

Catalogue of the papers and correspondence of

**Sir Michael Warwick Thompson**

(b. 1931)

by Adrian Nardone and Timothy E. Powell  
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M. W. Thompson  
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## **GENERAL INTRODUCTION**

### **PROVENANCE**

The papers were received through the good offices of Christine Penney, University Archivist, University of Birmingham in July 1997.

### **OUTLINE OF THE CAREER OF MICHAEL WARWICK THOMPSON.**

Michael Warwick Thompson was born on 1 June 1931. He attended Rydal School and the University of Liverpool where in 1953 he was awarded a first class honours degree in physics and was also Oliver Lodge Prize-winner. That same year he became a research scientist at the Atomic Energy Research Establishment, Harwell, Berkshire and remained there until 1965, conducting research into atomic collision phenomena in solids. In 1963 Thompson was awarded a D.Sc. in physics from the University of Liverpool and also in that year was elected a Fellow of the Institute of Physics.

From 1965 to 1980 Thompson worked at the University of Sussex, Brighton. He was Professor of Experimental Physics from 1965 to 1980 (Visiting Professor of Experimental Physics from 1980-1986) and he served as Pro-Vice-Chancellor from 1973 to 1977 (acting Vice-Chancellor in 1976).

In 1980 Thompson was appointed Vice-Chancellor of the University of East Anglia, Norwich. In 1987 he moved to the University of Birmingham as Vice-Chancellor and Principal, retiring in 1996.

Thompson was knighted in 1991.

## DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the list of contents. It covers the period 1949 to 1991.

Section A, Research, consists of notebooks, research papers and reports and covers the period 1954 to 1986. The notebooks, covering the period 1957 to 1986, consist of rough notes on research carried out at AERE Harwell and at the University of Sussex. There are also three notebooks of experimental results kept while at Atomic Energy of Canada Limited, Chalk River Nuclear Laboratories, Ontario in 1968. The research papers cover the period 1954 to 1985. The bulk were categorised by Thompson as either theoretical or experimental. There are also some research papers which were not placed by Thompson into either category. The reports are United Kingdom Atomic Energy Authority Reports (classified and unclassified) and relate to work carried out at AERE, Harwell. They were produced in the period 1957 to 1969. Thompson usually published a version of his unclassified reports and attention is drawn to these in the catalogue.

Section B, Publications and lecture, covers the period 1949 to 1991 and consists of draft publications, lecture material and Thompson's collection of off-prints of his own scientific papers. The bulk of the publications material relates to his book *Defects and radiation damage in metals*, (Cambridge University Press, 1969). There is one lecture in this section 'Violence and disorder in the solid state' which was presented as the Ninth John Waddell Lecture at The Royal Military College of Canada, Port Frederick, Kingston, Canada in May 1985. Lists of publications and reports and a mailing list can be found together with off-prints of Thompson's scientific papers.

Section C, University of Sussex, consists of material relating to teaching and administration at the University in the period 1973 to 1980. Thompson was leader of the site development project team set up to carry out investigations and planning work for the establishment of a development plan for the University site for the 1970s and 1980s. A report from 1973 about this work is to be found in this section. There are also lecture notes, correspondence *re* arrangements etc. for seminars, lectures and guest lectures held within the School of Mathematical and Physical Sciences during the period 1974 to 1980.

There is also an index of correspondents.

Adrian Nardone  
Timothy E. Powell  
BATH 1997

**SECTION A**

**RESEARCH**

**A.1-A.145**

A.1-A.21      NOTEBOOKS

A.22-A.132    RESEARCH FOLDERS

A.22-A.59      Experimental folders

A.60-A.111     Theory folders

A.112-A.132    Other research folders

A.133-A.144    REPORTS

A.133-A.142    United Kingdom Atomic Energy Authority  
(UKAEA) Reports.

A.143, A.144    Other reports

A.145            PHOTOGRAPHS

**Research**

<b>A.1-A.21</b>	<b>NOTEBOOKS</b>	<b>1957-1986</b>
A.1	'1957-1971 Notes of research seminars attended', hardback notebook so inscribed. Some intercalated material.	
A.2-A.18	Sequence of seventeen notebooks. All hardback with the exception of A.5.  The notebooks are usually inscribed or labelled by Thompson with the date and the description 'rough work'. They follow a chronological order 1958-1986 although there is a gap for the period 1969 to 1976.  The notebooks may contain calculations, draft papers for journals, some draft letters, plans for experiments and notes taken at seminars.	
A.2	'1958 to April 1959'.	
A.3	'April 1959 to Dec. '59'.	
A.4	'Dec. 59 to April '60'. Some intercalated material.	
A.5	'April 1960 to October 1960'. Some intercalated material.	
A.6	'October 1960 to Aug. 1961'.	
A.7	'Aug. 1961 to Dec. 1961'. Some intercalated material.	
A.8	'Dec. 1961 to June 62'.	
A.9	'June 62 to July 63'.	
A.10	'1964'. Some intercalated material.	

