) | B.535 | 1963 July-September |
| B.525 | 1962 April | B.536 | 1963 October |
| B.526 | 1962 May (1) | B.537 | 1963 November, December |
| B.527 | 1962 May (2) | B.538 | 1964 January, February |
| B.528 | 1962 June (1) | B.539 | 1964 March |
| B.529 | 1962 June (2) | B.540 | 1964 April |
| B.530 | 1962 July, August | B.541 | 1964 May-September |
| B.531 | 1962 September-December | B.542 | 1964 October-December |
| B.532 | 1963 January-April | B.543 | 1965 |

B.544 'UGC - New Building'. Contents of Mitchell's folder so inscribed: correspondence, manuscript notes, drawings etc., c.1961-65.

B.545-B.551 Correspondence and papers, 1966-74.

B.545	1966-68	B.549	1972 April-July
B.546	1969-70	B.550	1972 August-December
B.547	1971	B.551	1973-74
B.548	1972 January-March		

B.552-B.557 'Commissioning Team - Dr A. Hargreaves'. Contents of Mitchell's folder so inscribed: correspondence and papers, 1967-71.

Hargreaves was the chairman of the Commissioning Team which was responsible for equipping and bringing into use the new hospital buildings on the Hills Road site.

B.552	1967	B.555	1969 July-October
B.553	1968	B.556	1970
B.554	1969 February-June	B.557	1971

B.558-B.561 Architects' drawings. 4 folders.

B.562 Miscellaneous drawings, notes, lists of equipment, and photograph of MRC Laboratory of Molecular Biology.

B.563 Soft cover exercise book used for draft report by Mitchell on the development and extension of Addenbrooke's Hospital. Nd.

Miscellaneous hospital administration

B.564-B.574 Pharmaceutical Department.

B.564-B.570 General correspondence and papers, 1946-76

B.564	1946-48	B.568	1963-64
B.565	1950-54	B.569	1965-69
B.566	1955-59	B.570	1970-76
B.567	1960-62		

- B.571-B.574 Pharmaceutical Bulletin 1949-55.
- B.571 No.1 September 1949; No.2 January 1950; No.3 May 1950.
- B.572 No.5 February 1951; No.6 June 1951; No.7 September 1951.
- B.573 No.8 January 1952; No.9 May 1952; No.10 November 1952.
- B.574 No.11 April 1953; No.14 October 1954; No.15 March 1955.
- B.575, B.576 Maternity Hospital.
Clinical report of the Maternity Hospital Cambridge for 1953. 2 folders.
- B.577 Experimental Surgical Unit.
Correspondence and papers 1960.
- B.578 Cancer Care Unit
Correspondence and papers 1970-71
- B.579-B.582 National Health Service Reorganisation.
Correspondence and papers 1972-74. 4 folders.
- B.583, B.584 Mammography.
Correspondence and papers 1974-75. 2 folders.

UNIVERSITY OF CAMBRIDGE

B.585-B.708	Faculty Board of Medicine/Faculty Board of Clinical Medicine
B.709-B.801	Medical School
B.802-B.862	Boards, Committees, Departments, Colleges, Societies
B.863-B.881	Examining

Faculty Board of Medicine/Faculty Board of Clinical Medicine

B.585-B.705	General correspondence and papers, 1953-76.			
B.585	1953	B.637-B.642	1964	6 folders
B.586, B.587	1954 2 folders	B.643-B.653	1965	11 folders
B.588, B.589	1955 2 folders	B.654-B.661	1966	8 folders
B.590, B.591	1956 2 folders	B.662-B.670	1967	9 folders
B.592-B.595	1957 4 folders	B.671, B.672	1968	2 folders
B.596-B.599	1958 4 folders	B.673-B.682	1969	10 folders
B.600-B.603	1959 4 folders	B.683	1971	
B.604-B.609	1960 6 folders	B.684-B.696	1972	13 folders
B.610-B.614	1961 5 folders	B.697	1974	
B.615-B.628	1962 14 folders	B.698, B.699	1975	2 folders
B.629-B.636	1963 8 folders	B.700-B.705	1976	6 folders

B.706-B.708	Working Party on Central Medical Library, 1972-73. 3 folders.
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Medical School

- | | |
|-------------|--|
| B.709-B.716 | General administration and committees |
| B.717-B.747 | School of Clinical Research and Postgraduate Medical Teaching
With an introductory note |
| B.748-B.801 | School of Pre-graduate Clinical Medicine (Clinical School)
With an introductory note |

General administration and committees

- | | |
|-------------|---|
| B.709 | Education Committee 1953-55. |
| B.710-B.713 | Medical Library Sub-Committee 1954-55. 4 folders. |
| B.714 | Medical Libraries Fund 1955. |
| B.715 | Visit of Medical Sub-Committee of the University Grants Committee 1965. |
| B.716 | Miscellaneous correspondence 1961-71. |

School of Clinical Research and Postgraduate Medical Teaching

The School of Clinical Research and Postgraduate Medical Teaching (the Postgraduate Medical School) was established under the Faculty Board of Medicine in 1946 on the recommendation of the Report of the Inter-Departmental (Goodenough) Committee on Medical Schools. The School had four departments: Radiotherapy, Haematology, Experimental Medicine and Human Ecology, plus the Hospital Laboratory Service.

On his appointment to the Regius Chair of Physic in 1957 Mitchell stated that his priority would be the further development of the Postgraduate Medical School (see B.486 and B.717) in conjunction with the new site for Addenbrooke's Hospital (see B.465-B.563), which he recognised should take precedence over the creation of a pre-graduate clinical school. This had

been proposed in 1952 by the United Cambridge Hospitals (see below B.748-B.760). Mitchell supported the May 1959 Report of Council of Senate which concluded the proper course for the University was to concentrate on the development of the Postgraduate Medical School.

In 1960 Mitchell put forward plans for the expansion of the School to six departments to replace Experimental Medicine, Human Ecology and Radiotherapeutics (B.720). His plans included offering salaries higher than the university scale to attract and retain high-quality clinical staff in the School. The University rejected these controversial proposals in ballots of the Regent House in February and December 1961 (B.723 and B.735), the second of which, Mitchell believed, cast doubt on the commitment of the University to the Postgraduate Medical School.

Reviewing his position in the light of the University decision Mitchell determined to continue his efforts to expand the Postgraduate Medical School. The University Grants Committee had already indicated that it was unwilling to fund expansion unless the question of salary differentials was resolved. Mitchell therefore proposed that the School opt for 'extra-mural' status as an 'Institute of Post-graduate Medical Studies' (B.736). This was rejected by a General Board Report of July 1962 which instead recommended a small expansion in the School and that Postgraduate Medical School staff be offered part-time paid consultancies with the United Cambridge Hospitals to supplement salaries. The Report was approved by a ballot of the Regent House in January 1964 (B.743). This support from the University for the Postgraduate Medical School allowed the continued development of that part of the new Addenbrooke's site reserved for it.

B.717-B.747

Correspondence and papers, 1957-65.

Correspondents include university and hospital authorities, Ministry of Health and Mitchell's scientific and medical colleagues.

B.717

1957. Mitchell's appointment as Regius Professor of Physic. Includes Mitchell's memorandum on the Postgraduate Medical School, 19 August.

B.718

1958.

B.719

1959.

B.720

1960 January. Includes Memorandum on the development of the Postgraduate Medical School submitted by Mitchell to the Faculty Board of Medicine and the General Board.

- B.721 1960 March-December. Principally *re* Medical School salaries. Includes revised memorandum and Mitchell's 'Contribution to the Discussion' at the meeting of Senate, 15 November.
- B.722 1961 January-February. Includes Mitchell's Memorandum on the future of the Medical School dated 10 February and submitted to the General Board.
- B.723 *Re* Regent House vote on clinical salaries, 2 and 3 February 1961.
- B.724 1961 March-April. Includes Mitchell's introductory statement for meeting of Medical Sub-Committee of the University Grants Committee in Cambridge, 1 March.
- B.725 1961 May.
- B.726 1961 June.
- B.727 1961 July.
- B.728, B.729 Papers for Special Meeting of Council of the Medical School, 17 July 1961. Include Mitchell's 'Further Statement on the Development of the School of Clinical Research and Postgraduate Teaching'. 2 folders.
- B.730 Papers for Meeting of the Faculty Board of Medicine, 24 July 1961.
The only item of business was the future of the Medical School.
- B.731 1961 July, August.
- B.732 1961 September.
- B.733 1961 October. Includes papers for Special Meeting of the Faculty Board of Medicine and the Council of the Medical School, 10 October.

- B.734 1961 November, December.
- B.735 *Re* Regent House vote on clinical salaries, 6 and 7 December 1961.
- B.736 1962 January. Includes Mitchell's memorandum 'A new proposal for the development of the postgraduate medical school in Cambridge', 11 January.
- B.737 1962 February.
- B.738 1962 March-July
- B.739 1962 August.
- B.740 1962 September, October. Includes Mitchell's 'Contribution to [Regent House] Discussion on 16th October 1962'.
- B.741 1963 February-July. Includes Report of the General Board on the Postgraduate Medical School.
- B.742 1963 October-December. Includes Mitchell's 'Discussion in the Senate House on Tuesday, 26th November, 1963' *re* the report of the General Board.
- B.743 *Re* Regent House vote on the future of the Postgraduate Medical School 16 and 17 January 1964. Includes letters of congratulation received by Mitchell on the successful outcome for the Medical School.
- B.744 1964 March-October.
- B.745 1965 March-December.

B.746 Draft statement to be made to the General Board of the University by United Cambridge Hospitals on the future of the Postgraduate Medical School, nd [?1961].

'Extracts from documents relating to the development of the present position as between the University of Cambridge and the United Cambridge Hospitals, in relation to the School of Clinical Research and Post-graduate Teaching (The Medical School)', nd.

B.747 Miscellaneous notes and drafts by Mitchell, nd.

School of Pre-graduate Clinical Medicine (Clinical School)

The 1944 Goodenough Report on Medical Education concluded that before a pre-graduate school of clinical teaching could be established at Cambridge, offering the degrees of MB and BChir, the hospital services in the area would have to be improved and the Postgraduate Medical School built up. By 1952 the United Cambridge Hospitals felt these criteria had been met and recommended the University proceed with a clinical school. Mitchell was in favour of this proposal but after lengthy consultation the University decided to concentrate on the development of the Postgraduate Medical School, a view which was supported by Mitchell as Regius Professor in October 1958 (B.749).

In 1964 the University gave a clear commitment to the development of the Medical School in conjunction with the new site of Addenbrooke's Hospital, which in turn offered an improvement in the hospital facilities available in Cambridge. It appeared the criteria of the Goodenough Report would be fulfilled and Mitchell believed that the establishment of a pre-graduate clinical school was now practicable, a belief expressed in a letter to Sir George Godber, Chief Medical Officer, Ministry of Health in August 1964 (B.750).

Mitchell presented the case to the Faculty Board of Medicine (B.751), who recommended to the General Board in October 1965 that a clinical school be established from 1967, pointing out the changes in medical training which made this pressing. The General Board decided to defer consideration until the Royal Commission on Medical Education, set up in 1965, had reported (B.752). In April 1968 the Report of the Royal Commission supported the establishment of a clinical school in Cambridge.

In March 1969 the General Board recommended the University approve in principle the institution of a course of clinical teaching leading to the degrees of MB, BChir and the establishment of a Clinical School was approved by Regent House in June and a Clinical School Planning Committee was established.

In October 1971 the University Grants Committee approved in principle the establishment of a clinical school. It was decided that the existing Postgraduate Medical School would be merged with the new body to create a single School. The UGC announced that funding for the new School would become available from October 1975. The Faculty Board of Clinical Medicine held its first meeting in January 1975 and the Clinical School was opened on 27 September 1976 (B.760). Mitchell resigned his Regius Chair in 1975 a year before official retirement to enable his successor, W.J.H. Butterfield, to take charge of the Clinical School from the outset.

- B.748-B.760 Correspondence and papers *re* establishment of Clinical School 1952, 1957-58, 1964-76.
- B.748 1952 July, August. *Re* meeting of Addenbrooke's Hospital Consultant Staff Committee, 7 August, to discuss the possibility of making the hospital a centre of clinical teaching.
- In a letter to R.A. McCance, 31 July, Mitchell indicates his very strong support for the proposal.
- B.749 1957-59. Correspondence between Mitchell and Secretary General of the Faculties *re* formulation of a reply from the Vice-Chancellor to Board of Governors of Addenbrooke's Hospital on the possibility of the university establishing a clinical school.
- In his letter of 25 November 1957 Mitchell advised that 'the idea of a pre-graduate medical school should be dropped, at least for very many years'.
- B.750 1964. Includes letter to Sir George Godber, 26 August, *re* the possibility of establishing a clinical school at Cambridge.
- B.751 1965. Includes Report of the Faculty Board of Medicine Sub-Committee on the Creation of a Clinical School in Cambridge, submitted 19 October.
- B.752 1966. Includes General Board papers *re* proposed Clinical School and university submission to Royal Commission on Medical Education.
- B.753 1967. *Re* meeting between representatives of the University and members of the Royal Commission on Medical Education, 15 May. Includes memoranda from R.Y. Calne and I.H. Mills.

- B.754, B.755 1968. Papers of Joint Committee of the Faculty Boards of Biology 'A', Biology 'B' and Medicine on the proposed Clinical School. 2 folders.
- B.756 1969. Minutes of meeting of joint university/hospital committee on planning the clinical course, 17 October.
- Folder also includes 'Draft Fly Sheet' urging members of the Regent House to support the clinical school, nd. [?1969].
- B.757 1970. Includes Report of the General Board on the establishment of a School of Pre-graduate Clinical Medicine.
- B.758 1971. Papers re meeting of Faculty Board of Medicine Sub-Committee on the Constitution of the Proposed Board of Clinical Medical Studies, 20 December.
- B.759 1973. Re Mitchell's activities and duties as Regius Professor of Physic especially Medical School developments.
- B.760 1975-76. Includes Mitchell's remarks on the opening of the Clinical School, 27 September 1976.
- B.761-B.772 'Students (Prospective)'
- Contents of Mitchell's folder so inscribed divided into twelve for ease of reference. 1975-76.
- B.773-B.790 Committees.
- B.773-B.781 General Board of the Faculties Clinical School Planning Committee Finance and Estimates Sub-Committee 1973-74. 9 folders.
- B.782-B.788 School of Clinical Medicine Finance and Establishments Committee 1975-76. 7 folders.
- B.789 M.D. Committee 1978, 1980, 1985-86.

- B.790 Appeals Sub-Committee 1980-82.
- B.791-B.797 Meetings with successor as Regius Professor of Physic.
Mitchell's manuscript notes of meetings with W.J.H. Butterfield, his successor as Regius Professor of Physic, 1975-80. 7 folders.
- B.798-B.801 Miscellaneous correspondence.
- B.798 1975-78.
- B.799 1977. *Re* entry for Cambridge in International Directory of Specialized Cancer Research and Treatment Establishments.
- B.800 1980. *Re* opening of the Clinical School by the Chancellor, 21 November.
- B.801 1984-85.

Boards, Committees, Departments, Colleges, Societies

B.802-B.812	Boards and Committees
B.813-B.833	Departments
B.834-B.844	Colleges
B.845-B.862	Societies

Boards and Committees

- B.802-B.804 Assistant Staff Board 1963-74. 3 folders.
- B.805 Board of Graduate Studies 1984.

- B.806 Committee of Science Professors 1947-48.
- B.807 Council of the School of Biological Sciences 1958.
- B.808-B.810 Committee on Animal Accommodation 1964-66. 3 folders.
- B.811 Committee for Precautions against Ionising Radiation and Laser Beams
1975-78.
- B.812 Committee on Student Health nd.

Departments

- B.813 Anaesthetics 1962.
- B.814 Dermatology 1959-60, 1967.
- B.815 Genetics 1959.
- B.816-B.831 Medicine 1957-66.
- B.816 1962-63, 1966.

B.817-B.831 'Psychiatrists'. Contents of Mitchell's folder so inscribed: correspondence and papers *re* development of medical psychology within the Department of Medicine; also includes material *re* Department of Experimental Psychology (O.L. Zangwill) and proposed Student Mental Health Unit. 1957-65.

B.817	1957 June-December	B.825	1961
B.818	1957 November	B.826	1962
B.819	1957 December	B.827	1963
B.820	1958 January, February	B.828	1964 January-March
B.821	1958 March-May	B.829	1964 May-July
B.822	1958 June-December	B.830	1964 August-November
B.823	1959	B.831	1964-65
B.824	1960		

B.832 Pathology 1957-61.

B.833 Surgery 1967.

Colleges

B.834 Darwen College 1964.

B.835-B.844 St John's College 1944, 1961-62, 1975-86.

Mitchell was a Fellow of St John's College from 1936.

B.835-B.838 General correspondence and papers.

B.835	1944, 1961-62	B.837	1980
B.836	1975-79	B.838	1981-85

B.839-B.842

Linacre Lectures.

Correspondence *re* arrangements, votes of thanks.

B.839 1976-79

B.841 1984

B.840 1980-83

B.842 1985-86

B.843

St John's Medical Society 1978-87.

B.844

Meeres Senior Studentship for Medical Research 1978-84.

Societies

B.845

Cambridge University Medical Society 1944, 1961.

B.846-B.862

Cambridge Graduates' Medical Club 1958-77.

Correspondence and papers principally relating to the Club's annual general meeting and dinner. From 1959-65 Mitchell gave a speech at the dinner on the progress of the Medical School. From 1966 the speech was replaced by a typed report circulated at the dinner.

B.846 1958-59

B.855 1969

B.847 1960-61

B.856 1970

B.848 1962

B.857 1971

B.849 1963

B.858 1972

B.850 1964

B.859 1973

B.851 1965

B.860 1974

B.852 1966

B.861 1975

B.853 1967

B.862 1976-77

B.854 1968

Examining

B.863-B.874	Final M.B. Examinations 1972-74.		
B.863	1972	B.869	1973 November, December
B.864	1973 January-March	B.870	1974 January-March
B.865	1973 April-June	B.871	1974 April-June
B.866	1973 July	B.872	1974 July, August
B.867	1973 August, September	B.873	1974 September, October
B.868	1973 October	B.874	1974 November, December

B.875-B.881	Higher degrees, various dates 1948-86.		
B.875	1948	B.879	1979-81
B.876	1961	B.880	1981
B.877	1966-70	B.881	1982, 1986
B.878	1975-77		

LECTURES

B.882-B.1022	Departmental lectures
B.882-B.888A	Correspondence <i>re</i> arrangements
B.889-B.1004	Drafts
B.1005-B.1021	Lecture lists and bibliographies
B.1022	Tape recording
B.1023-B.1041	Courses and symposia for general medical practitioners
B.1042-B.1051	Long vacation courses for medical students
B.1052-B.1054	Medical isotopes courses

Departmental Lectures*Correspondence re arrangements*

B.882	1946-50	B.886	1960-65
B.883	1951-53	B.887	1966-69
B.884	1954-55	B.888	1970-75
B.885	1956-59	B.888A	Nd

Drafts

Mitchell's bulky folders have been divided for ease of reference. Where appropriate his inscriptions on the original folders (not kept) have been reproduced in the catalogue entries.

