

Catalogue of the papers and correspondence of

Sir William Hunter McCrea FRS

(1904-1999)

VOLUME I

Introduction

Section A: Biographical

Section B: University career

Section C: Research

Section D: Publications

by Peter Harper and Timothy E. Powell

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McCrea FRS, (1904-1999), astronomer

Compiled by: Peter Harper and Timothy E. Powell

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THE ARCHIVIST
ROYAL HOLLOWAY
UNIVERSITY OF LONDON

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GENERAL INTRODUCTION

PROVENANCE

The papers were received for cataloguing from Royal Holloway University of London in 2004.

OUTLINE OF THE CAREER OF WILLIAM HUNTER McCREA

William Hunter McCrea was born on 13 December 1904 in Dublin but moved to Chesterfield, Derbyshire before he was three. Here he was educated at the Central (elementary) School and the Grammar School, from which he won an entrance scholarship in Mathematics to Trinity College, Cambridge. He read for the Mathematical Tripos, becoming a Wrangler 1926, and after graduating began research with R.H. Fowler. Recognition came early with a Cambridge University Rayleigh Prize, a Trinity College Rouse Ball Senior Studentship, a Sheepshanks Exhibition and an Isaac Newton Studentship. After spending the year 1928-1929 at Göttingen University he moved to a succession of academic appointments: Lecturer in the Mathematics Department at Edinburgh University (headed by E.T. Whittaker) in 1930, Reader at Imperial College London in 1932 and Professor of Mathematics at Queen's University Belfast in 1936. In 1943 he was given leave from Belfast to undertake Operational Research in the Admiralty in the team led by P.M.S. Blackett and in 1944 he was appointed Professor of Mathematics at Royal Holloway University of London, an appointment he took up at the end of the war. McCrea remained at Royal Holloway until 1966 when he took up his last appointment as Science Research Council supported Research Professor of Theoretical Astronomy at the recently established Sussex University. McCrea and University Professor R.J. Tayler, with the support of the Astronomer Royal R.v.d.R. Woolley and other senior Royal Greenwich Observatory staff, effectively put Sussex on the world astronomy map.

McCrea's research covered many areas of mathematics, physics and astronomy, but he is probably best known for his work on relativity and cosmology. The following brief account of some of his principal interests draws on the obituary by Robert Smith and Leon Mestel in *The Observatory Magazine*. McCrea was an advocate, along with E.A. Milne, of the use of a Newtonian framework to provide simple derivations of the expanding universe models of general relativity. In the 1950s his interest in relativity led to a contentious dispute with Herbert Dingle on the famous 'twin paradox'. During the same period he was one of the few people to take seriously the steady-state theory developed by H. Bondi, T. Gold and F. Hoyle, showing how to treat the theory within the mathematical framework of general relativity, though he later accepted that the theory was ruled out by observational evidence. He had a particular interest in star formation and developed an innovative

(though not widely supported) model for the origin of the solar system. He was the first to make a quantitative study of the rate of formation of hydrogen molecules on the surfaces of dust grains in space, a process crucial to many reactions in interstellar chemistry. He was quick to realise in the 1960s that the newly postulated phenomenon of mass transfer in close binaries could be used to explain the presence of 'blue stragglers' which occupied the extended main sequence of some globular clusters. McCrea wrote some 280 scientific papers and a number of books including *Relativity Physics* (1935), *Analytical Geometry of Three Dimensions* (1942) and the less technical *Physics of the Sun and Stars* (1950).

McCrea played a major role in British astronomy. From 1944 he spent many years on the Admiralty's Board of Visitors of the Royal Greenwich Observatory and on its Science Research Council successor. He was very actively involved in the RGO's Tercentenary celebrations (1675-1975), writing an historical review for the occasion which was published by the HMSO. In 1985 he served on a Science and Engineering Research Council (SERC) Astronomy Working Group (chairman J.F.C. Kingman) which reviewed arrangements for ground-based astronomy. McCrea strongly dissented from the subsequent decision of the SERC (announced March 1986) to move the RGO from Herstmonceux in Sussex. His work for scientific societies was extensive, including, for example, serving on key Royal Society committees with respect to astronomy and space science. However, it was his contribution to the Royal Astronomical Society that was unique, having held all four offices (President, Secretary, Treasurer and Foreign Correspondent), and serving on its Council almost continuously from 1936 to 1980. He was frequently asked to be visiting professor for long or short periods, for example at the University of California, Berkeley in 1956 and 1967 and at the Case Institute of Technology, Cleveland in 1964, and often travelled as an exchange visitor under Royal Society auspices, for example to the USSR in 1960 and 1968, India in 1976 and Egypt in 1981. He was the first British scientist to make an official visit, also under the Royal Society auspices, to Argentina after the Falklands War. As a great admirer of Georges Lemaitre, he was particularly pleased to be the first occupant of the Georges Lemaitre Chair at the University of Louvain in 1969. In his extensive overseas commitments over many years he was almost an ambassador for British astronomy.