### Research

- A.11 '1965 to Sept 1966'.
- A.12 'August 1966'.
- A.13 *ca* 1967-1968.
- A.14 'July 77 to Feb. 78'.
- A.15 'Feb-June 78'. Some intercalated material.
- A.16 'June 1978 to Jan 1980'. Some intercalated material.
- A.17 'Jan 1980 to [?]'. Some intercalated material.
- A.18 'Feb 86-[?]'.  
  
A.19-A.21 Three ringbound binders kept by Thompson while carrying out research at Atomic Energy of Canada Limited, Chalk River Nuclear Laboratories, Chalk River, Ontario, Canada from August to September 1968. The third binder also contains experiments carried out in the University of Sussex in January 1969.  
  
A single sequence of dividers, running from A to Z, was used to divide up the material within the three binders. Each binder has a table of contents at the front. The binders contain data from experiments including much photographic material.  
  
Thompson later presented his findings in the paper 'Low-angle scattering of He<sup>+</sup> ions at a W crystal surface' with B.W. Farmery, A.D. Marwick in *Atomic collision phenomena in solids*, edited by D.W.Palmer, M.W. Thompson and P.D. Townsend, North-Holland, 1970.
- A.19 1-22 August 1968. With label on front cover giving details of the three binders.

### Research

A.20 4-5 [?September] 1968.

A.21 4-5 September 1968 and 3 and 14 January 1969.

**A.22-A.132**

#### **RESEARCH FOLDERS**

**1954-1985**

Thompson's unbound research papers were all kept in identical folders. Most of the folders were marked as either 'Exp[erimental]' or 'Theory' and are presented at A.22-A.59 and A.60-A.111 respectively. At A.112-A.132 are research folders which Thompson did not categorise as either experimental or theory.

The material in the folders may include drafts for scientific papers.

**A.22-A.59**

#### **Experimental folders**

**1955-1967**

The papers below are a sequence of research folders Thompson marked as 'Exp[erimental]'. They have been arranged in chronological order as far as possible.

A.22-A.24

'Exp: restivity of Mo'. Contents of folder so inscribed, divided into three for ease of reference. 1955-1957.

A.22

'Molybdenum Resistance Specimens', 6pp manuscript description of experimental procedures and results, including letter *re* preparation of tungsten samples, 17 January 1955-April 1958.

'Measurement of a resistance minimum in Molybdenum', 2pp manuscript draft + table and graph, 1 October 1957.

A.23

'Summary of observations, Mo 1.10'. Contents of folder so inscribed.

Tables and graphs of research data, *ca* September-December 1955.

A.24

'M.J. Stubbs. Summaries of Results. Mo and W'. Contents of folder so inscribed.

Tables and graphs of research data + photographs, *ca* October 1958.

### Research

- A.25 'Exp: proton irradiation of quartz'. Contents of folder so inscribed.  
  
Research notes and data etc., 8pp; ca 1955-1959; correspondence *re* quartz polishing with 1p research data, 24 August 1955-17 May 1956.
- A.26-A.47 'Exp: proton sputtering'. Contents of folder so inscribed. This folder enclosed a folder inscribed 'Proton sputtering' (see A.26). 1957-1961.
- A.26 'Proton Sputtering'. AERE Harwell issue folder so inscribed enclosing A.27-A.47. The contents were subdivided by Thompson into further folders.  
  
Information given on the cover states that it was created in the Basic Irradiation Studies Group of the Metallurgy Division. Its subject content was stated as being 'Surface sputtering during the proton irradiation of gold'. Date of opening of folder October 1957.  
  
A summary of results of experiments ('runs') is given on the inside cover, see A.34-A.47.
- A.27-A.33 'Irradiation sputtering-development of techniques. Preparation of gold targets, auto-radiographs, geiger counters'. Contents of folder so inscribed consisting of an inner folder enclosing five further folders and a manuscript draft. 1957-1958.
- A.27 Folder enclosing A.28-A.33. Date of opening of folder July 1957.
- A.28 'Autoradiographs of silica blanks'. Contents of folder so inscribed.  
  