The sequence includes notes and illustrative material found with the drafts.

B.889-B.892	'Lectures 1947'. 4 folders.
B.893-B.897	'Old papers & lectures' 1947-52. 5 folders.
B.898	Lectures 1949.
B.899-B.901	'Introductory course of lectures on Radiotherapy' 1950-51. 3 folders.
B.902	'Dosimetry'. 1950, 1953.
B.903-B.906	'Lectures 8/9/52 to 24/9/52'. 4 folders.
B.907-B.910	Lecture course 1952-53. 4 folders.

B.911-B.913	Lectures 1953. 3 folders.
B.914	Lecture 1954.
B.915	Illustrative material for ?lectures. Includes items dated 1954, 1955.
B.916-B.926	Lectures 1955-56. 11 folders.
B.927	'For lecture - 7/10/55'.
B.928	'For lecture 11/10/55'.
B.929	'Lecture 24/1/56'.
B.930	'Lecture 2/3/56'.
B.931	'Lecture notes 19/10/56 - 30/10/56'.
B.932	'Lecture 30 October 1956'.
B.933	'Lecture - 16 November 1956'.
B.934	'Treatment of Carcinoma of the Mouth', 20 November 1956.
B.935-B.938	Lectures October, November 1956. 4 folders
B.939	'Lecture 7/12/56'.

- B.940 'Lecture 29 January 1957'.
- B.941 'Lecture - 12 February 1957'.
- B.942-B.945 Lectures January-March 1957. 4 folders.
- B.946 'Investigations of practical interest' 1957.
- B.947 'Ca Thyroid'. Notes and drafts on carcinoma of the thyroid found with lectures material. 1958.
- B.948 Lectures December 1958.
- B.949-B.952 Undated lectures ?1950s. 4 folders.
- B.953 Lectures 1960.
- B.954 Lectures 1964.
- B.955, B.956 'Typed lectures 1966-1967'. Include manuscript notes and lecture dated 10 October 1964. 2 folders.
- B.957 Lecture 1969.
- B.958-B.962 Lectures 2-12 nd ?1960s. 5 folders.
- B.963-B.969 Miscellaneous lectures notes and drafts nd ?1960s. 7 folders.
- B.970, B.971 'Introductory Lectures'. Notes, data etc, latest reference 1971. 2 folders.

- B.972 Lecture 1973.
- B.973, B.974 Illustrative material for ?lectures. 1973, 1975. 2 folders.
- B.975-B.982 Lectures A1-A6, A8-A10, A12-A15. 1975-76. 8 folders.
- B.983-B.986 Background material. Possibly related to series A lectures. 4 folders.
- B.987-B.1001 Lectures B1-B15. 1975-76. 15 folders.
- B.1002 Lecture on treatment of cancer of the uterine cervix nd ?1970s.
- B.1003 Lecture paginated 4-17 nd.
- B.1004 'Synopsis of lectures' nd.

Lecture lists and bibliographies

- B.1005-B.1021 1965-76. 17 folders.

Tape recording

- B.1022 Lectures 8 and 12 February 1957.

Courses and symposia for general medical practitioners

B.1023-B.1041

Correspondence and papers 1948-76.

Documentation may include correspondence *re* arrangements, programmes, lists of cases to be demonstrated, lists of participants, Mitchell's introductory remarks and lecture drafts.

B.1023	1948-51	B.1033	1968 (1)
B.1024	1952-55	B.1034	1968 (2)
B.1025	1956-57	B.1035	1969
B.1026	1959	B.1036	1970
B.1027	1960-61	B.1037	1971
B.1028	1962-63	B.1038	1972
B.1029	1964	B.1039	1973
B.1030	1965	B.1040	1974
B.1031	1966	B.1041	1975-76
B.1032	1967		

Long vacation courses for medical students

B.1042-B.1051

Correspondence and papers 1947-69.

Documentation may include correspondence *re* arrangements, programmes, lists of participants, reading lists. See B.1046 for Mitchell's lecture on rays and their uses in medicine.

B.1042	1947	B.1047	1961-62
B.1043	1950-53	B.1048	1964-65
B.1044	1955-56	B.1049	1967
B.1045	1957-58	B.1050	1968
B.1046	1959	B.1051	1969

Medical isotopes courses

B.1052-B.1054 Programmes, lists of participants, 1958, 1967-69, nd.

B.1052 1958

B.1054 Nd

B.1053 1967-69

SECTION C

NOTEBOOKS

C.1-C.134

C.1-C.58

RESEARCH AND CLINICAL

C.59-C.78

BIBLIOGRAPHICAL

C.79-C.99

VISITS, CONFERENCES AND LECTURES

C.100-C.130

JOTTERS

C.131, C.132

ILLUSTRATIVE MATERIAL

C.133, C.134

GERMAN LANGUAGE

RESEARCH AND CLINICAL

The sequence of notebooks presented here covers the period 1926-81. Many of the notebooks used during and after the Second World War hold substantial quantities of additional material, either clipped to pages of the notebook or intercalated loose into the volume. This material is integral to the notebooks as Mitchell used the notebooks to 'file' papers pertinent to his current research activities and it may include calculations, correspondence, reprints, photographs, figures and graphs as well as manuscript and typescript notes on experimental procedures, dosages, case histories, bibliographical references etc. The original order of this material within the notebooks has been preserved.

The notebooks should be consulted in conjunction with the substantial body of research material in Section D.

Where applicable reference has been made to the bibliography in the Royal Society memoir of Mitchell (A.1) in the form *Biblog.* ...

- C.1 Green hardback sketchbook inscribed inside front cover '[...] University of Birmingham'. Used from the front for diagrams for 'Practical Botany' and from the back for 'Zoology'. The last of the pages used from the back has a manuscript note '[?] Birmingham 7 Dec. 1926'. Loose manuscript note at front.

Mitchell won a scholarship to Birmingham University in 1926.

- C.2 Hardback notebook inscribed inside front cover '[...] Birmingham'. Used from the front and from the back for physics notes (including some notes taken at Cambridge c.1928-31). Latest reference January 1931. Loose material enclosed in book.

After two years at Birmingham Mitchell won an entrance scholarship to St John's College Cambridge to study for the Natural Sciences Tripos. He specialised in physics for Part II. While at Cambridge Mitchell was advised to take examinations in pre-clinical subjects to allow him to take the Cambridge MB, BChir at a later date.

- C.3 Hardback notebook used for undergraduate physics notes at Cambridge. Latest bibliographical reference 1929.

- C.4 Hardback notebook inscribed inside front cover '[...] St John's College Cambridge'. Used from the front for physics notes. Latest reference January 1930.

- C.5 Hardback notebook used from the front for notes on 'Bonhoeffer & Harteck. Photochemistry' (K.F. Bonhoeffer and P. Harteck, *Grundlagen der Photochemie*, Dresden 1933) and for later notes on the literature (latest reference 1940), and from the back for calculations.
- C.6 Hardback notebook used for medical notes taken at Birmingham c.1931-34 and later physics notes taken at Cambridge (includes notes on 'Lord Rutherford: Ionisation & Radioactivity Easter 1935').
- Mitchell returned to Birmingham University in 1931 for the postgraduate clinical training necessary to obtain the Cambridge MB, BChir. He was awarded these in 1934 and thereafter began research for his PhD on irradiation of thin protein films under E.K. Rideal at the Colloid Science Laboratory in Cambridge.
- C.7 Hardback binder used for typescript draft [? of thesis] 'The action of ultraviolet light on proteins. September 1934 - February 1936'.
- C.8 Hardback notebook used for physics notes, including notes on lectures by J.E. Lennard-Jones, W.L. Bragg, W.T. Astbury, G.I. Finch, T.M. Lowry and R.G.W. Norrish, probably taken during a conference. Latest reference 'Soc. Exp. Biol. Manchester July 1935' (lecturers include D. Jordan Lloyd, J.D. Bernal, Astbury, P.W. Bridgman and D. Wrinch). Loose material intercalated.
- C.9 Hardback notebook used for miscellaneous notes, chiefly bibliographical. Latest reference 1935. Loose material at front.
- C.10 Hardback 'Physics Book' used for notes on experiments, 9 November 1936 - c.July 1937. Loose material intercalated.
- C.11 Hardback notebook inscribed inside front cover 'Wavelength Effects'. Used principally for notes on the literature *re* effectiveness of radiations of different wavelengths, latest bibliographical reference 1937. At the end of these are [? earlier] notes on bone diseases. Loose material intercalated.

- C.12 Hardback 'Physics' notebook inscribed inside front cover 'J.S. Mitchell [...] Cheadle Hulme m/c'. Used for notes on experiments, 6 April 1939 - 24 July 1940. Loose material at front, including correspondence, dated 1940-42.
- In 1938 Mitchell worked at the Christie Hospital and Holt Radium Institute in Manchester. He returned to Cambridge in 1939 as Assistant in Research in Radiotherapy in the Department of Medicine, a post made permanent in 1943.
- C.13 Hardback notebook used for notes on experiments, 17 June 1942 - 29 June 1944. Paginated.
- Loose material intercalated includes typescript introduction and list of slides for lecture on 'Some aspects of the therapeutic action of radiation', 5 January 1945 (also delivered at New Haven 6 April 1945), notes, graphs and photographs.
- In 1944, at the request of Sir John Cockcroft, Mitchell went to Canada to work at the British and Canadian Atomic Energy Project at Chalk River. He was asked to investigate radiobiological hazards to those working with radiations and to direct a medical programme at the Project.
- C.14 Hardback notebook labelled 'National Research Laboratories Ottawa Canada Division of Physics and Electrical Engineering' used for 'Medical investigations' on the ionising effect of radiations on tissue, November 1944 to November 1945. Paginated.
- Much additional material, dating principally 1945-47, intercalated including photographs, figures, correspondence, memoranda, notes, reprints and drafts. Among this material is Mitchell's 5pp typescript draft 'Provisional calculation of the tolerance flux of fast neutrons', 19 January 1947 (*Bibliog.* 26), and memoranda on developments of ionisation chambers for neutron dosimetry, February and April 1945.
- C.15 Binder. First page inscribed 'J.S. Mitchell c/o Mr M. Perrin D.S.I.R. 16 Old Queen St. Westminster London SW1'. Contains manuscript notes on 'METHODS. Chemical & Histological', 'ANIMAL EXPERIMENTS DATA', 'POST MORTEM REPORTS' and 'LABORATORY EQUIPMENT'. Loose material intercalated. Latest reference 1945.
- C.16 Hardback notebook inscribed inside front cover 'J.S. Mitchell Addenbrooke's Hospital Cambridge'. Used for notes on neutron irradiation experiments, 1945. Loose material intercalated.
- At the end of 1945 Mitchell returned to Cambridge to take up the newly created Chair of Radiotherapeutics and the Honorary Directorship of Addenbrooke's Radiotherapeutic Centre.

- C.17 Hardback notebook inscribed inside front cover '[...] J.S. Mitchell Dept of Radiotherapeutics Cambridge'. Used for plans of experiments, 4 September - 23 October 1947. Most pages not used. Loose material intercalated.
- C.18 Hardback notebook used for rough minutes taken during MRC 'Clinical Sub-Committee 20 Jan 49. 11 am' (see F.262).
- Loose material intercalated includes draft 'Summary of discussion with Dr D.R. Charles & Dr Thomas at Rochester, NY, on 7th April 1948'.
- C.19 Hardback notebook inscribed inside front cover '[...] Syncavit Clinical I'. Used from 23 July 1949 for notes on cases treated with the radiosensitising drug synkavit. Loose material intercalated.
- C.20 Hardback notebook inscribed inside front cover '[...] Syncavit Clinical II [...]'. Used from 24 January 1950 for notes on cases treated with synkavit. Loose material intercalated.
- C.21 Hardback notebook used for notes on treatment of patients with cancer and notes on the literature. Latest reference '28.3.50'.
- C.22 Hardback notebook used for miscellaneous notes. Latest bibliographical reference 1950. Some pages loose.
- C.23 Hardback notebook inscribed inside front cover 'J.S. Mitchell Addenbrooke's Hospital'. Used for draft on histological changes in patients produced by irradiation. Paginated up to 64 but pages 1-55 are missing from the notebook and the draft is unfinished. Most pages unused.
- Loose material intercalated includes 44pp typescript draft by Mitchell 'Practical aspects of radio-active isotopes in relation to medical treatment' (*Bibliog.* 39) described as 'Abridged version of lecture delivered to the Society of Apothecaries of London on 4th December, 1950'; Atomic Energy Research Establishment (AERE) 'Statistical review of haematological techniques and records' by A.C. Chamberlain and F.M. Turner; and papers for meetings of the Ministry of Supply AERE Harwell Project Health Committee 10 August 1951 (see F.418-F.420).

- C.24 Hardback notebook used for manuscript notes and calculations, probably for work for the Medical Research Council.
- Much additional material, dating c.1950-60, intercalated including correspondence with the MRC in connection with applications to the Advisory Panel on the Allocation of Radioactive Isotopes for Clinical Research (F.209-F.237), manuscript and typescript notes and calculations, figures and reprints. It also includes papers for ?1950 meeting of the Tracer Elements Subcommittee of the MRC's Committee on the Medical and Biological Applications of Nuclear Physics (F.248-F.319), and 'Summary of proceedings of meetings during the year ending 1/5/52' prepared for the Subcommittee on Internal Radiations of the MRC's Committee on Protection Against Ionising Radiations (F.322-F.372).
- C.25 Hardback notebook inscribed inside front cover 'Joseph S. Mitchell [...] 6.9.50'. Used for notes on experiments using radiosensitising drugs, including synkavit, September 1950 - October 1953.
- Much additional material intercalated including correspondence, photographs, manuscript and typescript notes (not all by Mitchell), calculations and graphs. It also includes duplicated typescript 'Notes on Demonstrations' prepared for a meeting of the Cambridge Philosophical Society at the Department of Radiotherapeutics, 19 November 1951.
- C.26 'Sectional pad' inscribed on front cover 'RATS WALKER CARCINOMA J.S.M. TOTAL BODY IRRADIATION EXPT. XV' and, by Mitchell's secretary M.J. Crichton, c.1987, 'Notes by Mr [E.A.] King - JSM's Chief Technician who carried out these expts. for JSM'. Notes on experiments, 27 December 1950 - 29 May 1951.
- C.27 Hardback notebook. First page titled 'Survey of Ca of bronchus (cont) 7.1.51'. Used for notes on cases treated with synkavit combined with x-ray therapy. Loose material intercalated.
- C.28 Hardback notebook used during July 1951 visit to the Finsen Laboratory, Copenhagen, in connection with work for the MRC on thorotrast (see F.326-F.333) and for later notes on thorotrast investigations, 1952 and 1953.
- Much additional material, dating c.1951-55, intercalated including correspondence, manuscript and typescript notes (not all by Mitchell), calculations, reprints and graphs. It also includes Mitchell's 58pp duplicated typescript report 'Clinical and laboratory studies of the effects of Thorotrast' and his 3pp duplicated typescript 'Abstract of published cases of human malignant tumours attributed to Thorotrast' prepared for the MRC's Subcommittee on Internal Radiations of the Committee on Protection against Ionising Radiations, 1951; 'Summary of Work of Sub-Committee from May, 1952 to September 1954' reporting on thorotrast investigations, annotated by Mitchell; and O.M. Henriques's 'Report from the Finsen

Laboratory [...] on Internal Radioactive Contamination' prepared for the subcommittee, 1952.

- C.29 Hardback notebook. Latest bibliographical reference 1952. Loose material intercalated.
- C.30 Hardback notebook inscribed on first page 'Synkavit investigation Inoperable ca. of bronchus Cases no 1-151. - first X ray tr. between 1 April 51 & 31 Dec 53. Assessed 30 June 1954' and dated '12.7.54'. Loose material intercalated.
- C.31 Hardback notebook used for notes on experiments on rats, 29 December 1953 - 21 December 1954 and 18 July 1955 - 26 March 1956.
- Much additional material intercalated including correspondence, manuscript and typescript notes (not all by Mitchell), calculations, photographs, reprints and graphs. It also includes typescript copy of Mitchell's 'Programme of research for the calendar year 1953' submitted to the British Empire Cancer Campaign and 11pp typescript draft and 4pp abstract of 'Laboratory studies and clinical trials of some chemical radiosensitisers' by Mitchell (*Bibliog.* 47).
- C.32 Hardback notebook used from the front for notes on results of 'Ca. cervix treated RTC', October 1954.
- C.33 Hardback notebook used for notes September 1955, probably on dangers from emissions from nuclear power plants.
- C.34 Hardback notebook inscribed on first page 'Clinical trials of Synkavit Randomised trial in inoperable ca. bronchus Cases 1-203 inclusive. Results assessed to 18 Dec 1955'. Used for notes on the results of various series of treatments (indicated by Mitchell's bookmarks pasted into the notebook). Loose material at back.
- C.35 Hardback notebook used for notes on synkavit experiments 123 to 146 (November 1954 - October 1955), and for notes on experiments using synkavit and other drugs, June 1956 - August 1957.
- Much additional material intercalated including correspondence, manuscript and typescript notes (not all by Mitchell), and photographs. Among the correspondence is a letter from R.H.N. Whitehouse of the Cambridge University Plant Breeding Institute detailing 'progress in the investigation of radiosensitisers on plant growth'.

- C.36 Exercise book used for draft on lung cancer incidence by L.M. Mitchell. Latest reference 1955.
- C.36A Exercise book used for draft on results of treatment of lip cancer by L.M. Mitchell. Latest reference 1956.
- C.37 Exercise book used for notes on the literature and calculations. Latest reference 1956. Most pages not used.
- C.38 Hardback notebook used for notes on pilot trial of oxygen and synkavit with randomised allocation '14.9.57', 'Reassessed 3.1.58'. Some pages loose.
- C.39 Hardback notebook inscribed inside front cover 'J.S. Mitchell [...] 9.8.1957'. Used for notes on experiments, August - November 1957 and February 1958 - October 1959.
- Much additional material, dating 1955-59, intercalated including correspondence and memoranda, manuscript and typescript notes (not all by Mitchell), graphs, photographs and reprints, including papers presented at the Second United Nations International Conference on the Peaceful Uses of Nuclear Power, September 1958 (see G.13, G.14).
- C.40 Hardback 'Physics Book' used for notes on experiments, February 1960 - April 1961.
- Much additional material, dating c.1958-61, intercalated including correspondence, memoranda, manuscript and typescript notes (not all by Mitchell), graphs and reprints.
- C.41 Hardback notebook used from 14 February 1961 chiefly for notes on lectures delivered by Gabriel Stein of the University of Jerusalem, possibly in his course 'Recent advances in the radiation chemistry of aqueous systems with special reference to biological systems' (see H.384). Stein was spending a sabbatical year working in the Department of Radiotherapeutics. Towards the back of the notebook are notes on lecture '17 March 61 Dr R M [?aher].

- C.42 Hardback notebook used for notes on experiments using TRA 119, TRK 219 and other compounds, c.November 1961 to June 1964.
- Much additional material, dating 1961-65, intercalated including correspondence and memoranda, manuscript and typescript notes (not all by Mitchell), graphs and reprints.
- C.43 Hardback notebook inscribed on first page 'TRA 119' used for notes on patients treated with this drug, 1962-64, and with TRK 219, 1964-65. Paginated 49-103, not all pages used. Loose material intercalated.
- C.44 Hardback notebook used for notes on discussions with Sir William Penney and J. Gaunt (? and others) re the UK presentation at UN Conference on Peaceful Uses of Atomic Power, Geneva, 1964 (see G.25-G.32), and for bibliographical references and notes on the literature (in German).
- C.45 Hardback 'Physics Book' used for notes on experiments, June 1964 - October 1965.
- Much additional material, dating c.1964-65 and 1973, intercalated including correspondence, memoranda, manuscript and typescript notes (not all by Mitchell) and reprints.
- C.46 Hardback 'Physics Book' used for notes on experiments, October 1965 - January 1967.
- Much additional material, dating 1964-68, intercalated including correspondence, manuscript and typescript notes and reprints.
- C.47 Hardback 'Physics Book' used for notes on experiments, January 1967 - March 1968.
- Much additional material intercalated including manuscript and typescript notes and reprints.
- C.48 Hardback 'Physics Book' used for notes on experiments, March 1968 - May 1970.
- Much additional material intercalated including correspondence, manuscript and typescript notes and reprints.

- C.49 Hardback 'Physics Book' used, principally towards the back, for notes on experiments, April - July 1969. Most pages not used. Loose material intercalated.
- C.50 Hardback notebook used from the front for notes on work of G. Di Vita, a visiting researcher studying the cerebellum of normal and irradiated *Xenopus laevis* in the Department of Radiotherapeutics, 3 July - November 1969. Loose material intercalated.
- C.51 Hardback 'Physics Book' used for notes on patients and experiments, January 1970 - March 1974.
- Much additional material, dating c.1967-74, intercalated including correspondence and memoranda, manuscript and typescript notes (not all by Mitchell), photographs and reprints. It also includes 6pp typescript draft by D.H. Marrian 'The reaction between Indanetrione Hydrate and Mercaptoacetic acid'.
- C.52 Hardback 'Physics Book' used for notes on treatment of patients, 15 May 1970 - 2 August 1971, and on experiments with 6-¹²⁵I-iodo MNDP, and other compounds, 2 June - 24 October 1978.
- Much additional material intercalated including manuscript notes and 'certificates of analysis'.
- C.53 Hardback 'Physics Book' used for notes on treatment of patients, 22 May 1970 - January 1971 and May 1971 - August 1972.
- Much additional material intercalated including correspondence, memoranda, manuscript and typescript notes (not all by Mitchell) and reprints.
- C.54 Hardback HMSO notebook inscribed on front cover 'Patients for bronchus trial 1972'. Most pages not used. Loose material at front.
- C.55 Hardback thumb-index notebook labelled on front cover 'Tumour Tissue Culture'. Used for notes (not by Mitchell) on treatment of patients. Latest reference 1973. Loose material intercalated.

- C.56 Hardback notebook dated on first page '13.6.74'. Used for notes on patients and on experiments, June 1974 - September 1977.
- Much additional material, dating 1974-78, intercalated including correspondence and memoranda, manuscript and typescript notes (not all by Mitchell), and reprints.
- C.57 Softback 'Science Book' used for notes on experiments, 15 May - 25 June 1981. Loose material intercalated.
- C.58 Softback 'Science Book' used for notes on experiments, 17 June - 15 October 1981. Loose material intercalated.

BIBLIOGRAPHICAL

With the exception of C.59 these are hardback notebooks dating from the 1960s and 1970s used by Mitchell during visits to Germany. The notebooks were used for bibliographical references to German research, notes on the literature (principally in German) and some notes taken during conferences and meetings in Germany.

- C.59 Inscribed inside front cover 'Bibliography'. Most pages loose. Some references intercalated. Latest reference 1944.
- C.60 Latest reference 1960. Additional material intercalated.
- C.61 Latest reference 1960. Additional material intercalated.
- C.62 Smaller format. Latest reference 1960. Additional material intercalated.
- C.63 Latest reference 1961. Loose material intercalated including programme of meeting of the Vereinigung Deutscher Strahlenschutzärzte, Essen, 3-6 January 1962 (see G.19).
- C.64 Latest reference 1962.

- C.65 Latest reference 1962. An official envelope of the Radiologisches Institut der Universität Freiburg has been pasted to the first page, probably indicating where Mitchell was working at the time. Loose material includes programme of 'Kolloquium über Biochemie der Strahlenmutation und Struktur der Desoxyribonukleinsäure', Freiburg, 8-9 March 1963.
- C.66 Latest reference 1963. There is much intercalated material, dating 1957-63, including reprints and manuscript and typescript notes (not all by Mitchell).
- C.67 Latest reference 1964. An envelope of the Radiologisches Institut of Freiburg clipped to the first page, probably indicating where Mitchell was working at the time.
- C.68 Inscribed inside front cover '13 March 1965 Freiburg.i.Br.'.
- C.69 Inscribed inside front cover '29.7.65 Freiburg'.
- C.70 Latest reference 1966. Loose material at front including programme of the 4. Strahlenschutzkurs für Sanitätsoffiziere der Bundeswehr, Freiburg, 21 March - 1 April 1966.
- C.71 Inscribed inside front cover 'July 1966'.
- C.72 Latest reference 1966. Programme for the 'Röntgentagung in Freiburg im Breisgau', 23-25 September 1966, clipped to the first page.
- C.73 Inscribed inside front cover '8. September 1968 [...] FREIBURG i Br' and on frontispiece 'Strahlensensibilisierende Substanzen und ihr Einfluss auf die Strahlenempfindlichkeit von Tumoren'. The first pages of the notebook are used for notes in English.
- C.74 Inscribed inside front cover '[...] Freiburg i Br [...] 1.August 1969' and on first page 'Über die Möglichkeit der Entwicklung radioaktiver Pharmaka'. Loose material intercalated.

- C.75 Inscribed inside front cover '[...] 20.3.70 bei Prof. H. Langendorff Radiologisches Institut der Universität 78 Freiburg i Br'.
- C.76 Latest reference 1970. An official envelope of the Radiologisches Institut of Freiburg clipped to the first page. Loose material intercalated.
- C.77 Latest reference 1971. An official envelope of the Radiologisches Institut of Freiburg clipped to the first page.
- C.78 Larger format. Inscribed inside front cover '[...] FREIBURG i Br'. Latest reference 1971. Loose material intercalated.

VISITS, CONFERENCES AND LECTURES

- C.79 Spiral bound notebook used during visit to the USA, March-April 1948. Includes notes taken during discussions with US colleagues. Loose material intercalated. See also F.184-F.194.
- C.80 Spiral bound notebook used during visit to the USA, March-April 1948. Includes notes taken during discussions with US colleagues. Loose material intercalated. See also F.184-F.194.
- C.81 Hardback notebook inscribed inside front cover 'J.S. Mitchell C.C.S.O. 1785 Massachusetts av. N.W. Washington D.C.' Used during visit to USA. Includes notes taken during discussions with US colleagues.
- Additional material intercalated including 'Minutes of a Meeting to discuss the Image Amplifier held at the Department of Radiotherapeutics on 8th June 1949', and reprints.
- C.82 Spiral bound notebook inscribed on front cover '23/4/54. Lecture to Architects.' Shorthand notes only. See E.122 for typescript of lecture.
- C.83 Softback notebook inscribed inside front cover 'J.S. Mitchell c/o Prof. Sven Hultberg Radiumhemmet [...] Stockholm'. Using during visit to Sweden. Latest bibliographical reference 1954.

- C.84 Softback notebook inscribed inside front cover 'J.S. Mitchell [...] Radiumhemmet Karolinska Sjukhuset Stockholm'. Used during visit to Sweden, February-March 1955. Loose material intercalated.
- C.85 Hardback notebook used for notes on proceedings of chemotherapy meeting held by the International Union Against Cancer Subcommittee for Great Britain and Ireland of the Committee on Chemotherapy, ICI Alderley Edge, 6-7 November 1958 (see F.160, F.161). Loose material intercalated including papers *re* arrangements for the meeting and programme of the International Symposium on the Chemotherapy of Cancer, Cambridge, 13-15 July 1958 (see F.153-F.159).
- C.86 Hardback notebook used principally for notes taken during departmental colloquia 1961.
- C.87 Hardback notebook possibly used during visit to Freiburg 1961. Loose material intercalated.
- C.88 Hardback notebook used for notes on proceedings of 4th Annual Meeting of the Anglo-German Medical Society, Cambridge, 25-28 September 1963. (See F.23-F.30). Most pages not used. Loose material intercalated including programme of the meeting.
- C.89 Pocket spiral bound notebook labelled on front cover 'Professor Mitchell's lectures Michaelmas Term 1964'. Used for attendance lists for lectures at Cambridge.
- C.90 Hardback notebook labelled on front cover 'Attendance list of Professor Mitchell's lectures' at Cambridge. Used 9 October 1965 - 10 March 1972.
- C.91 Hardback notebook used for notes on proceedings of British Institute of Radiology meeting on the Radiobiology of Organised Animal Tissues Fractionation Phenomena, London, 19 November 1965. Most pages not used. Loose material intercalated including programme of the meeting.
- C.92 Hardback notebook used for notes on proceedings of conference at 'Edinburgh 12-15 Oct 1966'. Also includes later manuscript notes.

- C.93 Hardback notebook used for notes on proceedings of Royal Medical Society symposium on Immunological Aspects of Cancer, Edinburgh, 16-17 October 1970. Most pages not used. Loose at front is symposium programme.
- C.94 Hardback notebook used for notes on proceedings of UN International Conference on the Peaceful Uses of Nuclear Power, Geneva, September 1971 (see G.44-G.46). Loose material intercalated includes Mitchell's 'Draft to start the trial [of radiosensitisers in radiotherapy with large dose fractions] on 3rd January 1972'.
- C.95 Notebook used for attendance lists for Mitchell's lectures at Cambridge, 11 October 1972 - 12 March 1976.
- C.96 Hardback notebook used for notes on proceedings of meeting dedicated to Mitchell on Clinical Applications of Short Term Cultures of Human Tumour Biopsy Specimens, Cambridge, 26-27 September 1974; and for notes on proceedings of British Association for Cancer Research AGM and Symposium on Viruses and Cancer, Cambridge, 23-25 March 1977. Loose material intercalated including papers *re* arrangements for both meetings.
- C.97 Hardback notebook used for notes on proceedings of conference at Cambridge. Participants include C. Auerbach, F.S. Dainton and J. Rotblat. Undated.
- C.98 Spiral bound notebook used for shorthand notes on unidentified lecture. Undated.
- C.99 Hardback notebook used for notes on unidentified conference. Nd.

JOTTERS

Small format pocket notebooks used by Mitchell, sometimes during visits abroad, for rough jottings of research ideas, calculations etc., and brief notes of bibliographical references, names and addresses, telephone numbers etc. Many have loose pages and intercalated material.

- C.100 Labelled on front cover by [? Mitchell's secretary] 'Milton Friedman ca 1945' and inscribed inside front cover '[...] Royal Victoria Hospital Montreal (c/o X Ray Dept)'. Used for notes during visit to USA.

- C.101 Latest reference 5 February 1946. Used for notes on medical requirements for Harwell. Mitchell was temporary Head of the Medical Department at Harwell (see A.20) and served on the Harwell Project Health Committee (F.418-F.420).
- C.102 Latest reference 26 October 1951.
- C.103 Latest reference 19 May 1952.
- C.104 Latest reference 5 September 1952.
- C.105 Latest reference 16 April 1953.
- C.106 Latest reference 9 June 1954.
- C.107 Latest reference 22 July 1954.
- C.108 Used on visit to Sweden, February-March 1955.
- C.109 Used on visit to Sweden, February-March 1955. Includes notes on Swedish grammar.
- C.110 Used on visit to Sweden, February-March 1955.
- C.111 Latest reference 1955.
- C.112 Latest reference 12 January 1956.
- C.113 Used on visit to Switzerland. Latest reference 24 July 1956. See G.10.

- C.114 Includes notes on Cancer Chemotherapy Conference July 1957. Latest reference 1959.
- C.115 Latest reference 6 December 1957.
- C.116 Latest reference 4 April 1958.
- C.117 Lacks cover. Latest reference 28 May 1958.
- C.118 Latest reference 26 November 1958.
- C.119 Latest reference August 1959.
- C.120 Latest reference 9 July 1960.
- C.121 Latest reference 1961.
- C.122 Latest reference 29 September 1962. Enclosed loose is Mitchell's 4pp typescript 'Contribution to discussion [on the proposed postgraduate medical school] on 16th October 1962'.
- C.123 Latest reference 7 September 1963.
- C.124 Latest reference 25 October 1963.
- C.125 Latest reference 8 October 1972.
- C.126 Latest reference 10 December 1975.
- C.127 Latest reference 30 July 1976.

- C.128 Latest bibliographical reference 1976.
- C.129 Latest reference 30 March 1978.
- C.130 Possibly used for rough notes towards a book on problems of radiotherapeutic oncology. Latest reference 11 February 1980.

ILLUSTRATIVE MATERIAL

Hardback binders containing illustrative material (graphs and figures, formulae, equipment, text etc) used by Mitchell and other members of the department for lectures and possibly publications. The material is small-format photographs and other figures probably reproduced from slides.

- C.131 Sets of illustrations used by Mitchell, 1957-71.
- C.132 Sets of illustrations used by other members of the Department, identified by name.

GERMAN LANGUAGE

Mitchell was a frequent visitor to Germany. He attended many conferences in that country and helped found the Anglo-German Medical Society to foster links between medical academics and practitioners in Britain and West Germany. A number of Mitchell's lectures and publications were in German.

These notebooks document Mitchell's efforts to improve his command of the language.

- C.133 Softback notebook used for notes on the German language, c.1954.
- C.134 Hardback notebook used as English-German glossary. Loose material at back. Latest reference 1959.

SECTION D

RESEARCH

D.1-D.595

Some documentation of Mitchell's research may be found in notebooks, listed in Section C (C.1-C.58). The papers presented in this section should therefore be consulted in conjunction with the notebooks. The bulk of Mitchell's research, however, was found in considerable disorder in folders or envelopes, or as loose notes. This material, which covers Mitchell's entire research career from postgraduate studies in 1933 to his death in 1987, has been divided into three subsections to correspond with distinct stages in his career.

The first, Early research, consists of material dating principally from Mitchell's postgraduate and postdoctoral work on the biophysics of protein monolayers with E.K. Rideal at the Colloid Science Laboratory in Cambridge, 1933-38.

The second subsection, Biochemistry of ionising radiations, comprises research carried out chiefly 1941-49. There is a little documentation of Mitchell's work from 1939 as Assistant in Research in Radiotherapeutics in the Cambridge Department of Medicine, but the bulk of the material is research undertaken during and just after the war on the radiobiological hazards to health of those working with or exposed to ionising radiations. This includes Mitchell's work with the British and Canadian Atomic Energy Project at Chalk River, Canada, 1944-45. Mitchell's interest in this subject led to his serving as a member of several Medical Research Council, Ministry of Supply and Ministry of Health committees which continued after his active research into radiobiological hazards had ceased. At D.138-D.144 is Mitchell's own selection of his most important papers relating to his work in this period. These were made available by Mitchell shortly before his death.

The third subsection, Cancer research, is by some way the largest. It documents Mitchell's main research effort; his long-standing determination to find a cure for cancer*. After the war Mitchell was appointed Professor of Radiotherapeutics at Cambridge and Director of the Radiotherapeutic Centre at Addenbrooke's Hospital. Although Mitchell viewed the two posts as complementary it meant there were two distinct sides to his research: as well as a scientist studying cancer, he was also a doctor treating patients. This is reflected in the presentation of the material which documents both Mitchell's scientific work to develop radiotherapeutic techniques to cure cancer and his treatment of those suffering from the disease.

* Visitors and researchers at Mitchell's Department of Radiotherapeutics in Cambridge would be met by a notice (A.84) proclaiming 'The aim of this department is to improve the treatment of cancer'. A similar 'mission statement' would be appropriate for Mitchell himself. His determination to find an effective treatment for cancer was inspired by his witnessing, at the age of six, a neighbour dying of cancer (see A.5).

Mitchell's first major contribution to cancer research had been in the early 1940s, when he demonstrated that doses of x and gamma radiation inhibited DNA synthesis in the nucleus of cells. During his period in Canada with the atomic energy project Mitchell produced two reports (with J.V. Dunworth) reviewing possible medical applications of radio-isotopes. He identified the gamma-ray emitting isotope cobalt-60 as potentially the most suitable for use in radiotherapy, a view confirmed by its subsequent worldwide use (see D.144). Mitchell's main research effort thereafter was to examine how radiation could be delivered to cancerous cells in order to stop their reproducing. This work concentrated on radiosensitising and radioactive drugs.

In November 1946 Mitchell started his investigation of radiosensitising drugs as anti-cancer agents. These drugs concentrate in malignant cells and render affected tissue more sensitive to the effects of ionising radiations. It was found that synkavit, menadiol sodium diphosphate, concentrated in malignant cells of certain tumours. Clinical trials using this drug began in 1952. From August 1953 a trial began using synkavit in conjunction with oxygen to discover whether this could enhance the drug's effectiveness.

Mitchell and his team then began work on modifying radiosensitising drugs to carry their own radiation source, thus to create radioactive drugs (whose action would resemble the treatment of thyroid tumours by radio-iodine). It was hoped the drug would concentrate in malignant tissue where its radioactivity would create a radiotherapeutic effect with minimal changes to normal tissue. The radiation source selected by Mitchell was the radioisotope tritium (an isotope of hydrogen), a beta-ray emitter. Trials with tritiated synkavit began in 1959. Various drugs were tried; TRA 72 with one tritium atom was used 1960-61, TRA 119, which had three, was used 1962-63 and TRK 219, with two, was used 1964-70. The compound was then prepared in different forms with four tritium atoms: TRK 397 (1970-72), TRQ 347 (1973) and TRQ 368 (1973). The next step was to investigate whether an isotope more effective than tritium could be found and Mitchell was studying this at his death.