Research data 7pp + 3 graphs, 2-11 September 1957, 17, 21 February and 18-24 April 1958.  
  
Letter *re* quartz and silica samples, 11 April 1958
- A.29 'Preliminary autoradiographs'. Contents of folder so inscribed.  
  
'Test with Rhodium plated silica', 1p manuscript of research notes and data with two photographs so entitled. 4-7 November 1957.  
  
'Autoradiographs of irradiated silica', 1p manuscript of research notes and data with two photographs + graph. N.d.  
  
'Trial irradiation of graphite', 1p manuscript of research notes and data with photograph + graph. N.d.

### Research

'Autoradiograph of spec. pure Al foil (N. Hancox)', 1p manuscript of research notes and data with photograph. N.d.

- A.30 'Energy loss of protons in gold'. Contents of folder so inscribed.  
Graphs and tables of research data, 10pp. February 1958.
- A.31 'Preparation of gold targets'. Contents of folder so inscribed.  
1p manuscript of research notes and data with 3 x-ray photographs. N.d.
- A.32 'Molecular beam detection', 2pp manuscript draft so inscribed. N.d.
- A.33 'Trial autoradiographs using gold sputtered in gas discharge onto silica blanks'. Contents of folder so inscribed.  
Research data + 2 graphs and copper disc. N.d.
- A.34-A.46 Experimental Runs.  
With the exception of A.34 and A.35 the material consists of 'runs' from experiments using a PSC (Proton Sputtering Camera). 1957-1958.
- A.34 Run 1.  
Research notes and data 3pp + graph and diagram. 12-22 October 1957.
- A.35 Run 2 and 3.  
'Energy transferred to PKO recoiling at 45', 2pp manuscript calculations + graph. N.d.  
'Proton irradiation sputtering Run 2', 4pp manuscript research notes and data + graph and photograph. 26 November-12 December 1957.  
'Run 3. Effect of varying angle of incidence', 2pp manuscript research notes and data + graph and photograph. 24 February and 4-12 April 1958.

### Research

- A.36                      Runs 1 and 2 (PSC).  
  
12pp manuscript research notes and data + graphs. 18 April-5 May 1958.
- A.37                      Run 3 (PSC).  
  
11pp manuscript research notes and data + graphs and diagrams. 11-24 June 1958.
- A.38                      Run 4 (PSC).  
  
7pp manuscript research notes and data + graphs and photograph. 17-30 July 1958.
- A.39                      Run 5 (PSC).  
  
3pp manuscript research notes and data. 12-22 August 1958.
- A.40                      Run 6 (PSC).  
  
9pp manuscript research notes and data with 2pp calculations + graphs and photograph. 30 September-19 October 1958.
- A.41                      Run 7 (PSC).  
  
10pp manuscript research notes and data + graphs and photograph. 28 October-7 November 1958.
- A.42, A.43                Run 8 (PSC).
- A.42                      Folder enclosing research papers with three photographs attached inside cover.
- A.43                      'Run 8 (PSC)', 2pp manuscript research notes and data + graphs, 8-15 December 1958.  
  
10pp manuscript research notes and data + tracings, 16-19 December 1958.

### Research

- A.44 Run 10 (PSC).  
8pp manuscript research notes and data + graphs and tracings, 25 February-13 March 1959.
- A.45 Run 11 (PSC).  
6pp manuscript research notes and data + graph and tracings, 25-30 May 1959.
- A.46 Run 12 (PSC).  
5pp manuscript research notes and data + graphs and 5 sheets of tracings, 22 June-7 July 1959.
- A.47 'Proton Sputtering Targets (front) & Collectors (back)', softback exercise book, so inscribed.  
Apparently created in the period 1958-1961 the 'Target' entries are undated while the 'Collector' entries include references to experiments carried out from April 1955 to February 1961.  
Manuscript research notes and data *re* 'run' experiments with intercalated material including x-rays and photographs.
- A.48 'Exp: penetration of [f] Li<sup>+</sup> in HF'. Contents of folder so inscribed.  
2pp manuscript calculations + table, photographs etc., June 1958-October 1959; 'Li<sup>+</sup> Ion bombardment of LiF', softback small notebook, so inscribed with manuscript research notes and diagrams on first few pages, n.d.
- A.49 'Exp: sublimation'. Contents of folder so inscribed.  
'Run 1', 4pp manuscript research notes and data + graphs, so entitled, May 1959.  
'Run 2', 5pp manuscript research notes and data + graphs, so entitled, June 1959.  
'Summary Sublimation', 1p manuscript draft + graphs, diagram and photographs, so entitled. *ca* June 1959.