Mitchell's work with radiosensitising and radioactive drugs did not fulfil his expectations. As D.H. Marrian wrote in his memoir of Mitchell, (*Biographical Memoirs of Fellows of the Royal Society*, 34 (1988), p.601):

'Unfortunately, the selective uptake was not of sufficient magnitude to produce the desired effect with the required tumour selectivity. The idea was, and still is, first class and comparable techniques, with monoclonal antibodies to target radiation, are now being developed. Once again Mitchell was far ahead in his field and with a little more luck could have made even greater improvements in the treatment of cancer.'

The remainder of this subsection covers Mitchell's treatment of patients as a physician, including his contribution to cancer research in pioneering randomised trials to assess the efficacy of different

kinds of treatment. The King's College Hospital London - Addenbrooke's Hospital Cambridge Breast Trial of therapy for 'early' breast cancer (D.408-D.466), which Mitchell helped organise, was one of the first of its kind and led the way to larger scale trials which have significantly improved the treatment of this common form of cancer. He was also among the first to suggest that psychological factors might play an important part in the onset, cure and recurrence of cancer and encouraged research into this as first Chairman of the Faith Courtauld Cancer Research Unit (D.512-D.535).

The material is presented as follows:

D.1-D.22	EARLY RESEARCH
D.23-D.144	BIOCHEMISTRY OF IONISING RADIATIONS
D.145-D.595	CANCER RESEARCH
D.145-D.205	General and miscellaneous
D.206-D.308	Radiosensitising drugs
D.309-D.394	Radioactive drugs
D.395-D.535	Treatment of cancers
D.536-D.595	Patient records and case notes

EARLY RESEARCH

- D.1 Correspondence between E.K. Rideal and Adam Hilger Ltd., 1933-34, *re* cutting a quartz prism and lenses for a monochromatic illuminator for the Cambridge Department of Colloid Science. Folder also includes manuscript calculation by Mitchell 'Colinear relationship of object space and image space' found with the correspondence.
- D.2-D.8 'Ultra-violet light and spectroscopy'. Contents of Mitchell's envelope so inscribed divided into seven for ease of reference: notes, calculations, graphs etc. c.1934-45.
- Material includes report beginning 'During the last three years we have been investigating the photochemistry of proteins, from the point of view of radiation therapy', 12pp typescript, annotated by Mitchell 'Radiobiology Committee July 1937' (D.3); 'On the photochemical decomposition of some organic anions and free acids in ultraviolet light' by L. Farkas and O.H. Wansbrough-Jones, 17pp typescript (D.4); 'Proposed investigations, Michaelmas, 1937. Mitchell and [C.B.] Allsopp' (D.4).
- D.9 'Physical chemistry'. Contents of Mitchell's folder so inscribed: manuscript notes, latest bibliographical reference 1934.
- D.10 Manuscript and typescript data on amino acid constituents of proteins, latest bibliographical reference 1935.
- D.11 'The present position of the complement fixation reaction' by Mitchell, 12pp typescript 'prepared for Prof. E.K. Rideal about 1935 or early 1936'.
- D.12-D.16 'Ultraviolet photomicrography'. Contents of Mitchell's envelope so inscribed divided into five for ease of reference: notes, calculations, graphs, correspondence from manufacturers of scientific apparatus etc., c.1936-54.
- Includes 'Ultra-violet irradiation of leucocytes', 11pp typescript with photographs found therewith (D.14).
- D.17-D.20 'Dispersal of light by absorbing and refracting cylinder (chromosome)'. Contents of Mitchell's envelope so inscribed divided into four for ease of reference.

D.17, D.18 Manuscript calculations paginated 1-59. Page 30 is written on verso of 'Abstract of unconfirmed minutes of [?St John's College Cambridge] Council 25th January 1940'. 2 folders.

D.19, D.20 Miscellaneous calculations. 2 folders.

D.21, D.22 Miscellaneous manuscript notes, references etc. 2 folders.

BIOCHEMISTRY OF IONISING RADIATIONS

D.23 Minutes of 'TQ' meetings on tolerance doses of radiation, 26 March, 25 June, 3 and 10 December 1941.

D.24-D.29 'Tissue culture notes'. Contents of Mitchell's folder so inscribed divided into six for ease of reference.

D.24 Notes on experiments on chick tissue culture, 1941.

D.25-D.28 Photographs of tissue culture. 4 folders.

D.29 Miscellaneous photographs found with preceding.

D.30 'Chromosome breakage by radiation'. Contents of Mitchell's folder so inscribed: letter, February 1942; manuscript notes; 'The effects of fractionated x-ray dosage on restitution and reunion' by K.C. Bora, c.1951, 5pp typescript.

D.31-D.33 'Gene mutations and chromosome breakage (summary)'. Contents of Mitchell's folder so inscribed divided into three for ease of reference.

D.31 Draft 'Second Note on "Electronized Chemicals" based on discussion with Professor J.S. Mitchell' by E.C. Bate-Smith; letter from Mitchell to W.A. Akers, December 1946, re paper by Brasch and Huber; etc.

- D.32 'Translation of part of a "confidential" Swedish report: "Studies of the influence of Roentgen irradiation, with and without the addition of protecting substance, upon the fertility and mutation frequency in mice" - by K.G. Luning'; etc.
- D.33 Manuscript notes, 1957.
- D.34 'Chromosome breakage by genetic effects. Carcinogenesis'. Contents of Mitchell's folder so inscribed: manuscript and typescript notes, bibliographical references etc., c.1948-72.
- D.35 Manuscript notes, 21 April 1942; 'Carcinoma of the lung', 4pp typescript with Mitchell's manuscript corrections, c.1944.
- D.36-D.41 'Metabolic effects'. Contents of Mitchell's folder so inscribed divided into six for ease of reference.
- D.36 Includes correspondence with J.N. Davidson, 1943, *re* work on nucleotides; application for renewal of British Empire Cancer Campaign grant, 1943, including outline of proposed research; manuscript notes.
- D.37 Correspondence with W.M. Dale, 1943-44, *re* 'ionic efficiency' including draft of proposed letter to *Nature* by Dale; 'Report on investigations of the therapeutic action of X and gamma radiations' by Mitchell, 5pp typescript, 4 July 1944; manuscript note on 'Interview with Dr Bach 7.6.46'.
- D.38 Correspondence with R.E. Stowell, 1944-45, *re* experimental results in Mitchell's three papers on 'Disturbance of nucleic acid metabolism produced by therapeutic gamma radiation' published in *Br. J. exp. Path.* 23 (1942) (*Bibliog.* 18-20); manuscript notes.
- D.39 'Some aspects of the therapeutic action of radiation', typescript introduction plus 3pp list of slides for 'Lecture 5.1.45'; manuscript notes, some on verso of correspondence received by R.A. McCance, 1936-37.

- D.40 Letter from F.W. Gunz, June 1945, enclosing 'figures of the photometer measurements of a set of plates from a leukaemic bone marrow treated for the first time'. Folder includes the photographs to which the figures refer, and two other photographs found with them.
- D.41 Includes Annual Reports to the British Empire Cancer Campaign for 1948; 'Lecture 7. 20.1.48 Department of Anatomy' on 'the metabolic effects of therapeutic doses of X and gamma radiations', 9pp typescript.
- D.42, D.43 'Tolerance'. Contents of Mitchell's folder so inscribed divided into two for ease of reference.
- D.42 Photocopy of 'Industrial Technical Letter' re 'The use and care of minometers', 1 January 1944, issued by G.E. X-ray Corporation, with figures for thickness of lead required for protection against x-radiation found attached; 'The calculation of the tolerance flux of fast neutrons' by J.H. Tait, 4 February 1949; etc.
- D.43 Letter from H. Lisco, 15 September 1947, enclosing draft data for a 'Standard Man' for calculations of tolerances to radioactive isotopes; correspondence, 1949; manuscript notes including some annotated 'Strontium Lisco 1947'.
- D.44-D.54 Contents of Mitchell's folder: papers and reports on fast and thermal neutrons, 1944-50. Where applicable the official report number has been given.
- D.44 'Determination of the number of neutrons emitted by a Radium-Beryllium source' by E. Bretscher *et al*, BR 382, stamped '18 Feb 1944'.
- D.45 'Neutron flux measurements (D+D and C+D neutrons)' by E. Bretscher and A.P. French, BR 386, stamped '18 Feb 1944'.
- D.46 'The energy spectrum of the neutrons from the lithium (p.n.) reaction' by B.B. Kinsey and S.G. Cohen, BR 452, stamped '24 Jun 1944'.

- D.47 'Lectures on Pile Theory. (Lectures of Sept. 27th and Oct. 4th [1944]). II. Diffusion of Thermal Neutrons' by G. Volkoff, TL 2.
- 'Lectures on Pile Theory (Lectures of October 11, 18, 25) III. Slowing-down of fast neutrons' by G. Volkoff, TL 3. Manuscript calculations by Mitchell intercalated.
- D.48 'The range/energy relation for particles of 0-5.3 MeV in ethylene and polythene' by D.H. Wilkinson, BR 639, May 1945.
- 'Measurement of a flux of fast neutrons with a counting pressure ionisation chamber' by K.W. Allen, BI 93, October 1945.
- D.49 'Bremsung und Absorption von Neutronen in Beton' by P. Jensen and O. Ritter, sent to Mitchell, 24 April 1946.
- D.50 'Summary of Report on "Atomic Bombs, Hiroshima and Nagasaki ... " (29th May 1946', NP/P/19.
- 'The neutron spectra of Po-B and Po-Be' by L.H. Perlman *et al*, MDDC 39, 'Document declassified 7/9/46'.
- D.51 'Experiments on the mechanism of the biological action of fast neutrons using the summation method for lethal effects in mice' by Mitchell, 12pp typescript plus references and tables, *Bibliog.* 31; 'The thermal neutron distribution in a slab of paraffin' by J.H. Tait and B. Smith, for publication in *Nature*, sent to Mitchell 12 August 1949; etc.
- D.52 'Stars produced in nuclear emulsions by 150 MeV neutrons' and 'Hammer tracks in neutron and proton induced stars' by E.W. Titterton, 1950.
- D.53 'The action of neutrons on bacteria' by F.G. Spear, nd.
- 'Reduction in neutron density caused by an absorbing disc' by T.H.R. Skyrme, MS 91, nd.
- D.54 Miscellaneous notes and figures.
- D.55 Not used.

- D.56-D.59 'Radiation Carcinogenesis & Radiation Injury'. Contents of Mitchell's box so labelled divided into four for ease of reference.
- D.56 'Problems in relation to the protection of personnel' by Mitchell, 2pp typescript, 15 November 1944; 'Some aspects of the biological action of X and γ radiations introduction to colloquium', 3pp typescript, 16 November 1944 plus 2 plates; data, 1945; correspondence and papers, 1951-56.
- D.57 Typescript extracts from published papers *re* radiation injury.
- D.58 'A re-evaluation of the maximum permissible concentration for radium' by W.B. Looney, sent to Mitchell for comment, 30 July 1957.
- D.59 Manuscript and typescript notes; 8pp typescript 'Bibliography'.
- D.60 Ministry of Supply Health Sub-Committee Memorandum SCH-12 'Notes on Industrial Tolerance Conference National Cancer Institute, Bethesda, Maryland. January 23-24, 1945. By J.S. Mitchell'.
- D.61-D.64 'Montreal experiments'. Manuscript and typescript notes so labelled on experiments on irradiation of mice, 1945. Not all the manuscript notes are in Mitchell's hand. 4 folders.
- D.65-D.67 Duplicated typescript reports by Mitchell, prepared while working in Canada.
- D.65 'Note on tolerance levels for X' by Mitchell, 16 September 1945 (no.H-12), 4pp.
- D.66 'Note on the preparation of radioactive isotopes for use in medicine and biology (Supplement to Memorandum on "Application of Nuclear Physics to Medicine and Biology")' by Mitchell and J.V. Dunworth, 17 October 1945 (no.HI-13), 15pp.
- D.67 'Applications of recent advances in nuclear physics to medicine' by Mitchell, 14 November 1945, 20pp.

- D.68-D.71 Contents of Mitchell's folder: miscellaneous typescript and manuscript notes, papers, correspondence etc., various dates, 1944-46, but most dated November 1945.
- D.68 Includes memorandum to J.D. Cockcroft from Mitchell re 'Subjects of medical importance recommended for release and publication', 29 November 1945, referring to declassification of wartime reports, list of 'Documents for Dr Mitchell', 12 December 1945, and lists of papers sent to Mitchell 29 December 1945 and 15 January 1946.
- D.69 Includes 'Biological effects of high doses [of radiation]', 4pp typescript, and invitation to contribute to Symposium on Nucleic Acid organised by the Society for Experimental Biology (see also G.1).
- D.70 Correspondence, October-November 1945; manuscript note by Mitchell on 'Meeting with Dr K. Williams on 2 April 46 at 12 noon in Addenbrooke's Hospital'.
- D.71 Photocopy of 'Biochemistry at Chalk River' by A.M. Marko, G.C. Butler and D.K. Myers, *Bulletin of the Canadian Biochemical Society* 23 (1986), 11-19. Sent to Mitchell by Myers as it includes a note on Mitchell's work at Chalk River 1944-45 on p.14.
- D.72-D.86 'HAZARDS'. Contents of Mitchell's box so labelled. The material was found in folders with subject titles inscribed thereon and these titles are reproduced in the catalogue entries. Where appropriate Mitchell's bulky folders have been subdivided for ease of reference.
- D.72, D.73 'External Irradiation'. 2 folders.
- Includes material re leukaemia, 1945; draft note 'Health precautions in atomic and nuclear physics' by E.S. Shire sent to Mitchell for comment, 6 December 1947; letter from D.H. Wilkinson, 19 October 1950, re exposure to irradiation of workers in the Cavendish Laboratory.
- D.74-D.77 'Fall out'. 4 folders.
- Reprints etc.

- D.78-D.80 'Genetic effects'. 3 folders.
- D.78 Includes 'Preliminary Note on Tolerance for Total Body Gamma Irradiation' by Mitchell, HI-11, 18 September 1945; abstract from HI-18, November 1945.
- D.79 'Genetic effects of radioactive pollution' by T.C. Carter, 1958; material re work of L.B. and W.L. Russell.
- D.80 Medical Research Council papers including material for Experimental Genetics Committee, 1958, 1960.
- D.81 'Protection'.
Reprints
- D.82 'Statistics'.
Manuscript and typescript notes.
- D.83-D.86 'Various Reprints'. 4 folders.
- D.87-D.90 'Hazards'. Contents of Mitchell's folder so inscribed divided into four for ease of reference.
- D.87 Ministry of Supply Health Subcommittee Memorandum SCH-11 'The problem of clinical tests for the early detection of permanent radiation damage' by Mitchell, 1946; manuscript notes.
- D.88 'Applications of recent advances in nuclear physics to radiotherapeutics' by Mitchell, 4pp typescript, 6 October 1947; duplicated typescript notes on 'informal discussion of the radioiodine treatment of thyroid carcinoma ...', heavily annotated by Mitchell.
- D.89 Correspondence and papers, various dates, 1956-66.

- D.90 Manuscript and typescript notes.
- D.91-D.93 'Hazards: Genetic effects'. Contents of Mitchell's folder so inscribed divided into three for ease of reference.
- D.91 Ministry of Supply Tolerance Dose Committee papers 'The inapplicability of Brues Law for the incidence of sarcoma in the tolerance range' and 'The tolerance amount of Ra, Sr and Pu in the human body' by K. Fuchs, 1948.
- D.92 Includes 'Presentation by Dr Failla Median Lethal Dose for Men exposed in a radioactive fall-out field' prepared for the Tripartite Conference, 1956, sent to Mitchell for comment; letter from E.E. Pochin *re* meeting to 'discuss the pathological effects likely to result from bone concentrations of radiostrontium', 24 October 1957, heavily annotated by Mitchell.
- D.93 Miscellaneous notes and papers, c.1955-59.
- D.94 Memorandum to J.D. Cockcroft from J. Thewlis, 13 March 1946, outlining 'X-Ray work at Harwell'; 'Simultaneous treatment of malignant neoplasms by means of "short waves" and X or Y radiation' by G.R. Newbery, 6pp typescript, 26 February 1946; 'Dosage measurements on two MeV x-rays' by A.J. Cipriani and W.V. Mayneord, 27 May 1946; manuscript notes, May, July 1946; etc.
- D.95 Typescript notes of meetings, September and November 1946, to discuss the measurement of radiation in bone and tissue.
- D.96 Manuscript notes, dated '25.10.46', of meeting on radioactive hazards; other manuscript notes found therewith, first sheet, on 'Fibre proteins', annotated 'K. Bailey'.
- D.97 'A course in nuclear physics, 1946'. Photostat of lecture course paginated 1-77 and stamped 'Directorate of Atomic Energy ...', retained in original binder.

- D.98-D.104 Material *re* the sterilisation of foodstuffs and medicaments by radiation.
- In December 1946 Sir Wallace Akers, Research Director of ICI, asked Mitchell for his views on an American report on the sterilisation of foodstuffs by electron bombardment. Mitchell replied 'The presentation is poor and the biological work not very convincing but I think the underlying idea is right'. He recommended further investigation offering to advise on any experimental work necessary. ICI subsequently decided not to pursue this but research was taken up at the Low Temperature Research Station (LTRS) at Cambridge. Mitchell felt 'this whole question of sterilisation of foodstuffs by radiation should be considered in this country because I gather indirectly that a number of American commercial firms are interested in it'. An informal group was established, of which Mitchell was a member, to support such research.
- D.98 Correspondence, 1946-48. Includes 'Sterilisation by low dose of x-rays' by S.W. Bogyo sent to Mitchell for comment.
- D.99 Correspondence and papers *re* 2nd and 3rd meetings of the informal group, 19 December 1950 and 13 December 1951.
- D.100 Correspondence with MRC *re* current position of research into sterilisation of foodstuffs by radiation, December 1951; minutes of meeting to discuss the electronic sterilisation of pharmaceutical products, 30 April 1952; etc.
- D.101 Papers for MRC informal conference on the Electronic Sterilisation of Medicaments and Foods, 9 February 1953. Mitchell was unable to attend.
- D.102 Correspondence and papers, 1954-57. Includes general correspondence with colleagues at LTRS *re* Cobalt-60 Source used by the LTRS for work on sterilising food and medicines.
- D.103 Correspondence and papers for LTRS Symposium on Radiation Processing of Foods, 26-27 September 1957. Mitchell was unable to attend.
- D.104 Correspondence with colleagues at LTRS, 1957-60, chiefly *re* improvements to and ownership of the Cobalt-60 Source.

- D.105-D.122 Material *re* dosimetry.
- D.105-D.108 Contents of Mitchell's folder divided into four for ease of reference.
- D.105 'Radioactivity Units and Standards' by R.D. Evans, 15 April 1947.
- D.106 'Calorimetric measurement of the energy released in a one range Uranium cyclotron target by 189-MeV deuterons' by R.M. Horning *et al*, Livermore Research Laboratory, December 1953.
- D.107 Manuscript and typescript notes. Includes 'Memorandum by Dr L.H. Gray on:- The adoption of the Rad by radiotherapy departments' sent to Mitchell for comment, 3 February 1955, and pages of typescript draft on units of measurement of radiation (possibly part of draft at D.116).
- D.108 Memoranda by G.R. Newbery, Radiotherapeutic Research Unit, London, *re* use of the neutron beam from the MRC Cyclotron; sent to Mitchell prior to discussion, 14 June 1955.
- D.109-D.122 Contents of Mitchell's folder divided into fourteen for ease of reference.
- D.109 Typescript ?extract from 'Cosmic-ray induced fission' by D.K. Froman *et al*, declassified 20 June 1947; US National Bureau of Standards report 'The problem of radiation dosimetry in the multimillion-volt energy range' sent to Mitchell for comment 29 August 1947; typescript draft on radiotherapeutic possibilities of radiophosphorus and radioiodine by Mitchell, 10 September 1947 (first page missing).
- D.110-D.112 US Atomic Energy Commission report 'Ionization chamber studies of energy transfer from 100 MeV neutrons to light nuclei' by R. Loevinger, 21 October 1947. 3 folders.
- D.113 Manuscript notes etc., some dated December 1949, November and December 1950.

- D.114 National Bureau of Standards reports 'Penetration and diffusion of X rays Mathematical techniques' by L.V. Spencer, 3 March 1951, and 'The distribution of linear energy transfer or "ion density" for fast neutrons in water' by J.W. Boag, 15 November 1953.
- D.115 US Naval School of Aviation Medicine Research Reports 'Graphs and tables for the hit frequencies from heavy nuclei of the primary cosmic radiation', 4 August 1954 and 11 February 1955.
- D.116 'Some aspects of radiation dosimetry' by Mitchell, incomplete typescript draft paginated 1-4 with extensive manuscript correction and annotation. This may be the first part of the draft at D.107.
- D.117 Circuit diagrams; instructions for use of potentiometer.
- D.118-D.122 Miscellaneous manuscript and typescript notes. 5 folders.
- D.123-D.128 Material on fast and thermal neutrons.
- D.123 'Preliminary considerations on the energy distribution due to a flux of fast neutrons' by R.K. Appleyard, 21 April 1947, 8pp manuscript; comments by D. Lee on draft by Mitchell 'The provisional calculation of the tolerance flux for fast neutrons', 3 May (with draft and manuscript calculations found attached; letter from K. Chackett and G.R. Martin *re* the published paper; 'Note on visit to Prof. Mitchell ... Cambridge on 7th October by Dr J.W.J. Fay and Dr E.D. Dyson' *re* the use of photographic films for personnel monitoring.
- D.124, D.125 Typescript and manuscript notes, 1947. 2 folders.
- D.126, D.127 'Biological effects of fast neutrons'. Contents of Mitchell's folder so inscribed divided into two for ease of reference.
- D.126 'Preliminary draft of report of Subcommittee on Permissible External Exposure of [US] National Committee on Radiation Protection' by G. Failla, September 1949; manuscript note 'Average energy loss per collision by fast neutrons' by Mitchell.

- D.127 Letter to J.W. Boag, 26 March 1952, enclosing 'Tolerance levels for fast and thermal neutrons', 10pp typescript plus references (*Bibliog.* 40); letter to A Citron, 20 April 1953, advising 'on tolerances in connection with shielding of high energy machines'; manuscript notes etc.
- D.128 'Proposed program for computing the REM dose due to irradiation by fast neutrons' by W.S. Snyder and J. Neufeld to be submitted to the National Bureau of Standard's Subcommittee on Heavy Particles. Sent to Mitchell for comment, 1 March 1955. Folder also includes 'Maximum permissible neutron flux for fast and thermal neutrons' by Snyder and Neufeld found with it.
- D.129 'The biological basis of maximum permissible exposures for workers in the field of atomic energy' by G.C. Butler, Canadian National Research Council Atomic Energy Project, 20 August 1947.
- D.130 Manuscript notes, not in Mitchell's hand, dated 1948; manuscript calculation by Mitchell dated 16 May 1948.
- D.131, D.132 'Biochemical effects of radiation'. Contents of Mitchell's envelope so inscribed divided into two for ease of reference.
- D.131 Note from E.E. Pochin of 'meeting on radiostrontium at the Medical Research Council on September 30th 1957'; 'Changes in the urinary excretion of β -amino-isobutyric acid after irradiation', 12pp typescript plus abstract and figures, latest bibliographical reference 1963.
- D.132 Manuscript and typescript notes.
- D.133, D.134 'Mechanisms of action'. Contents of Mitchell's folder so inscribed divided into two for ease of reference: manuscript and typescript notes. Latest bibliographical reference 1963 but includes much earlier material.
- D.135 Manuscript notes on treatment of overexposure to radiation; material on dangers of exposure to radon. Nd.

- D.136 Notes on 'Discussion with Dr Charles' *re* 'production of genetic effects in mice by means of one MV X radiation', nd; 'The radiation chemistry of systems of biological interest', 3pp typescript, nd.
- D.137 Manuscript notes, nd.
- D.138-D.144 Mitchell's selection of his own most important papers on atomic energy and radio-cobalt in radiotherapy.
- D.138 'Notes on Visit to Rochester (March 14-16, 1945) by J.S. Mitchell', 12 April 1945, HI-4.
- D.139 'Visit to Chicago, 18-19 April, 1945. Notes by J.S. Mitchell'. 1 June 1945, HI-6.
- D.140 'Applications of recent advances in nuclear physics to medicine', 14 November 1945, HI-15.
- D.141 'Memorandum on some aspects of the biological action of radiations, with especial reference to tolerance problems', 20 November 1945, HI-17.
- D.142 'Notes on visit to Rochester (9th-10th November, 1945)', 19 November 1945, HI-18.
- D.143 'Provisional calculation of the tolerance flux of fast neutrons', 4pp typescript plus tables with manuscript correction, 1947.
- D.144 'Notes for speech at presentation of portrait at Dr Harry Richard's house on 6th March 1977 Sunday am' beginning 'I would like to say a few words about the "Idea" - which was the proposal to use ⁶⁰Co in radiotherapy and how this arose'. 2pp typescript with manuscript correction.

CANCER RESEARCH

D.145-D.205	General and miscellaneous
D.206-D.308	Radiosensitising drugs
D.309-D.394	Radioactive drugs
D.395-D.535	Treatment of cancers
D.536-D.595	Patient records and case notes

General and miscellaneous

D.145, D.146	'Radioisotopes older work'. Contents of Mitchell's folder so inscribed divided into two for ease of reference.
D.145	'Therapeutic possibilities of radio-phosphorus' by Mitchell, 4pp typescript, 27 December 1946, <i>Bibliog.</i> 27 (1947), with manuscript notes found with it; 'Note on therapeutic applications of radioactive isotopes' by Mitchell, 5pp typescript, 10 September 1947; 'Revised draft statement Radioactive isotopes for therapeutic investigations' by Mitchell, prepared for the MRC's Committee on the Medical and Biological Applications of Nuclear Physics Clinical Sub-committee, 21 January 1948 (see F.256); etc.
D.146	'6th Lecture [...] 21.11.50' on 'radioactive isotopes in radiotherapy' by Mitchell, 15pp typescript; '1st draft' of introduction to dissertation on dosimetry of I ¹³¹ , 5pp typescript, latest bibliographical reference 1955; etc.
D.147	Material re clinical use of radioactive isotopes. Includes 'Caution in the clinical use of radioactive isotopes especially radiophosphorus' by Mitchell, 2pp typescript, latest bibliographical reference 1947; letter from K. Fuchs re I ¹²⁹ , 21 June 1948.
D.148	'MRC synchrotron physical investigations. Notes on a visit to T.R.E. Malvern July 12th-23rd 1948' by D.J. Allen-Williams.
D.149-D.153	Contents of Mitchell's folder divided into five for ease of reference.

- D.149 Copy of 'Total cross sections of nuclei for 280 MeV neutrons-I' by R. Fox *et al*, University of California Radiation Laboratory, 26 January 1950; typescript tables of methods and results of treatment of cancers, c.1951.
- D.150 Includes 'Report of work by L. Burkinshaw, Sept. 1952 - Sept. 1953', 13pp typescript.
- D.151 Incomplete typescript text of lecture on treatment of tumours, paginated 21-41.
- D.152 Photographs for slides for the above.
- D.153 Manuscript and typescript notes on radioisotopes.
- D.154-D.156 'Radioactive isotopes'. Contents of Mitchell's folder so inscribed divided into three for ease of reference: miscellaneous manuscript and typescript notes etc., c.1950-58.
- D.157 Correspondence, September-November 1951, *re* supply of C¹⁴-labelled adenine to Mitchell by the Sloan-Kettering Institute, New York.
- D.158 Manuscript notes *re* Victoreen chamber, used to measure synchrotron dose, 1952. Also includes photographic negatives and x-rays found with the notes.
- D.159-D.162 'General radiotherapy and problems of malignant growth'. Contents of Mitchell's folder so inscribed divided into four for ease of reference.
- D.159 'The concentration of substances in tumours', 8pp typescript and manuscript draft, latest bibliographical reference 1952.
- D.160 'Director's visit to US and Canada, March 1952 Part 14 - Treatment of brain tumours with Pile neutrons' by J.D. Cockcroft, 1p typescript; manuscript notes, 1955.

- D.161 'Report on the visit of Dr V.B. Levison to the Radiumhemmet August/September 1968', 22pp duplicated typescript.
- D.162 Manuscript and typescript notes, various dates 1961-69.
- D.163 'Relative biological efficiency of pulsed 30 MeV X-rays and Ir¹⁹² gamma rays' by Mitchell, 2pp abstract on work of K.C. Bora, latest bibliographical reference 1953; letter to Mitchell from J.L. Haybittle, 27 July 1954, enclosing his 'Annual Report'; miscellaneous material re Ir¹⁹².
- D.164-D.168 'Cancer chemotherapy'. Contents of Mitchell's folder so inscribed divided into five for ease of reference.
- D.164 'The reaction of substituted maleimides with thiols' by D.H. Marrian, 11pp typescript, c.1955; manuscript and typescript notes found therewith.
- D.165 Minutes of meetings of American Cancer Society Committee to study the Problem of Cancer Quackery, June and November 1955.
- D.166, D.167 Papers from International Union Against Cancer symposium on Chemotherapy of Cancer, Oslo, 21-25 May 1956. 2 folders. See F.140-F.145.
- D.168 Manuscript tables of 'Chemotherapeutic agents', 1958, and 'Some carcino-chemotherapeutic agents', 1971.
- D.169 'The x- and γ irradiation of ferrous sulphate in dilute aqueous solution' by J.L. Haybittle *et al*, 15pp typescript plus references etc. Latest bibliographical reference 1955.
- D.170 'Various therapeutic methods'. Contents of Mitchell's folder so inscribed: 'Oxygenation in radiotherapy results of treatment December 1956' by I. Churchill-Davidson *et al*; manuscript notes.
- D.171 'High-pressure oxygen and radiotherapy Results of treatment' by I. Churchill-Davidson *et al*, July 1958.

- D.172 'High-pressure oxygen and radiotherapy Results of treatment' by Churchill-Davidson *et al*, July 1962.
- D.173 'High-pressure oxygen and radiotherapy Results of treatment of cases treated on new unit from June, 1959' by Churchill-Davidson *et al*, July 1962.
- D.174 Contents of Mitchell's folder: manuscript and typescript notes. Includes letter *re* cobalt sources, 5 September 1960, and typescript tables of information on radioactive isotopes, c.1960.
- D.175 Manuscript data from experiments with co-enzyme Q10 on monolayer cultures, 1961-62. Not in Mitchell's hand.
- D.175A Clinical trial of anti-sickness drugs in radiotherapy.

Duplicated typescript results of pilot trial and protocol for second trial, 1 May 1962; results of second trial and protocol for third trial, July 1964.
- D.176 'Summary of recent work' by G. DiVita, 10pp typescript with manuscript annotation by Mitchell, 11 May 1964. See C.50.
- D.177 '5th-9th September 1966 Comments on culture work at Homburg' by P.P. Dendy, 5pp typescript.
- D.178 Questionnaire on 'The medical uses of low energy (5-50kV) x-rays in the United Kingdom' completed by J.L. Haybittle for the Radiotherapeutic Centre, with brief correspondence arising, 1969.
- D.179-D.182 'Cancer Chemotherapy'. Contents of Mitchell's folder so inscribed divided into four for ease of reference.
- D.179, D.180 Material *re* work of P.P. Dendy and others in the Department of Radiotherapeutics, 1969-72. 2 folders.
- D.181, D.182 Manuscript notes and bibliographical references, c.1974-75. 2 folders.

- D.183 Proposals and draft protocols for clinical trials using the linear accelerator MEL SL 75-20, dated '31.10.74'.
- D.184 'Progress Report on Project RAD 5 "In vitro assays of tumour cell sensitivity to cytotoxic drugs" ' by Mitchell, 3pp typescript, 14 August 1974; manuscript notes of meetings found with it.
- D.185 Contents of Mitchell's folder: miscellaneous material chiefly *re* radiation dosages, latest reference 1976.
- D.186 Papers for meetings of the MRC Working Party on Radiotherapy and High-Tension for Hyperbaric Oxygen, 1976-77, sent to Mitchell for reference and comment.
- D.187-D.189 Contents of Mitchell's folder divided into three for ease of reference.
- D.187, D.188 Unidentified graphs and data, August-November 1977. 2 folders.
- D.189 'Line Sources Measured 31.10.77 & template'. Photographs.
- D.190 'Biochemical and molecular biological effects of radioactive and chemotherapeutic agents'. Contents of Mitchell's folder so inscribed: manuscript notes, 1979.
- D.191 Mitchell's manuscript notes on meetings with P.P. Dendy to discuss research, 1983-84.
- D.192-D.195 Miscellaneous manuscript and typescript notes, 1979-85, nd.
- | | |
|-----------------|--------------|
| D.192 1979-81 | D.194 1985 |
| D.193 1982-84 | D.195 Nd |
- D.196 Notes removed from Mitchell's copy of his book *Studies in Radiotherapeutics* (Oxford, 1960).

- D.197-D.200 Manuscript notes on the literature, 1983-85. 4 folders.
- D.201 Print-outs from literature searches on 'alkaline phosphatase and neoplastic disease' and 'malignant disease in pigeons', undertaken for Mitchell, May 1983.
- D.202-D.205 'List of reprints sent for and copied'. Contents of Mitchell's folder so labelled divided into four for ease of reference.

Radiosensitising drugs

- D.206-D.216 'Synkavit'. Contents of Mitchell's box so inscribed divided into eleven for ease of reference.
- D.206 'Combination of some effects of x-radiation and a synthetic vitamin k' by Mitchell and I. Simon-Reuss, 5pp manuscript (*Bibliog.* 30, 1947); miscellaneous material found therewith.
- D.207 'Chemotherapy of multiple myelomatosis' by Mitchell, 3pp manuscript and 3pp typescript drafts plus references, 4 September 1947 (*Bibliog.* 32); material found therewith.
- D.208 'Clinical trials of tetra-sodium 2-methyl-1:4 naphthohydroquinone diphosphate, in conjunction with X-ray therapy' by Mitchell, 16pp typescript plus summary and references, 27 August 1948, 'Revised 20.9.48' (*Bibliog.* 35); etc.
- D.209 Typescript and manuscript tables, notes and correspondence on results of experiments with radiosensitisers, including synkavit, 1958.
- D.210, D.211 Miscellaneous notes, pages of drafts, calculations etc. 2 folders.
- D.212-D.215 Patient notes, 1946-48. 4 folders.

- D.216 Index cards of patient notes, 1947-48.
- D.217, D.218 'Current Expts Synkavit'. Contents of envelope so inscribed divided into two for ease of reference.
- D.217 Correspondence, 1949-50, *re* synkavit; 1950 'Annual Report to the British Empire Cancer Campaign' of the Department of Radiotherapeutics; manuscript notes, graphs etc.
- D.218 Abstracts of eight cases treated with synkavit, sent to Mitchell 1949.
- D.219-D.225 'Radiosensitive chemicals and tissue cultures'. Contents of Mitchell's folder so inscribed divided into seven for ease of reference: data from experiments with radiosensitisers; manuscript and typescript notes, graphs etc. 1949-57.
- D.226 Correspondence *re* results of clinical trial on carcinoma of the bronchus, 1950-51.
- This trial compared the results of treatment by x-rays only, with treatment by x-rays and synkavit.
- D.227 Duplicated typescript results of treatment by intra-venous and intra-muscular administered synkavit, April 1951 - December 1952.
- D.228 'Concentration of tetra-sodium 2-methyl-1:4-naphthohydroquinone diphosphate [synkavit] in the Walker rat carcinoma 256, and normal rat tissues', 'Revised 18.11.51'.
- D.229-D.232 Contents of Mitchell's folder divided into four for ease of reference.
- D.229 'Further clinical trials of tetra-sodium 2-methyl-1:4-naphthohydroquinone diphosphate in conjunction with x-ray therapy in inoperable cases of carcinoma of the bronchus' by Mitchell, 14pp typescript, latest bibliographical reference 1951.

- D.230 'Factors which influence radiosensitivity' 6pp typescript, latest reference 1951.
- Includes reference to bronchus trials carried out by Mitchell.
- D.231, D.232 Manuscript notes, tables, calculations. Various dates 1949-66. 2 folders.
- D.233-D.237 Data from experiments, 1952-53, possibly on effects of synkavit on rats with and without doses of ionising radiation. 5 folders.
- D.238-D.241 Similar data to preceding, 1953-54. 4 folders.
- D.242-D.244 'Synkavit'. Contents of Mitchell's folder so inscribed divided into three for ease of reference: data from experiments with synkavit and 2-ethylenimino-1:4-naphthoquinone, 1952, 1954.
- D.245 Typescript and duplicated typescript material *re* trials of synkavit, 1952-53 and *nd*.
- D.246 Letter from B. Jolles, Radiotherapy Department Northampton General Hospital, 16 May 1953, enclosing 'graphs relating to experiments with rabbits and rats' with synkavit and whole-body irradiation.
- D.247 'Clinical therapeutic trial of a radiosensitiser Summary of results'. Results assessed 31 May 1953.
- D.248-D.255 'Pilot trial Feb 1954 Clinical trials of oxygen and synkavit with randomised allocation'. Contents of Mitchell's box so inscribed divided into eight for ease of reference.
- This trial compared results of treatment of patients by x-ray therapy and intramuscular synkavit, x-rays and intravenous synkavit, x-rays and oxygen, and x-rays and intravenous synkavit and oxygen.
- D.248 Protocol for trial; miscellaneous notes.