### Research

- A.50, A.51 'Exp: energy spectrum by low speed rotor'. Contents of folder so inscribed, divided into two for ease of reference.
- A.50 1p manuscript research data + graphs, x-rays and tracings. May 1959, May 1961
- A.51 'Mechanical Spectrometer', softback exercise book, so inscribed.  
  
Manuscript research notes, data and calculations with diagrams and graphs. ca May 1961.
- A.52, A.53 'Exp: energy spectrum by E.M. Spectrometer'. Contents of folder so inscribed, divided into two for ease of reference.
- A.52 'E.M. Spectrometer', softback exercise book, so inscribed.  
  
Manuscript research notes, data and calculations with diagrams and graphs and intercalated x-rays. 10 November 1960-23 March 1961.
- A.53 Tracings, n.d.
- A.54, A.55 'Exp: erosion'. Contents of folder so inscribed, divided into two for ease of reference.
- A.54 'Mrs J. Hall 15 September 1962', photographs from envelope so inscribed.
- A.55 'Experiments on the erosion of single crystals of gold by bombarding with argon ions from heavy ion accelerator'. Contents of folder so inscribed. ca 1961.  
  
19pp manuscript draft report with photographs.
- A.56 'Exp: transmission channelling in Cu'. Contents of folder so inscribed.  
  
'Transmission Channelling 1', 8 January-10 February 1965 and 'Transmission Channelling 2', 30 March-3 April 1965, two softback exercise books containing manuscript research notes and data with a little intercalated material so inscribed.



### Research

- A.63 Softback notebook with manuscript notes and calculations *re* observations and possible experiments with much intercalated material. N.d.
- A.64 'Nielsen's range values', 1p manuscript calculations. N.d.
- A.65 'Theory of [?Focusing] Generation in a Vibrating Lattice'. Contents of folder so inscribed.  
  
'Summary', 8pp manuscript calculations so entitled. N.d.
- A.66-A.68 'Theory: interatomic collision'. Contents of folder so inscribed, divided into three for ease of reference.
- A.66 'Interatomic collisions relevant to irradiation damage', 18pp typescript draft + graphs with annotations and with 2pp manuscript draft at end entitled 'The collision of fast ions with beams of atoms'. March 1957.
- A.67 'Interatomic collisions...', 18pp typescript with annotations. March 1957.
- A.68 6pp manuscript calculations + graphs. N.d.
- A.69 'Theory: erosion by sputtering'. Contents of folder so inscribed.  
  
'Mechanism of Sputtering Progress Report on work done between July 1960 and June 1961', 7pp + photographs.  
  
Brief correspondence with G. M. McCracken, March-April 1974.
- A.70 'Theory: high fidelity sputtering'. Contents of folder so inscribed.  
  
'High-energy sputtering from crystals', 45pp manuscript draft + graphs and diagrams, 1961.
- A.71 'Theory: assisted focusing'. Contents of folder so inscribed.  
  
9pp manuscript calculations, latest bibliographical reference 1961.

### Research

- A.72, A.73 'Theory of erosion'. Contents of folder so inscribed, divided into two for ease of reference. 1961-1962.
- A.72 Bundle of papers including typescript correspondence with A.D.G. Stewart, of the Department of Engineering, University of Cambridge, and typescript draft versions of a report by Stewart with related manuscript calculations, 14 October 1961-7 April 1962.
- A.73 6pp manuscript calculations; 'Angle of Incidence Effects in Sputtering', 5pp manuscript draft and 5pp copy with annotations so entitled, n.d.
- A.74-A.77 'Theory: influence of thermal vibration on focusing'. Contents of folder so inscribed. 4 folders. 1962  
  
The papers consist of manuscript draft calculations etc. compiled in the preparation of 'The influence of thermal vibration on focused collision sequences', with R.S. Nelson, and H. Montgomery, *Philosophical Magazine*, 7, (1962), p1385-p1405.
- A.78-A.83 'Theory: sputtered energy spectrum'. Contents of folder so inscribed, divided into six for ease of reference. ca 1962.
- A.78 'Thermal Sputtering', 16pp manuscript research notes and calculations. N.d.
- A.79-A.82 Manuscript research notes and calculations etc. 4 folders. ca 1962.
- A.83 'The Focused Spectrum', 3pp manuscript research notes and calculations + graphs and table; etc. N.d.
- A.84-A.88 'Theory of channelling'. Contents of folder so inscribed, divided into five for ease of reference. 1962-1964.
- A.84 Manuscript research notes and calculations etc. including material re influence of channelling on nuclear reaction rates. ca 1962.
- A.85 AERE internal memoranda, typescript computations and computer programmes; etc. ca August 1962 and February 1964.