- D.249-D.255 Patient notes.
- D.249 X-ray therapy with intravenous synkavit.
- D.250, D.251 X-ray therapy with intramuscular synkavit. 2 folders.
- D.252, D.253 X-ray therapy with oxygen. 2 folders.
- D.254, D.255 X-ray therapy with oxygen and intravenous synkavit. 2 folders.
- D.256 'Clinical therapeutic trial of compound I as a radiosensitiser Summary of results to 18th December, 1954'. Typescript tables.
- D.257 Data re prolongation of life from cases treated with x-rays and intravenous or intramuscular synkavit. Latest reference 1954.
- D.258, D.259 Contents of Mitchell's folder divided into two for ease of reference: data from experiments on rats with 2-ethylenimino-1:4-naphthoquinone, 1954.
- D.260-D.266 Material re work of E. Friedmann, 1954-58.
- D.260, D.261 Contents of Mitchell's envelope divided into two for ease of reference.
- D.260 Letter from E. Friedmann about his work, 1954; correspondence between Friedmann and R. Meier of CIBA, 1955; manuscript notes.
- D.261 'Biological implications suggested by the study of the effect of x-rays on the naphthoquinone (or unsaturated imide)-SH reaction' by Friedmann, 11pp typescript; 15pp typescript draft beginning 'Die Hemmung der Mitose durch Chinone ist von E. Lehmann bei der Untersuchung von Tubifex Eiern entdeckt worden'.

- D.262-D.266 'Ernst Friedmann'. Contents of Mitchell's folder so inscribed divided into five for ease of reference.
- D.262 'Annual Report' on the 'investigation of the interaction of sulphydryl compounds with quinones and their derivatives' by Friedmann, 1956.
- D.263, D.264 Manuscript and typescript notes *re* the effect of adenosine triphosphate and D-methionine on mitotic inhibition by quinones. 2 folders.
- D.265 Manuscript data from experiments, 1955-56, ?1958.
- D.266 Bibliographical references and notes on the literature.
- D.267 Letter from D.R. Maxwell, 9 March 1955, enclosing 'the results of the C-14 Synkavit experiments'.
- D.268 Typescript results of treatment of bronchial cancer by x-ray therapy with and without synkavit. 'Reclassification 30.12.55'.
- D.269-D.271 Manuscript data from experiments, 1955-56. 3 folders.
- D.272 Protocol for 'Clinical trial of compound XIV ... Comparison of Compound XIV and Synkavit as radiosensitizers in the treatment of inoperable carcinoma of the bronchus with randomized allocation'. 24 February 1956. Also includes manuscript note *re* trial.
- D.273 'Radiosensitisers & radio-active incorporation'. Contents of Mitchell's envelope so inscribed: chiefly material *re* hydroquinones, 1956-57.
- D.274 Protocol for 'Clinical trial of compound XXVIII: a comparison of compound XXVIII and Synkavit as radiosensitisers in the treatment of inoperable carcinoma of the bronchus with randomised allocation'. The trial began 21 January 1957.

- D.275-D.278 'Clinical therapeutic trial of compound I as a radiosensitiser Summary of cases'. Typescript results assessed October 1957. 4 folders.
- D.279 'Pilot trial of the combination of compound I, oxygen inhaled at atmospheric pressure and x-ray therapy [...] in the treatment of patients with certain types of advanced and recurrent malignant tumours'.

Typescript results, December 1957 and January 1958.
- D.280 Typescript results of experiments with radiosensitisers, with material found with them, 1957-58.
- D.281 Case reports on treatment of dogs and cats by synkavit and x-rays, c.1957-61; photographs.
- D.282 Protocol for 'Clinical trial of radiosensitisers in the treatment of inoperable carcinoma of the bronchus' (trial begun 11 February 1958); 'Interim Report', results obtained to June 1960; 'Second interim report', results obtained to 30 November 1962.
- D.283 Protocols for 'Clinical trials of oxygen inhaled at atmospheric pressure, intravenous synkavit and intravenous compound XXVIII in the treatment of inoperable cases of carcinoma of the bronchus'. The trial began 11 February 1958.
- D.284 'Annual report 1959-60 - Tissue culture' by I. Simon-Reuss, 4pp typescript plus data.
- D.285, D.286 Contents of Mitchell's envelope divided into two for ease of reference.
- D.285 Exchange with O.C.A. Scott *re* synergistic effect of synkavit, March-April 1960; calculations and notes *re* 'Importance of penetration of compounds into cells + distribution within cells'.
- D.286 Miscellaneous notes.

- D.287 'Evaluation of synkavit sensitised radiation therapy in the treatment of radio-resistant and oral carcinomas' by V. Shanta and S. Krishnamurthi, 6pp typescript, latest bibliographical reference 1961. With comments on the paper by J.L. Haybittle.
- D.288 'Instructions for the intravenous injection of synkavit', 1p typescript, 6 February 1962; 'Non-surgical treatment of bronchial carcinoma' by Mitchell, 2pp typescript plus figure, 21 June 1963; copy of letter from J.L. Haybittle re survival rates, c.1963.
- D.289 'Results of bronchus trial to date', 6pp typescript plus figures, sent to Mitchell by Haybittle, 23 March 1964; data from trial '22.7.64'; 'Bronchus trial reassessed on 1.1.65', 3pp manuscript.
- D.290-D.293 'Radiation protection and sensitisation'. Contents of Mitchell's folder so inscribed divided into four for ease of reference.
- D.290 Correspondence and papers, 1967, 1970, 1971.
- D.291 List of patients, sent to Mitchell August 1970.
- D.292 Data from experiments on rats with TRQ 348, May 1973.
- D.293 'Clinical trials of radiosensitizers and fractionation' by Mitchell, 3pp typescript plus references, *Biblog.* 96 (1973); manuscript notes etc.
- D.294-D.303 'Dr Ladner Pyridoxal-5-Phosphate Expts 3-11'. Contents of Mitchell's folder so inscribed divided into five for ease of reference. H.-A. Ladner was studying the effects of this compound on growth and radiosensitivity of Walker rat carcinoma. See also H.200, H.201.
- D.294-D.297 Manuscript data from experiments on rats, 1968-70. 4 folders.
- D.298 Final 'Results of the pyridoxal-5-P' series sent to Ladner, 1 September 1970.

- D.299-D.303 'Prof Ladner's expts'. Contents of envelope so inscribed divided into five for ease of reference.
- D.299 'Das Verhalten einiger B-Vitamine beim Karzinompatienten während der Strahlentherapie I. Zur Vitamin-B₆-Rolle bei der Lokalbestrahlung von Tumorratten' by Mitchell, Ladner, E.A. King and R. Weisselberg, 10pp typescript plus references. *Bibliog.* 105 (1979).
- D.300, D.301 'Zur Vitamin-B₆-Rolle beim bestrahlten Tumorträger' by Mitchell, Ladner and King. Manuscript and typescript drafts. 2 folders.
- D.302 Untitled 13pp typescript draft beginning 'Trotz der grossen Fortschritte, die bisher bei der Behandlung des Krebses mit energiereichen ionisierenden Strahlen erzielt wurden, müssen für die Strahlentherapie neue Wege gesucht werden'.
- D.303 Miscellaneous manuscript and typescript notes, drafts etc.
- D.304 'Revised draft' 21 June 1972 and 'Further revision' 6 April 1973 of trial of radiosensitisers in radiotherapy with large dose fractions. The trial began 3 January 1972.
- D.305-D.307 'Radioprotecting substances and chemical radiosensitisers'. Contents of Mitchell's envelope so inscribed divided into three for ease of reference: manuscript notes etc., c.1972-76.
- D.308 Untitled 5pp typescript draft *re* experiment with synkavit on mitosis in tissue with and without irradiation. Nd.

Radioactive drugs

- D.309 Data from experiments with tritiated synkavit, February and June 1958; '13.5.59 Plans for trials of tritiated synkavit'.

- D.310 Untitled 3pp manuscript draft beginning 'This paper gives a preliminary account of a new way of treating some human malignancies', not in Mitchell's hand though reporting on work carried out by him at Cambridge. Latest bibliographical reference 1958.
- D.311 Data from experiments on rat tissue and organs, April 1959.
- D.312-D.319 'Tritiated synkavit'. Contents of Mitchell's folder so inscribed divided into eight for ease of reference.
- D.312-D.316 Duplicated typescript notes of meetings 'to discuss arrangements for investigation of tritiated synkavit and other tritiated drugs, e.g., tritiated thymidine' held in the Radiotherapeutic Centre, Cambridge, October 1959 - October 1962. 5 folders.
- D.317 Minutes of meeting of 'the tritium group', 4 June 1962; Notes of meeting on 'Plans for the investigation of TRK 219', 12 May 1964.
- D.318 Correspondence *re* provision of TRA 119 for research, 1963.
- D.319 Miscellaneous correspondence and papers, 1959-66.
- D.320 Miscellaneous material *re* tritiated synkavit, 1960, 1962.
- D.321 Patent specifications filed by D.H. Marrian (Cambridge) and E.A. Evans (Radiochemical Centre, Amersham).

 'Production of tritiated "Synkavit" by dehalogenation of the 6-iodo compound with tritium gas', 10 February 1961; 'Preparation and purification of tri-tritiated synkavit', 14 September 1962; 'Novel Naphthaquinols and a Process for the Manufacture thereof', 25 September 1963.
- D.322 'The development of radioactive drugs, with special reference to tritiated drugs as radiotherapeutic agents' by Mitchell, 'Report submitted to the Medical Research Council [...] 14 May 1962'. 11pp typescript with manuscript additions interleaved.

- D.323 Typescript data from experiments on shelflife and uptake by cells of TRA 72 and TRA 119, October-November 1963.
- D.324 Typescript data from experiments on shelflife and uptake by cells of TRA 72 and TRA 119, December 1963; Radiochemical Centre 'Report on In Vitro studies on the uptake of TRA 72 and TRA 119 by malignant and normal cells' sent to Mitchell 11 December 1963.
- D.325 Data from experiments with TRA 119 on rats, 1963-64.
- D.326 'Excretion of tritium after injections of tritiated drugs', report on work carried out in Cambridge Department of Radiotherapeutics, 1963. 17pp typescript plus tables and figure.
- D.327-D.346 'TRK'. Contents of Mitchell's box so inscribed divided into twenty for ease of reference.
- D.327 Letter from Radiochemical Centre, Amersham, *re* 'problem of erratic biological activity of tritium-labelled "Synkavit" ', 28 August 1963; 'report of a meeting at [...] Department of Radiotherapeutics, 16th January, 1964 ... to discuss the latest developments with TRA 72 and TRA 119'; etc.
- D.328 'Distribution of tritium in tissues of patients treated with tritiated drugs' by B. Chipperfield, 18pp typescript plus tables and figures, sent to Mitchell for comment, 17 January 1964; 'Stability of tetrasodium 2-methyl-1, 4-naphthaquinol diphosphate labelled with tritium' by E.A. Evans, 3pp typescript, 17 May 1965.
- D.329 Correspondence with R.Y. Calne, August 1966, *re* possibility of collaboration in work on development of a radioactive drug for the treatment of carcinoma of the gastro-intestinal tract.
- D.330-D.335 Batch details from tritiated synkavit supplied by the Radiochemical Centre, some annotated by Mitchell.
- D.330 TRA 119, 1963-65.

- D.331-D.334 TRK 219, 1964-70. 4 folders.
- D.335 TRK 397 and others, 1970-75.
- D.336-D.346 Patient notes, 1959-67. 11 folders.
- D.347 Departmental memoranda on investigation of TRK 219, July 1964.
- D.348-D.350 'TRK and synkavit recent 1965'. Contents of Mitchell's envelope so inscribed divided into three for ease of reference.
- D.348 Correspondence, various dates 1955-65; introduction to 'An attempt to develop a radioactive drug for cancer chemotherapy' by Mitchell *et al*, 5pp typescript (*Bibliog.* 78, 1965); 'Annual Report 1962-63' by B. Chipperfield.
- D.349 'Metabolism of tritiated and ^{14}C -labelled compounds in diagnostic use' by G.P. Howells, paper for MRC Subcommittee on Permissible Levels, 1963.
- D.350 'Studies of the uptake of tritium labelled Mepacrine by tumours' by J.M. Young *et al*, 11pp typescript plus table, c.1965; manuscript notes.
- D.351 'TRK and related problems'. Contents of Mitchell's envelope so inscribed: miscellaneous material chiefly *re* TRK 219, c.1965.
- D.352 Manuscript tables of results of cases treated with tritiated synkavit to 1965.
- D.353 Memorandum on 'Experience with TRK 219 in Dogs and Cats' by I.A. Silver, with copy of data, latest reference 1966; 'Preliminary discussion of clinical trials of the treatment of patients with malignant melanoma Notes of a discussion held on 12th August 1967 ...' dated 10 August; miscellaneous material dated 1968-70.
- D.354 'Memo on reactions to intravenous compounds in the radioactive isotope unit to Professor Mitchell' by J. Stone and K. Szaz, 10pp typescript, 17 April 1969.

- D.355, D.356 'TRK and synkavit and related topics'. Contents of Mitchell's folder so inscribed divided into two for ease of reference.
- D.355 'Diagnostische und therapeutische Anwendungen der radioaktiven Pharmaka in der Tumorbehandlung' by Mitchell, 12pp typescript plus summary and table, *Bibliog.* 91 (1969); 'Radioactive drugs in the treatment and diagnosis of tumours', English version of preceding.
- D.356 Miscellaneous manuscript and typescript material.
- D.357 Data from experiments with 6-I¹³¹-iodo-MNDP on rats and tissue sample, 1970.
- D.358, D.359 Data and manuscript notes from experiments with 6-I¹³¹-iodo-MNDP on rats, 1971. 2 folders.
- D.360 Data and manuscript notes from experiments with TRK 397 on rats, 1971.
- D.361, D.362 Data and manuscript notes from experiments with 6-I¹³¹-iodo-MNDP and TRK 397 on rats, 1972. 2 folders.
- D.363 Data from experiment with TRQ 368 on rats, 19 March 1973.
- D.364 Contents of Mitchell's folder: data from experiments with TRK 397 on rats, 1974, 1975.
- D.365 'JSM Cell cycle exp'. Contents of Mitchell's folder so inscribed: typescript accounts of 'Experiments to show the uptake of Tritiated Thymidine and Tritiated Synkavit in HEp/2 cells at different stages of the cell cycle', October 1975 - April 1976, and 'Continuous labelling with ³H Thymidine Experiment, using HEp/2 telophase pairs', December 1975.

- D.366 'Contribution to Discussion of Paper by Dr S.J. Lukiewicz' by Mitchell, IAEA Coordinated Research Programme on improvement in radiotherapy of cancer using modifiers of radiosensitivity of cells, second meeting, Cambridge, 26-29 November 1979.
- 'The *in vitro* selective concentration of an ^{125}I -iodinated compound in human tumour cells' by Mitchell *et al*, summary for XVth International Congress of Radiology, Brussels, 24 June - 1 July 1981.
- D.367-D.382 Data from experiments with 6- ^{125}I -iodo-MNDP, 1979-81.
- D.367-D.369 Cloning experiments with HEp2 cells, 1979-80. 3 folders.
- D.370-D.382 Uptake experiments with normal and malignant cells, 1979-81. 13 folders.
- D.383 Correspondence with H.A. Moser, 1979-80. Moser, of CIBA, Basel, was sent data from Mitchell's team for evaluation.
- D.384, D.385 Computer print-outs received from Moser; manuscript notes on results supplied by Moser.
- D.386 'Approximate calculation of specific γ -ray constant, c_γ , for ^{211}At . Note by J.S. Mitchell', 4pp typescript, 20 December 1982.
- D.387, D.388 Manuscript notes on experiments with 6- ^{211}At -MNDP on mice, 1982. 2 folders.
- D.389 Reports on work in progress with ^{211}At , 1983.
- D.390 'Clinical studies of therapy with [...] 6- ^{211}At -astato MNDP; a plan for three years work by J.S. Mitchell, I. Brown and R.N. Carpenter (13th March 1985)'. 6pp typescript plus forms for documentation etc.
- Mitchell died in February 1987 before the plan reached fruition. An attached note by Mitchell's secretary explains: 'Professor hoped to have started clinical trials with the new compound being made by him and members of the laboratory but it had not got off the ground at Addenbrooke's and Dr. Brown hoped he might at some stage make arrangements for trials in London.'

- D.391 'Report to the Medical Research Council A. Hodgson Attempts to synthesize tritiated synkavit', 4pp typescript, nd.
- D.392 Manuscript and typescript data from experiments on tritium activity in 'MK' and 'HeLa' cells, nd.
- D.393 Manuscript notes on work on At^- and 'AtCpd', nd.
- D.394 Typescript data on $6\text{-}^{211}\text{At}$ -astato-MNDP, nd.

Treatment of cancers

The material is arranged as follows:

- D.395-D.400 Conduct of clinical trials
- D.401-D.468 Breast cancer
- D.469-D.497 Cervical cancer
- D.498-D.411 Other cancers
- D.512-D.535 Faith Courtauld Cancer Research Unit

Conduct of clinical trials

- D.395, D.396 'Statistics'. Contents of Mitchell's folder so inscribed divided into two for ease of reference: miscellaneous notes, drafts and memoranda re statistical methods of assessing cancer treatment, various dates 1955-68.
- D.397-D.399 'Clinical trials'. Contents of Mitchell's folder so inscribed divided into three for ease of reference.
- D.397 'The estimation of the proportion of patients cured after treatment for cancer of the breast' by J.L. Haybittle, 15pp typescript plus figures, tables and references (photostat), latest bibliographical reference 1959; 'Revised draft of the trial started on 3rd January 1972 Radiotherapeutic Centre [...]'; etc.

- D.398 'The reporting of non-significant results in clinical trials' by J.L. Haybittle, 8pp typescript plus references etc., 1978; 'Significance tests and decision-making in clinical trial applications', 8pp typescript annotated by Mitchell 'discussed 17.1.79 L. Freedman'.
- D.399 Manuscript notes, reprints etc.
- D.400 'Drugs for clinical trial at the Radiotherapeutic Centre Addenbrooke's Hospital, Cambridge', 2pp duplicated typescript with manuscript annotation by Mitchell. Nd.

Breast cancer

- D.401, D.402 'Cancer of breast'. Contents of Mitchell's folder so inscribed divided into two for ease of reference.
- D.401 'Carcinoma breast' by R. McWhirter, 13pp typescript sent to Mitchell 4 February 1948; correspondence with B. McN. Truscott re the staging of carcinoma of the breast, 1950; miscellaneous papers, 1951-54.
- D.402 Manuscript and typescript notes, latest bibliographical reference 1956.
- D.403 'Ca. breast'. Contents of Mitchell's envelope so inscribed: correspondence and papers, 1957-71.
- D.404, D.405 Annual reports on Addenbrooke's Hospital 'clinical trial of treatment of stage II carcinoma of the breast by either radical mastectomy plus x-rays or modified simple mastectomy plus x-rays'. The trial began 1 October 1958.
- D.404 1959-60; 1960-61.
- D.405 1961-62; 1962-63; 1963-64.