### Research

- A.86 'A numerical correction to "The penetration of energetic ions through the open channels in a crystal lattice" by R.S. Nelson and M.W. Thompson, *Phil. Mag.*, **8**, (1963), p1677', *Philosophical Magazine*, **9**, (1964), p1069. 1964.
- Correspondence and two typescript drafts with corrections.
- A.87 'Channelling: Theory'. Contents of folder so inscribed.
- Includes manuscript calculations *re* density of nuclei near a closely packed plane, proton channelling in Si <110>, protons in Au <110> channels, channel blocking by interstitials, impulse approximations, etc. N.d.
- A.88 4pp photocopies of channelling calculations; etc. N.d.
- A.89 'Theory: damage function with inverse square pot[ential]'. Contents of folder so inscribed.
- 9pp manuscript calculations + graphs; 1p typescript computations. July 1963.
- A.90, A.91 'Theory: inter atomic potentials'. Contents of folder so inscribed, divided into two for ease of reference. *ca* 1964.
- A.90 2pp manuscript notes and calculations + graphs, *ca* 1964.
- A.91 'Calculation of V(r) from Focusing Parameters'. Contents of folder so inscribed.
- Includes calculations *re* A-A and Cu-Cu potentials, compressibility and bulk modules; etc. N.d.
- A.92 'Theory: damage function for graphite'. Contents of folder so inscribed, consisting of a further folder inscribed 'Improvement of Displacement Theory in Graphite'.
- 3pp manuscript calculations + graphs and related letter, 30 June [?1966], 5pp typescript computations and covering letter, 21 November 1966.

### Research

- A.93-A.101 'Theory of Channelling'. Contents of folder so inscribed, divided into nine for ease of reference. 1966-1967.  
  
Material *re* 'A theory of star patterns', *Proc. Int. Conf. SSP Res with ACC. BNL 50083*, (1967), p.127.
- A.93 3pp manuscript calculations, October and December 1966.
- A.94 1p typescript draft abstract; 11pp manuscript research notes + photographs; etc. December 1966.
- A.95 7pp graphs *ca* January 1967.
- A.96 Letter *re* research data etc., 17 April 1967; 3pp graphs, n.d.
- A.97 Letter etc. *re* star pattern data, 28 July 1967; memo *re* draft paper on star patterns, etc., n.d.
- A.98 'Theory of Star Patterns', 20pp manuscript draft + references, n.d.
- A.99 'Interpretation of Star Patterns', 30pp manuscript draft including calculations + graphs, n.d.
- A.100 'Theory of star patterns', 23pp typescript with annotations + references and diagrams, n.d.
- A.101 7pp photocopies of manuscript calculations *re* channelling theory.
- A.102-A.104 'Theory of multiple scattering from surfaces. (April 1970)'. Contents of folder so inscribed, divided into three for ease of reference. 1970.
- A.102 'Multiple Scatt. (false start)', 20pp manuscript calculations, n.d.

### Research

- A.103 'He<sup>+</sup> Multiple Scattering in Tungsten', 2pp manuscript calculations + graph, n.d.
- A.104 'Multiple Scattering from a Solid Surface', 27pp manuscript calculations, n.d.
- A.105 'Theory: Scattering by inverse square potential'. Contents of folder so inscribed.  
  
Manuscript note to Thompson *re* unidentified review being authored by him, 20 October 1971 (attached to outside of folder).  
  
12pp manuscript calculations, n.d.
- A.106-A.111 'Surface Scattering 1. Theory 2. Correspondence on the experiments'. Contents of folder so inscribed. Divided into six for ease of reference. 1971-1975.
- A.106 'The low angle scattering of 275 keV He<sup>+</sup> ions from a tungsten crystal surface', with A.D. Marwick, B.W. Farmery and G.S. Harbinson, *Rad. Effects*, **15**, (1972), 195-204.  
  
14pp typescript draft + references, *ca* May 1971.
- A.107 Letter and graph *re* channelling simulations, etc., 4 November 1971.
- A.108 Material *re* 'X-ray production and ion scattering from surfaces', D. Phil thesis by research student G.S Harbinson including 3pp typescript report, March 1972, 1p typescript memorandum *re* surface scattering experiments, manuscript correspondence and notes *re* corrections to thesis etc., May 1973.
- A.109 'Theory of surface scattering (unpublished 1st draft of Harbinson et al 1975)', 10pp typescript draft + diagrams; correspondence etc. with H.J. Pabst *re* 'skewness' effects, February, March 1975; correspondence with G. S. Harbinson *re* publication of results from her thesis in a paper by Thompson, October, November [?1975].