- D.406 'The cured group in a series of treated breast cancer patients' by J.L. Haybittle. Letter to *British Journal of Radiology*, 22 May 1968.
- D.407 'Clinical evaluation of ST.272 in the hormone treatment of breast cancer', 3pp typescript, nd; information on ST.272 from Leo Pharmaceutical Products.
- D.408-D.466 King's-Cambridge Breast Trials, 1969-86.
- In 1969 King's College Hospital London and Addenbrooke's Hospital planned a trial on the treatment of 'early' carcinoma of the breast to determine the value of immediate post-operative radiotherapy in combination with simple mastectomy. The trial began on 1 May 1970 and by January 1972 involved over 900 patients. The target of 2000 patients was reached in 1974 and the trial ceased to admit new cases from April 1975. The follow-up was to continue until all treated patients had been observed for 10 years.
- In 1973 it was decided to begin a second trial to test the effectiveness of adjuvant chemotherapy with melphalan and methotrexate in treating 'early' breast cancer. This trial was started in 1975.
- D.408 Replies to preliminary enquiries *re* participation in trial, June-July 1969.
- D.409 Invitation to meeting to discuss the proposed trial, Addenbrooke's Hospital, 27 September 1969, including draft protocol for the trial; lists of those invited; correspondence *re* arrangements.
- D.410-D.416 Correspondence with those invited and other possible participants in the trial, July-October 1969, arranged alphabetically by correspondent.
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| D.410 A-B | D.414 L-M |
| D.411 C-E | D.415 N-S |
| D.412 F-G | D.416 T-Y |
| D.413 H-K | |
- D.417 Annotated programme of meeting; lists of participants.
- D.418 Typescript draft of Mitchell's introductory remarks; manuscript notes taken during meeting.

- D.419-D.421 Typescript transcriptions of proceedings. 3 folders.
- D.422 Correspondence and papers, October-December 1969.
- D.423 Correspondence and papers *re* meeting of Breast Trial working party, 14 January 1970, including drafts of protocol and proforma.
- D.424 Correspondence, April-May 1970; protocol and proforma.
- D.425 Correspondence, June-November 1970.
- D.426, D.427 Correspondence and papers *re* first AGM of the breast trial, Royal College of Surgeons, London, 19 December 1970.
- D.426 Includes list of surgeons, pathologists and radiotherapists involved in the trial.
- D.427 Mitchell's manuscript notes on proceedings; summary of AGM by W.M. Ross.
- D.428 Papers *re* meetings of trial working party, 19 March and 25 June 1971, including first Progress Report.
- D.429 Papers *re* meeting of working party, 4 November 1971; first draft of 'The treatment of "early" cancer of the breast' by M. Baum to be submitted to *The Lancet*; correspondence, October-November 1971.
- D.430 Correspondence and papers *re* second AGM, Royal College of Surgeons,, 11 December 1971.
- D.431 Papers *re* meeting of working party, 21 February 1972; correspondence, March-June 1972; graph of current and projected numbers of patients in the trial.

- D.432 Papers *re* meeting of working party, 13 July 1972; 'Newsletter and Two Year Progress Report August 1972'.
- D.433 'Thirty month Progress Report October, 1972'; correspondence and papers, August-November 1972.
- D.434 Papers *re* meeting of working party, 15 November 1972; 'Thirty three month Progress Report February 1973'; correspondence and papers, January-March 1973.
- D.435 Papers *re* meetings of working party, 7 March and 25 April 1973; correspondence, March 1973.
- D.436 Papers *re* third AGM, Royal College of Surgeons, 31 March 1973.
- D.437 Papers *re* meetings of the working party, 13 July 1973, and the chemotherapy sub-group, 20 June 1973; 'Three Year Progress Report'.
- D.438 'Note on the development of chemical agents of low toxicity as non-specific stimulants of host responses against malignant tumours' by Mitchell, 3pp duplicated typescript, 23 July 1973; '40 month Progress Report'; correspondence and papers, July and November 1973.
- D.439 Papers *re* meetings of working party, 19 November 1973 and 22 January 1974.
- D.440 'Progress Report January, 1974'; papers for meetings of working party and the chemotherapy sub-committee, 20 March; correspondence and papers, January-May.
- D.441 Correspondence and papers *re* meetings of working party, 10 May and 13 June 1974. Includes 'C.R.C. Working Party. Note by J.S. Mitchell', circulated before the meeting of 13 June.
- D.442 Papers *re* fourth AGM, Royal College of Surgeons, 14 June 1974.

- D.443 Correspondence and papers *re* meeting of working party, 11 October 1974.
- This meeting discussed the commencement of the chemotherapy trial and whether or not to end the radiotherapy and surgery trial.
- D.444 'Progress Report November 1974' with Mitchell's manuscript notes; correspondence, November-December 1974.
- D.445 Correspondence and papers *re* meetings of working party, 22 January and 14 April 1975.
- D.446 Papers *re* meeting of working party, 27 June 1975. Includes 'New study of adjuvant chemotherapy in "early" cancer of the breast', annotated by Mitchell.
- D.447 Correspondence, September-October 1975, *re* draft of article 'Management of "early" cancer of the breast: Cancer Research Campaign Study' by J.G. Murray.
- D.448 Correspondence and papers, January-March 1976, chiefly *re* Murray's proposed article and working party meeting, 2 March.
- D.449 Correspondence, April-June 1976, chiefly *re* Murray's article published in the *British Medical Journal*, and the publication in *The Lancet* of a paper by three of Murray's team.
- D.450 Papers *re* meeting of working party, 25 June 1976; correspondence, June 1976.
- D.451 Protocols for chemotherapy trial, June 1976.
- D.452 Correspondence and papers *re* meetings of pathology working party, 22 July and 22 October, and radiotherapy working party, 10 September 1976.
- D.453 Papers *re* AGM, London, 10 December 1976.

- D.454 Correspondence and papers *re* meetings of working parties, 1977.
- D.455 Graphs and tables of results of chemotherapy trial, 1977.
- D.456 Correspondence and papers, 1978, chiefly *re* meetings of working parties, and the AGM, 22 November.
- D.457 Correspondence and papers, January-February 1979, *re* meeting of pathology working party, 2 February and AGM of chemotherapy trial, 14 February.
- D.458 Draft protocol for expansion of the chemotherapy trial sent to Mitchell, 19 February 1979.
- D.459 Correspondence and papers, July 1979 - February 1980. Includes data from trial circulated at working party meeting, 8 November.
- D.460 'First draft of the definite paper' on the results of the trial after ten years prepared by M. Baum, J.L. Haybittle and J. Houghton, sent to Mitchell for comment, 17 January 1980.
- D.461 Correspondence *re* draft papers, March-May 1980.
- D.462 Correspondence and papers, August-October 1980. Includes protocol for new trial of chemotherapy on breast cancer.
- D.463 Correspondence and papers, 1981-82.
- D.464 Draft of 'The Cancer Research Campaign (King's/Cambridge) trial for early breast cancer: an analysis of the radiotherapy data' by D.M. Brinkley *et al*, sent to Mitchell, 24 May 1983.
- D.465 Papers for meeting on '1st Breast Trials update', 8 February 1985.

D.466 Papers for breast cancer trials AGM, 21 March 1986.

D.467, D.468 Miscellaneous material *re* breast cancer. 2 folders.

Cervical cancer

D.469 'Technique used in the treatment of carcinoma of the uterine cervix at Addenbrooke's Hospital, Cambridge, in 1949, 1950 and 1951' by Mitchell, 2pp typescript.

Untitled typescript draft beginning 'The treatment of recurrent cases of carcinoma of the cervix raises many problems', 12pp plus tables. Latest bibliographical reference 1954.

D.470 Miscellaneous manuscript and typescript material *re* treatment of cervical cancer, chiefly dating 1954-58.

D.471-D.480 Papers *re* meetings of members of the gynaecology, radiotherapy and pathology departments of Addenbrooke's Hospital to discuss the treatment of carcinoma of the uterine cervix, corpus uteri and ovary, 1956-68.

D.471 14 November 1956, 16 January 1957.

D.472 1 May 1957.

D.473 5 June, 10 July 1957.

D.474 9 October, 11 December 1957.

D.475 5 February, 3 December 1958; 20 January, 20 April 1960.

D.476 November 1960; 3 May, 8 November 1961; 21 February, 20 December 1962.

- D.477 20 November 1963, 19 February 1964.
- D.478 4 November 1964; 3 March, 12 December 1965.
- D.479 16 November, 14 December 1966; 1 February, 17 May 1967.
- D.480 14 June, 22 November 1967; 22 August, 19 December 1968.
- D.481 Typescript results of treatment of patients at Addenbrooke's Hospital, 1962-64.
- D.482 'Treatment policy for carcinoma of the cervix at Addenbrooke's Hospital up to October 1963', 4pp duplicated typescript.
- D.483-D.485 Data on treatment of cases of carcinoma of the cervix uteri at Addenbrooke's Hospital, 1943-66 and 1969, completed for the Radiumhemmet, Stockholm, by L.M. Mitchell. 3 folders.
- D.486-D.491 'Ca. cervix and hyperbaric oxygen'. Contents of Mitchell's folder so labelled divided into six for ease of reference: manuscript and typescript material, various dates 1947-73.
- D.492-D.494 'Ca. Cervix Uteri'. Contents of Mitchell's folder so inscribed divided into three for ease of reference: manuscript and typescript material, chiefly 1972-74.
- D.495 Report on 'Cancer of the cervix - Addenbrooke's Hospital Cambridge, 1946-70' by J.L. Haybittle, 2pp typescript plus manuscript figures, December 1978.
- D.496 Miscellaneous material *re* cancer of the ovary.
- D.497 Miscellaneous material *re* cancer of the corpus uteri.

Other cancers

D.498

Bladder.

Duplicated typescript papers on carcinoma of the bladder, c.1966.

D.499-D.502

Bronchus.

D.499-D.500

Contents of Mitchell's folder divided into two for ease of reference.

D.499

Copies of manuscript data on cases treated at the Leeds Radiotherapy Department, 1940-50.

D.500

Manuscript and typescript material, various dates 1948-70.

D.501

Contents of Mitchell's folder: manuscript and typescript material, 1954-56.

D.502

Correspondence and papers from MRC *re* clinical trials, 1961-64.

D.503, D.504

'Cerebral tumours'.

Contents of Mitchell's envelope so inscribed divided into two for ease of reference: manuscript notes, latest reference 1969.

D.505

'Hodgkin's disease'.

Contents of Mitchell's envelope so inscribed: manuscript notes, 1971-73.

D.506

Larynx.

Typescript and manuscript data, 1951.

D.507

Mouth.

'Cases treated at the Radiotherapeutic Centre, Addenbrooke's Hospital, Cambridge from 1938 to 1950 inclusive'. 2pp typescript tables.

D.508

Thyroid.

Manuscript and typescript notes on treatment of thyrotoxicosis and carcinoma of the thyroid, c.1956.

D.509-D.511

'Malignant tumours in childhood and young people'.

Contents of Mitchell's envelope so inscribed divided into three for ease of reference.

D.509

Exchange with T. Rowntree *re* malignant synovioma, November 1943, with later material found attached; 'Radiotherapy in malignant diseases of children' by Mitchell, 3pp typescript, 2 July 1948.

D.510, D.511

Manuscript and typescript notes, c.1950. 2 folders.

Faith Courtauld Cancer Research Unit

This Unit at King's College Hospital London was founded in 1971 by a donation from Mrs Fay Courtauld 'for research on as broad a front as possible into the relationship between psychological, hormonal and immunological factors in the onset and course of cancer with particular reference to the psychological aspects of the disease'.

Mitchell was interested in the effect of psychological factors on the onset and progress of cancers and served on the Courtauld Research Committee, 1971-86, as Chairman from 1971 and Vice-Chairman from 1978. During this period it supported research into breast cancer.

D.512-D.531	Correspondence and papers for meetings, 1971-86.			
	D.512	1971	D.522	1978
	D.513	1972	D.523	1979
	D.514	1973	D.524	1980
	D.515	1974 (1)	D.525	1981
	D.516	1974 (2)	D.526	1982
	D.517	1975 (1)	D.527	1983
	D.518	1975 (2)	D.528	1984
	D.519	1976 (1)	D.529	1985 (1)
	D.520	1976 (2)	D.530	1985 (2)
	D.521	1977	D.531	1986

D.532-D.535 Protocols and personality test sheets. 4 folders.

Patient records and case notes

D.536, D.537 Contents of Mitchell's folder divided into two for ease of reference: chiefly correspondence with A. Glücksmann *re* specimens from biopsies of patients dying of cancer, sent to Mitchell for analysis 1938-40.

D.538-D.542 Contents of Mitchell's thumb index file of photographic patient records, retained in original alphabetical sequence. The photographs are in Mitchell's envelopes with the patient's name inscribed thereon. Some dated 1939 or 1940. 5 folders.

D.543 Contents of Mitchell's folder inscribed 'Case summaries' and (at a later date) 'Early patients': typescript case notes covering 1939-48.

D.544-D.551 'Old results'. Contents of Mitchell's box so inscribed divided into eight for ease of reference.

- D.544, D.545 Manuscript and typescript data *re* cases treated by gamma and x radiation, 1940-41. 2 folders.
- D.546-D.551 Photographic records and manuscript case notes, retained in Mitchell's original envelopes. 6 folders.
- D.552, D.553 Manuscript and typescript notes on patients treated by x-rays, latest reference 1948. 2 folders.
- D.554 Manuscript notes on patients given toluidine blue, 1947-49. Not in Mitchell's hand.
- D.555 Case notes *re* treatment of dogs with cancer, 1955-56.
- D.556-D.559 Mitchell's manuscript tables of cases treated 1959-73.
- D.556 Case numbers 1-48, 1959-61.
- D.557 Case numbers 49-124, 1962-65.
- D.558 Case numbers 125-193, 1965-68.
- D.559 Case numbers 206-266, 1969-73.
- D.560-D.567 Patient records and case notes, 1950s. 8 folders.
- D.568-D.589 Contents of Mitchell's thumb index file of patient records, retained in original alphabetical sequence. The records principally cover the period 1963-71. 22 folders.
- D.590 'Letters *re* patients'. Contents of Mitchell's folder so inscribed: correspondence, 1965-70.

D.591, D.592

Patient records and case notes, 1960s. 2 folders.

D.593-D.595

Correspondence and case notes, 1973-82. 3 folders.

SECTION E

PUBLICATIONS, LECTURES AND BROADCASTS

E.1-E.147

E.1-E.117

PUBLICATIONS

E.118-E.142

LECTURES

E.143-E.146

BROADCASTS

E.147

REPRINTS

PUBLICATIONS

E.1-E.104	Drafts
E.105-E.117	Editorial correspondence

Drafts

A chronological sequence of material relating to publications, or to the intention to publish. Where applicable reference has been made to the Bibliography in the Royal Society memoir of Mitchell (A.1) in the form *Bibliog.* ...

- E.1 'The action of ultra-violet radiation on proteins. II Some aspects of the photo-oxidation of the tyrosine chromophor', with C.B. Allsopp. Probably relates to *Bibliog.* 10, 1937.
- 20pp manuscript.
- E.2 'The photochemistry of proteins'. Communicated to Royal Society May 1937 but not published in this form.
- 34pp typescript plus 2pp Appendix.
- E.3-E.5 'Photochemistry of glycyl-tyrosine'. Communicated to Royal Society May 1937 but not published.
- E.3 18pp typescript plus summary, references and figures.
- E.4 37pp typescript of 'Part II with Appendix' by E.N. Willmer and O.A. Trowell.
- E.5 Manuscript notes, figures.

- E.6 'Disturbance of nucleic acid metabolism produced by therapeutic doses of X and gamma radiations'. Published in three parts, *Bibliog.* 18-20, 1942.
- 2pp typescript 'Summary of unpublished paper. (9.5.42).' May refer to a section of the draft not accepted for publication.
- E.7 'Therapeutic possibilities of radio-phosphorus'. *Bibliog.* 27, 1947.
- Invitation to write and related correspondence, 1946-47.
- E.8 'Applications of recent advances in nuclear physics to cancer research'. *Bibliog.* 29, 1947.
- 9pp typescript plus references and tables.
- E.9 'Caution in the clinical use of radio-active isotopes especially radio-phosphorus'. Not published, latest bibliographical reference, 1947.
- Manuscript draft paginated 1-11.
- E.10, E.11 'Chemotherapy of cancer'. Probably draft of *Bibliog.* 34, 1948.
- Manuscript draft paginated 1-45 plus list of references. 2 folders.
- E.12 'Clinical trials of tetra-sodium 2-methyl-1:4 naphthohydroquinone diphosphate, in conjunction with X-ray theory'. *Bibliog.* 35, 1948.
- Typescript summary, tables.
- E.13 'Nuclear Physics, in relation to medical treatment'. *Bibliog.* 38, 1951.
- 19pp typescript.
- E.14-E.16 'Practical aspects of radioactive isotopes in relation to medical treatment'. *Bibliog.* 39, 1951. See also C.23.
- E.14 Correspondence with *British Medical Journal*.

- E.15, E.16 61pp typescript plus references. 2 folders.
- E.17, E.18 'Methods and techniques : isotopes'. Not listed in *Bibliog.* but prepared for an encyclopaedia, 1953.
- E.17 13pp typescript with manuscript corrections plus references, table, etc.
- E.18 Manuscript notes.
- E.19, E.20 'Some quantitative considerations of the genetic effects of chronic irradiation in Man'. Not listed in *Bibliog.*, latest bibliographical reference, 1954.

Extensively corrected typescript and manuscript draft. 2 folders.
- E.21 'Carcinoma of the skin appearing 49 years after a single diagnostic roentgen exposure', with J.L. Haybittle. *Bibliog.* 51, 1955.

Extensively corrected typescript and manuscript draft.
- E.22 'Nuclear radiations for radiotherapy with external sources'. *Bibliog.* 55, 1956.

Letter from publishers; first page of draft.
- E.23 'Some clinical and laboratory studies of chemical radiosensitizers'. *Bibliog.* 59, 1957.

8pp duplicated typescript plus tables.
- E.24 'A study of the treatment of inoperable malignant tumours in dogs', with I.A. Silver. *Bibliog.* 60, 1957.

22pp typescript with manuscript corrections plus summary and references.