### Research

- A.110 30pp typescript draft with 2pp manuscript corrections to draft headed 'Main points from Alan's Chapter 5'. Possibly part of a thesis by A.D. Marwick (see A.107, A.108); etc. N.d.
- A.111 'Scattering and Energy Loss by a Single Row', 6pp photocopies of manuscript research notes and calculations so entitled; 'Multiple scattering by rows', 2pp manuscript research notes and calculations. N.d.
- A.112-A.132                      Other research folders                      1954-1985**
- The papers catalogued below consist of research folders not marked by Thompson as being either 'Experimental' or 'Theory'. The papers are arranged chronologically.
- A.112-A.118 'Drawings of cryostat E/B'. Contents of folder so inscribed, divided into seven for ease of reference. 1954-1966.
- A.112-A.114 'Thermocouple calibrations'. Contents of folder so inscribed, divided into three for ease of reference. 1954-1956.
- A.112 'Cu/Constantan. Thermocouple calibrations'. Contents of folder so inscribed.
- 7pp manuscript research data + graphs, ca October 1954. 1p typescript laboratory report, 3 May 1955.
- A.113 'Calibration of Cu/Con 5 and 6,  $-196^{\circ}\text{C} \rightarrow 232^{\circ}\text{C}$ '. Contents of folder so inscribed.
- 14pp manuscript research data + graphs, ca June 1955, February 1956.
- A.114 'Automatic level controller'. Contents of folder so inscribed.
- Material *re* apparatus to maintain constant level of liquid nitrogen in a Dewar flask including diagrams, 2pp manuscript notes and data, 1p manuscript draft and 1p typescript draft *re* apparatus description. N.d.
- A.115 'Current regulator'. Contents of folder so inscribed.
- 3pp manuscript research data + diagram, etc. 1,2 December 1955.

### Research

- A.116 'Low temperature pile irradiation facilities', 2pp typescript meeting minutes, 11 July 1956.  
  
Report *re* safety clearance for water cooled hollow slug, 6pp typescript, 18 July 1958.
- A.117 'Research and Engineering Controls Ltd. Resistance Thermometers'. Contents of folder so inscribed.  
  
Correspondence 21 December 1964-8 March 1965.
- A.118 Insurance company report *re* lifting tackle in use at AERE, 1p typescript, 19 September 1956.  
  
3pp diagrams *re* automatic heating controller; 2pp diagrams *re* 'H.T.' power unit; 1p diagram *re* circuit for resistance measurement. N.d.
- A.119-A.121 'Joyce's reports'. Contents of folder so inscribed, divided into three for ease of reference. *ca* 1959.
- A.119 'Growth of single crystals by electron bombardment', 3pp typescript draft + diagram, latest bibliographical reference 1959; 'A method of measuring the sputtering rates of metals with the heavy ion accelerator', 3pp typescript draft + diagram, n.d.
- A.120 'Use of the scintillation detector', 6pp typescript draft with annotations + diagram; x-ray photographs. N.d.
- A.121 Photographs, n.d.
- A.122-A.131 Contents of untitled folder.  
  
Papers *re* Au spectra 'run' experiments. A summary of results appears at A.122 and A.123.  
  
Material at A.122, A.123 was found in further folders.

### Research

- A.122, A.123 'Energy spectra: summary of Au results'. Contents of folder so inscribed, divided into two for ease of reference. 1963-1964.
- A.122 'High speed rotor runs 11 to 41 Experiments Au Spectra', softback exercise book so inscribed with much intercalated material, 11 March 1963-18 June 1964.  
  
X-ray photographs. N.d.
- A.123 'Energy Spectra summary of Au data'. Contents of folder so inscribed.  
  
7pp manuscript research data + graphs etc. N.d.
- A.124-A.131 Research data etc. from runs from experiments. 1963-1964.
- A.124 Runs 6-8.
- A.125 Runs 9, 10.
- A.126 Runs 11-14.
- A.127 Runs 15-18.
- A.128 Runs 19-22.
- A.129 Runs 23, 24.
- A.130 Runs 27-29.
- A.131 Run 30.