- E.25 'A study of dose levels in radio-iridium gamma-ray therapy', with J.L. Haybittle. *Bibliog.* 61, 1958.
15pp typescript with manuscript corrections plus summary and tables.
- E.26, E.27 'Clinical and laboratory studies of the therapeutic possibilities of tritiated synkavit, mainly by intra-arterial administration', with H. Horwitz et al. *Bibliog.* 62, 1959.
36pp manuscript. 2 folders.
- E.28 'Radiosensitisation by oxygen and chemicals'. *Bibliog.* 65, 1959.
24pp typescript plus tables and bibliography.
- E.29 'Radiotherapy', *Concise Encyclopaedia of Atomics*. Latest bibliographical reference 1959. Not listed in *Bibliog.*
15pp typescript with extensive manuscript correction.
- E.30-E.36 *Studies in Radiotherapeutics*. Blackwells, Oxford, 1960.
This was Mitchell's first book. It was based on series of lectures given in 1958: the Dunham Lectures delivered at Harvard (E.124-E.126) and the William Withering Memorial Lectures given at Birmingham University (E.127).
- E.30-E.35 Incomplete manuscript and typescript rough draft. 6 folders.
- E.36 'Revision of Chapter 3 Practical applications'. Contents of Mitchell's folder so inscribed: miscellaneous manuscript notes, data etc. Latest reference 1960.
- E.37-E.39 'Laboratory and clinical studies of some quinol diphosphates and related compounds as chemical radiosensitisers and the development of a radioactive drug', with D.H. Marrian and B. Marshall. *Bibliog.* 67, 1961.
117pp typescript plus references. 3 folders.

- E.40 'Laboratory and clinical studies of some chemical radiosensitizers and the development of a radioactive drug', with Marrian and Marshall. Possibly earlier draft of preceding.
- 31pp typescript.
- E.41, E.42 'Investigation of a radioactive drug (TRA 119) with special reference to autoradiographic and related studies', with E.A. King *et al.* *Bibliog.* 72, 1963.
- E.41 42pp typescript plus references and legends for figures.
- E.42 Proof copy with manuscript correction and annotation.
- E.43 'A review of clinical and laboratory studies of radiosensitizers in radiotherapy'. *Bibliog.* 75, 1965.
- 14pp typescript with manuscript corrections plus references and summary.
- E.44, E.45 'Über die Möglichkeit der Verwendung radioaktiver Pharmaka'. *Bibliog.* 76, 1965.
- 30pp manuscript plus legends for figures, references etc. 2 folders.
- E.46 'An attempt to develop a radioactive drug for cancer chemotherapy', with D.H. Marrian *et al.* *Bibliog.* 78, 1965.
- 19pp manuscript and typescript draft.
- E.47 'Assessment of new methods of treatment of cancer'. *Bibliog.* 79, 1965.
- 18pp typescript.
- E.48 *The treatment of cancer, with special reference to radiotherapy.* Cambridge University Press, 1965.
- This volume, edited by Mitchell, was based on a lecture course organised by the Cambridge School of Clinical Research and Postgraduate Medical Training.
- Correspondence with Cambridge University Press 1965-70; reviews.

- E.49-E.51 'Some aspects of the effects of radiations on the metabolism of tissues and tumours', *Handbuch der medizinischen Radiologie II i*, Springer-Verlag Berlin, 1966. Not listed in *Bibliog*.
- E.49 Brief correspondence with publishers 1961, 1964, 1965.
- E.50, E.51 Manuscript notes, references etc. found with the preceding. 2 folders.
- E.52 'Ein Beitrag zur Untersuchung radioaktiver Pharmaka'. *Bibliog.* 82, 1966.
10pp typescript with manuscript corrections plus references and legends for figures.
- E.53 'The use of tritium-labelled compounds'. *Bibliog.* 84, 1967.
26pp typescript.
- E.54 'Strahlensensibilisierende Substanzen und ihr Einfluss auf die Strahlenempfindlichkeit von Tumoren'. *Bibliog.* 86, 1967.
28pp typescript with manuscript correction plus references and legends for figures.
- E.55, E.56 'The preparation of 6-¹³¹I-iodo-MNDP and some studies of its uptake in certain human tumours by means of radio-isotope scanning', with D.H. Marrian *et al.* Not listed in *Bibliog.* but probably an early draft of *Bibliog.* 90, 1969.
- E.55 33pp typescript plus references, summary etc.
- E.56 Manuscript notes found with the preceding.
- E.57, E.58 'Über die Möglichkeit der Entwicklung radioaktiver Pharmaka'. *Bibliog.* 92, 1970.

- E.57 28pp typescript with extensive manuscript correction.
- E.58 Legends for figures and references.
- E.59 'Neuere Untersuchungen zur Frage der therapeutischen Anwendungen von tritium-markierten organischen Substanzen'. *Bibliog.* 93, 1971.
20pp typescript plus references.
- E.60 'Testing anti-cancer drugs', with P.P. Dendy *et al.* *Bibliog.* 94, 1972.
2pp typescript.
- E.60A 'Effects of ionising radiation and other physical treatments on short-term cultures'. Not listed in *Bibliog.*, latest bibliographical reference, 1974.
7pp typescript, with 7pp typescript tables found therewith.
- E.61-E.72 *Principles of Radiotherapeutic Oncology.*

In October 1975, a year before his retirement, Mitchell suggested to Cambridge University Press that he write a book based on his lecture course 'Selected topics in radiotherapeutics and clinical oncology'. The Press agreed and a contract was signed in December giving July 1977 as the completion date. However the book was never completed.
- E.61 Correspondence with Cambridge University Press, 1975-80.
- E.62 Manuscript drafts of List of Contents and Preface.
- E.63 'Clinical Radiotherapeutic Oncology. Its changing role in the treatment of cancer'.
11pp typescript draft of General Introduction plus tables.
- E.64, E.65 'Unrevised text of Chapter 1 - to be kept till book finished'. Contents of Mitchell's envelope so inscribed.

- E.64 16pp typescript plus tables etc; manuscript references.
- E.65 Manuscript references for the chapter.
- E.66 Later draft of chapter 1.
21pp typescript plus tables and references.
- E.67 Draft of chapter 2.
31pp typescript plus tables.
- E.68 Background material for chapter 2 including correspondence with manufacturers and others *re* costs of Cobalt-60 therapy units compared with other types of radiotherapy units, 1977-78.
- E.69-E.72 General background material.
- E.69 'Guidelines in clinical radiotherapeutic oncology', 17pp typescript. See also E.95.
- E.70-E.72 Manuscript notes, references etc. 3 folders.
- E.73-E.76 'Attempts to develop radioactive drugs in the treatment of cancer', *Bibliog.* 99, 1977,
- E.73 Editorial correspondence, 1973-75.
- E.74 17pp manuscript rough draft.
- E.75 Tables and references for the preceding.

- E.76 30pp typescript including tables and references.
- E.77 'Further assessment of an *in vitro* screening test of cytotoxic agents in the treatment of advanced malignant disease', with A. Dawson and P.P. Dendy. Submitted to *Oncology* 1977 but not published.
- 16pp photocopied typescript plus references and figures; covering letter to *Oncology*.
- E.78, E.79 Obituaries and biography of F.R. Berridge, 1978 and 1981.
- Mitchell wrote obituaries of Berridge for the *British Medical Journal* (10 June 1978) and the *Lancet* (24 June). He was then asked to write a biography for the 6th volume of the Royal College of Physicians' 'Munk's Roll'. This was published in 1981.
- E.78 Correspondence with *BMJ* and the *Lancet* with copies of Mitchell's obituaries; manuscript draft of Mitchell's address at the Opening of the Berridge Room, Department of Radiology, Cambridge; correspondence with Berridge's widow re obituaries.
- E.79 Correspondence with Royal College of Physicians; drafts; background information including curricula vitae.
- E.80 'Investigation of 6-[¹²⁵I]-iodo-2-methyl-1, 4-naphthoquinol bis (diammonium phosphate) (6-[¹²⁵I]-MNDP) as a radioactive drug', with I. Brown *et al. Bibliog.* 103, 1979.
- 6pp typescript 'Annotated text ... 18.8.79' plus figures; miscellaneous material found with it.
- E.81 Foreword to *Bone injuries resulting from radiation therapy of tumours* by K. Shimanovskaya, 1981.
- Correspondence, principally with B. Haigh 1980-81, re comments on the volume with a view to its publication by Pergamon Press; copy of Mitchell's Foreword.
- E.82-E.86 '6-[¹²⁵I]-iodo-2-methyl-1, 4-naphthoquinol bis (diammonium phosphate) as a potential radio-halogenated anti-cancer agent: *in vitro* investigations and possible clinical implications', with I. Brown and R.N. Carpenter, *Bibliog.* 108, 1982.

- E.82, E.83 27pp typescript and manuscript 'Corrected copy 11.11.80' plus summary. 2 folders.
- E.84 20pp typescript and manuscript draft 'Revised 21.4.81' plus references.
- E.85, E.86 Miscellaneous manuscript notes, some dated 1979-81, graphs, pages of old drafts etc. found with the preceding. 2 folders.
- E.87 'Approximate calculation of specific γ -ray constant, C_γ , for ^{211}At . Note by J.S. Mitchell'. Not listed in *Bibliog.* but dated 20 December 1982.

2pp typescript plus references.
- E.88, E.89 ' α -particle track autoradiography for localisation of a [^{211}At]-astatinated drug', with I. Brown and R.N. Carpenter. Not listed in *Bibliog.* but published in *Experientia* 39 (1983), 337-339.
- E.88 7pp manuscript plus tables, references etc.
- E.89 12pp typescript; brief correspondence with *Nature* and *Experientia*, 1982-83.
- E.90-E.100 'Cobalt-60 teletherapy: a compendium of international practice', edited with M. Cohen. *Bibliog.* 113, 1984.

Work began on the compendium, a joint undertaking by the World Health Organisation and the International Atomic Energy Agency, in 1977. It was part of an IAEA series, an *Atlas of Radiation Dose Distributions*. The material consists chiefly of drafts and related correspondence.
- E.90-E.93 Photocopied typescript and manuscript draft. 4 folders.
- E.94 'Pre-publication working copy', 1982.
- E.95-E.100 Correspondence, chiefly with M. Cohen, co-editor, and R. Beck of IAEA.

- E.95 1977. Includes amendments to chapter IV 'Guidelines in clinical radiation oncology' from Z. Hlasivec (a co-author of the chapter) and Mitchell. A draft of this chapter was kept by Mitchell with the material for his planned book on *Principles of Radiotherapeutic Oncology* (E.69).
- E.96 1979, 1980. Includes arrangements for visit to Vienna, 13-19 May.
- E.97 1981, 1982.
- E.98 1983.
- E.99 1984. Includes arrangements for visit to Vienna, 20-24 February and correspondence *re* the published volume.
- E.100 1985, 1986. Review of the compendium.
- E.101 'Radioactive derivatives of 2-methyl-1, 4-naphthoquinol bis (disphosphate salt) as anti-cancer drugs with high LET radiations', with I. Brown and R.N. Carpenter. *Bibliog.* 116, 1984.

9pp photocopied typescript; editorial correspondence. See also G.96.
- E.102 'Die Entwicklung radioaktiver Derivate von 2-Methyl-1, 4-naphthochinol bis (Diphosphat Salz) als Pharmaka mit Strahlen von hohem LET gegen den Krebs', with Brown and Carpenter. *Bibliog.* 117, 1985.

6pp typescript 'final copy' plus tables. See also G.97, G.98.
- E.103 ' α -particle track autoradiographic study of the distribution of a [211 -At]-astatinated drug in normal tissues of the mouse', with Brown and Carpenter. *Bibliog.* 118, 1985.

Correspondence with *Experientia* *re* revision, 1984.
- E.104 'The effects of alkaline phosphatase activity on the selectivity to human cells of a potential endoradiotherapeutic drug', with Brown and Carpenter. Not listed in *Bibliog.* Latest bibliographical reference 1985.

14pp photocopied typescript and manuscript '1st draft'.

Editorial correspondence

Arranged alphabetically by publisher or journal title.

E.105	Blackwell Scientific Publications Ltd.	1977
	Request for comment on proposed new journal.	
E.106	<i>British Journal of Radiology</i>	various dates 1953-86
	Chiefly re refereeing.	
E.107-E.109	<i>British Medical Journal</i>	various dates 1946-74
E.107	1946-49. Chiefly re 'annotations' for the <i>BMJ</i> .	
E.108	1950-58. Chiefly re 'annotations' and reviews.	
E.109	1963, 1972, 1974. Includes letter of 15 July 1974 to the Editor suggesting a voluntary reduction of salaries in the medical profession.	
E.110	Cambridge University Press	1975
	Excerpta Medica Foundation	1964
E.111-E.114	<i>Experientia</i>	1980-86
	Refereeing.	
E.111	1980	E.113 1982
E.112	1981	E.114 1983-86

E.115	<i>International Journal of Cancer</i>	1982, 1983, nd
	Refereeing.	
	<i>Nature</i>	1946
E.116	<i>Physics in Medicine and Biology</i>	1960
	Editorial Board meeting.	
	<i>Proceedings of the Medical Association for the Prevention of War</i>	1982
	Review.	
E.117	<i>Radiation Research</i>	1957, 1958
	Refereeing.	
	Taylor & Francis Ltd.	1957, 1958
	Proposed new journal.	

LECTURES

A chronological sequence of material relating to Mitchell's public and invitation lectures. For Mitchell's departmental lectures see section B.

E.118	Untitled 10pp typescript of lecture on research work at the Department of Radiotherapeutics, Hospital Physicists Association AGM, Cambridge, 28-29 September 1951.
E.119	<p>'Some contributions of physics to the treatment of cancer', Hull, 12 November 1953.</p> <p>13pp manuscript; miscellaneous notes and sections of drafts for similar lectures.</p>

- E.120, E.121 'Therapeutic doses of isotopes including iridium teletherapy and interstitial infiltration with radioactive colloid gold', Copenhagen, 20 March 1954.
- E.120 Incomplete 13pp typescript draft paginated 7-19, with figures clipped to the pages; covering letter from J. Nielsen (in Danish).
- E.121 38pp typescript with extensive manuscript correction (p.1 is Nielsen's introduction).
- E.122 Untitled lecture on the use of radioactive isotopes for diagnostic and therapeutic purposes, 'given to Architects 23.4.54'.

6pp typescript. See C.82 for notebook containing shorthand notes taken by Mitchell's secretary.
- E.123 'Further thoughts about the White Paper on the hazards to Man of nuclear and allied radiations', Cambridge University Scientists' Lunch Club, 15 November 1956.

4pp typescript 'Notes for lecture'.
- E.124-E.126 'Studies in radiotherapeutics', Edward K. Dunham Lectures, Harvard University, 10, 12 and 13 March 1958.

Mitchell gave lectures on the 'Mechanisms of the therapeutic actions of ionising radiations', 'Laboratory and clinical investigations of radiosensitisers' and 'Some investigations of practical interest'. The lectures were the basis of Mitchell's book *Studies in radiotherapeutics* published in 1960 (E.30-E.36). Whilst in Boston he spoke on 'Some clinical investigations in radiotherapeutics' to the New England Roentgen Ray Society, 14 March.
- E.124, E.125 Correspondence *re* arrangements. 2 folders.
- E.126 Schedule for visit; notice of lectures; 'Synopsis of lectures'; etc.
- E.127 'Studies in radiotherapeutics', William Withering Lectures, Birmingham University, 13, 14 and 15 May 1958. These were the same lectures delivered at Harvard in March (E.124-E.126)

Correspondence *re* arrangements; synopsis; notice; etc.

- E.128 'Strahlenschutz in Öffentlichen Gesundheitsdienst in Grossbritannien', dated '20 März 1960'.
10pp typescript.
- E.129 'Some aspects of the uses of radioactive isotopes in medical diagnosis and treatment', Nottingham, 31 October 1962.
2pp typescript summary.
- E.130-E.133 'Attempts to develop a radioactive drug', Robert Knox Memorial Lecture, 1965.
- E.130-E.132 50pp manuscript draft plus 1p manuscript summary. 3 folders.
- E.133 Manuscript and typescript tables; legends for figures.
- E.134 'Applied science and the development of radiotherapy - past, present and future', British Institute of Radiology Silvanus Thompson Memorial Lecture, Bristol, 8 June 1968. The lecture was published in the *British Journal of Radiology* (Bibliog. 88).
Annotated reprint; correspondence *re* arrangements.
- E.135 'New approaches to radiotherapy', Fison Lecture, Guy's Hospital, London, 19 May 1970.
2pp typescript summary; correspondence *re* arrangements.
- E.136 'The heritage of physics and its applications in medicine', Newcastle-upon-Tyne Regional Medical Physics Department, 13 January 1972.
31pp typescript.
- E.137, E.138 'Newcastle Lecture & Cambridge 18.3.72'. Contents of Mitchell's folder so inscribed: incomplete typescript and manuscript draft paginated 19-28; miscellaneous pages of drafts; manuscript notes; etc. 2 folders.

- E.139-E.142 Miscellaneous lectures correspondence.
- E.139 'The medical and biological applications of the recent developments in nuclear physics', Glasgow University, 1 March 1946.
- 'The results and prospects of radiotherapeutics', Pharmaceutical Society Cambridge and District Branch, 24 April 1947.
- 'The application of nuclear physics in medicine', Middlesex Hospital Students Medical Society, 10 February 1949.
- E.140 'The medical applications of recent advances in nuclear physics', Atomic Scientists Association London Branch, 16 December 1949.
- 'Practical aspects of isotopes in relation to medicine', Society of Apothecaries of London, 4 December 1950 (*Bibliog.* 39).
- E.141 'Medical uses of atomic energy', Birmingham University Extra-Mural course, Worcester, 12 November, Birmingham, 13 November 1954.
- Oral Surgery Club, Cambridge, 12 April 1957.
- Manchester Medical Society, ? January 1959.
- E.142 Cambridge University Scientists Luncheon Club, Michaelmas Term 1962 (declined).
- 'Some problems in the study of radio-sensitisers and radioactive drugs', London University Postgraduate Medical School, 24 May 1962.
- Treatment of cancer, Cambridge University Scientists Luncheon Club, 7 March 1974.

BROADCASTS

- E.143 Correspondence 1946 with BBC Features Department *re* radio broadcast on 'Atomic Energy'. Mitchell advised on the draft of the programme.
- E.144 Correspondence 1947 *re* planned BBC Home Service radio broadcast on 'Blood'. The programme, in which Mitchell was to have participated with Sir Joseph Barcroft and Sir Lionel Whitby, was abandoned after Barcroft's death.

E.145 'Radiotherapy Today', BBC Home Service radio broadcast 9 October 1947.
Brief correspondence; transcript of programme.

E.146 Invitation 1985 to participate in BBC Radio Four broadcast on British nuclear tests in the 1950s (declined).

REPRINTS

E.147 Reprints of Mitchell's published papers 1932-85. Not a complete set.