### Research

- A.139 'The observed nature of primary radiation damage', December 1960. Later published in *Rendiconti della scuola internazionale di Fisica <E. Fermi>*, Academic Press, (1961).
- 'An account of the symposium on ion bombardment held at the C.N.R.S. laboratories, Bellevue, Paris, in December 1961', January 1962. Later published as 'Symposium on ion bombardment, Bellevue, Paris, December 1961', *British Journal of Applied Physics*, **13**, (1962), 194-196.
- A.140 'Evidence for heated spikes in bombarded gold from the energy spectrum of atoms ejected by 43 keV A<sup>+</sup> and Xe<sup>+</sup> ions', with R.S. Nelson, July 1962. Later published in *Philosophical Magazine*, **7**, (1962), 2015.
- 'The penetration of energetic ions through the open channels in a crystal lattice', with R.S. Nelson, February 1963. Later published in *Philosophical Magazine*, **8**, (1963), 1677.
- 'The penetration of energetic ions...', Amendment No. 1, issued February 1963. Later published as 'A numerical correction to "The penetration of energetic ions..."', *Philosophical Magazine*, **9**, (1964), 1069.
- A.141 'A direct measurement of the focusing energy for <110> collision sequences in gold', July 1963. Later published in *Physics Letters*, **6**, (1963), 24.
- 'The effect of proton channelling at 2.8 MeV on the Cu<sup>65</sup>(p, n)Zn<sup>65</sup> reaction rate in a single crystal of Cu', September 1964. Later published in *Physical Review Letters*, **13**, (1964), 756.
- A.142 'Proton channelling through thin crystals', Thompson et al., February 1969. Later published in *Philosophical Magazine*, **18**, (1968), 985-1016.
- A.143, A.144** **Other reports** **1966, n.d.**
- A.143 6pp typescript and 1p manuscript mailing lists of recipients of reports entitled 'I A mechanical spectrometer for analysing the energy distribution of sputtered atoms of Cu or Au' and 'II The energy spectrum of ejected atoms during the high energy sputtering of gold', 13 September 1966.
- The papers were published in *Philosophical Magazine*, **18**, (1968), 361-414.
- A.144 'Production of short lived isotopes for tracer and other chemical studies', 6pp typescript report, unidentified, n.d.

**Research**

**A.145                      PHOTOGRAPHS                      n.d.**

A.145                      Photographs. N.d.

**SECTION B**

**PUBLICATIONS AND LECTURE**

**B.1-B.33**

B.1-B.27 PUBLICATIONS

B.28-B.30 LECTURE

B.31-B.33 OFF-PRINTS

**Publications and lecture**

B.1-B.27	PUBLICATIONS	1967-1984
	Some draft publications material may also be found at A.22-A.111.	
B.1	'Theory of star patterns', <i>Proc. Int. Conf. SSP Res with Acc</i> , (1967), 106. 1p manuscript mailing list, ca 1967.	
B.2-B.12	<i>Defects and radiation damage in metals</i> , Cambridge University Press, 1969. Material from a boxfile, divided into eleven for ease of reference. Incomplete typescript draft with annotations + figures, graphs etc., and two proofs of the completed text with corrections (see B.11 and B.12). Thompson's original arrangement has been retained. An accompanying note states that the book was 'mostly written whilst at Harwell - completed in Sussex'. 1967-1972	
B.2-B.10	Incomplete typescript draft with annotations etc. Divided into eleven for ease of reference. ca 1967-1972	
B.2	4pp manuscript advance information sheet for Cambridge University Press re Thompson's biographical details, 18 September 1967.	
B.3	4pp typescript mailing list; 2pp manuscript bibliographical references. N.d.	
B.4	Contents and Chapter 1, Introduction, 7pp.	
B.5	Chapter 2, Point Defects, 42pp + graphs, figures etc.	
B.6	Chapter 3, Extended Defects, 34pp + graphs, figures etc.	
B.7	Chapter 4, The Primary Event, 49pp + graphs, figures etc.	

**Publications and lecture**

- B.8-B.10 Chapter 5, The Collision Cascade, 94pp + graphs, figures etc. 3 folders.
- B.11 Bound proof with slight corrections, 1969.
- B.12 Unbound proof with corrections and 'Corrections for 2nd Edition' inscribed on cover. Intercalated material consists of correspondence *re* corrections, 24 October 1969-14 June 1972.
- B.13 'The channelling of particles in crystals', *Contemp. Phys.*, **9**, (1968), 375-398.  
  
23pp typescript draft + references, diagrams and graphs, *ca* 1968.
- B.14 'Applications of ion implantation outside the semiconductor area', in *Proc. European conference: ion implantation, Sept. 1970 (Reading)*, Institute of Physics, (1970).  
  
Correspondence *re* paper etc., 14, 24 May 1971.
- B.15 'The energy distribution of sputtered atoms from Gold', with G.E. Chapman, B.W. Farmery, and I.H. Wilson, *Radiation Effects*, **13**, (1972), 121-129.  
  
'Sputtering', 5pp manuscript draft so entitled, *ca* 1972.
- B.16 'Estatic scattering of 5-90 eV neutral gold atoms by argon', with C. Foster and I.H. Wilson, *J. Phys. B: Atom. Molec. Phys.*, **5**, (1972).  
  
6pp typescript draft + references and figure captions, *ca* 1972; correspondence *re* publication, 6-14 January 1972.
- B.17 'Effects of inner shell excitation on the stopping power of solids for heavy ions', with G.W. Neilson, *Phys. Letters*, **49A**, (1974), 151-153.  
  
Letter *re* corrections, 9 August 1974; 6pp manuscript draft + references, *ca* 1974.

**Publications and lecture**

- B.18 'Atomic collisions at solid surfaces', in [*Proceedings of 2nd ESCAMPIG Conference, Innsbruck*, European Phys. Society, (1974).  
5pp typescript draft with annotations + references; 9pp typescript draft + references. ca 1974.
- B.19-B.23 'Scattering, energy loss and x-ray production of protons of 150-275 keV at grazing incidence on a tungsten crystal', with G.S. Harbinson, H.W. Farmery and H.J. Pabst, *Radiation Effects*, **27**, (1975), 97-108.
- B.19 27pp typescript draft with annotations + diagrams etc.
- B.20 Draft diagrams etc.
- B.21 22pp typescript draft with annotations + references etc.
- B.22 Draft diagrams etc.
- B.23 11pp proof with annotations.
- B.24-B.27 'Draft Paper: "Focusing action of lenses formed by a crystal surface". by Shoaib Ahmad and M.W. Thompson'. Contents of folder so inscribed divided into four for ease of reference. ca 1984.  
No evidence of publication.
- B.24-B.26 Correspondence etc. with S. Ahmad and Bob Collins re draft paper, 23 March 1984-11 October [?1984].
- B.27 'Atom emission through a curved surface potential' 7pp manuscript draft; 3pp manuscript corrections to draft paper; 15pp typescript and manuscript draft with annotations; draft diagrams; 8pp typescript draft with 2pp manuscript corrections attached. ca 1984.



**SECTION C**

**UNIVERSITY OF SUSSEX**

**C.1-C.11**

Thompson was Professor of Experimental Physics at the University of Sussex from 1965 to 1980 and was Visiting Professor of Experimental Physics from 1980 to 1986.

The material in this section has been arranged chronologically, it covers the period 1973 to 1980.

C.1                    *University of Sussex site development project discussion paper, January 1973, bound discussion paper with note attached inscribed 'M.W. Thompson first entry into University administration'.*

Thompson was leader of the site development project team set up to carry out investigations and planning work *re* establishment of a development plan for the University site for the 1970s and 1980s.

C.2-C.10            School of Mathematical and Physical Sciences.

The following material relates to seminars presented for the benefit of the Solid State Group and other groups within the School of Mathematical and Physical Sciences, in the period January 1974 to June 1980.

C.2-C.5            'Group seminars'. Contents of folder so inscribed, divided into four for ease of reference. January 1974-July 1979.

Thompson's manuscript notes of seminars presented by students, staff and guest lecturers; correspondence *re* arrangements for guest lectures; departmental notices etc. *re* forthcoming seminar arrangements.

C.2                    8 January 1974-5 May 1975.

C.3                    6 February-24 November 1976.

C.4                    14 June-5 October 1977.

C.5                    2 June 1978-6 July [?1979].

**University of Sussex**

- C.6-C.10            'Solids Group Seminars'. Contents of folder so inscribed, divided into five for ease of reference. February 1978-June 1980.
- Thompson's manuscript notes of seminars presented by students, staff and guest lecturers; correspondence *re* arrangements for guest lectures; departmental notices, notes etc. *re* forthcoming seminar arrangements.
- C.6                    17 January-4 October 1978.
- C.7                    6 October 1978.
- C.8                    9 October-11 December 1978.
- C.9                    12 January-4 October 1979.
- C.10                  23 January- [?] June 1980.
- C.11                  'Standing conference of professors of physics', 5pp typescript mailing list of names and addresses, n.d.

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