His distinction in research and services to astronomy were recognised by many honours and awards including election to the Fellowship of the Royal Society in 1952, the award of the Gold Medal of the Royal Astronomical Society in 1976 and a knighthood in 1985.

In 1933 he married Marian Nicol Core who died in 1995. They had one son and two daughters. He died in Lewes, Sussex on 25 April 1999 aged 94.

DESCRIPTION OF COLLECTION

The papers are presented in the order given in the list of contents. They cover the period 1890-2004.

Section A, Biographical, presents significant material relating to McCrea's education and career, honours and awards. There are obituaries, interviews and biographical and autobiographical writings. The autobiographical writings consider some of his principal areas of research activity such as 'statistical physics', 'quantum physics', 'Dirac's Large Number hypothesis (LNh) and cosmology', 'solar system problems' and 'Relativity'. Of especial interest for the beginning of his career are the folders of notes made and the 37 notebooks kept by him as an undergraduate and research student at Trinity College Cambridge, 1923-1929, including the period at Göttingen in 1928-1929. Amongst the lecturers and topics represented are P.A.M. Dirac (Modern Quantum Mechanics), A.S. Eddington (Stellar Astronomy), R.H. Fowler (Thermodynamics and Kinetic Theory of Gases), D.R. Hartree (Physics of the Quantum Theory), H. Jeffreys (Operational Methods), J.E. Littlewood (Analysis Theory of Series) and F.J.M. Stratton (Stellar Physics). Also presented here are a series of 'personal' scrapbooks beginning with no. 3 '1960-1967 with a few earlier items' and continuing to the end of his life with no.17 '1993-1997'. The scrapbooks document McCrea's career in photographs, newspaper cuttings, programmes of meetings, invitation cards, table plans, etc. A series of seven 'general' scrapbooks cover the period 1960-1997 and contain principally press-cuttings, especially obituaries. There is also a great deal of other personal memorabilia in the form of invitation cards, programmes, menu cards, seating plans and similar. Many relate to academic occasions, especially in the University of London or scientific occasions, for example at the Royal Society and the Royal Astronomical Society.

Section B, University Career, documents a succession of university positions at Edinburgh, Imperial College London, Queen's University Belfast, Royal Holloway University of London and University of Sussex. There is correspondence relating to his early career at Imperial and Belfast, 1934-1944, correspondence and papers relating to Royal Holloway including the Mathematics Department and continuing after his departure for Sussex, 1945-1984, while the Sussex material documents, amongst other matters, aspects of the work of the Astronomy Centre, 1966-1989. However, the largest group of university material relates to McCrea's teaching which is a particularly valuable record for the earlier part of his career at Edinburgh, Imperial and Belfast and continues at Royal Holloway. There is also teaching material for a number of his Visiting Professorships: University of California, Berkeley in 1956 and 1967 and Case Institute of Technology, Cleveland, Ohio in 1964. Also presented here are McCrea's notes on the university teaching of others (subsequent to his own undergraduate and postgraduate education), including E.T. Whittaker and C.G. Darwin at Edinburgh and J. Todd at Belfast.

Section C, Research, is predominantly the contents of McCrea's titled folders which may include manuscript working, drafts, correspondence and off-prints. The folders cover an extended period from 1928 to the 1980s and are presented in chronological order as far as possible. Folder topics include, amongst many others, relativity, 'Milne Theory', stellar models, interstellar molecules and continual creation. Folder titles may also indicate an association with the work of collaborators, for example 'Kermack - McCrea Problems' in the 1930s, and with that of research students, especially at Royal Holloway. Some of the folders contained drafts for identifiable publications and lectures and assignment amongst the sections of the catalogue was not straightforward.

Section D, Publications, presents a major chronological sequence of drafts and related material for McCrea's publications, covering the exceptionally long period of seventy years, 1928-1997. The non-availability of a reliable bibliography of McCrea's publications, especially for the period after 1970, meant that the designation of drafts as intended for publication was sometimes tentative. A separate sequence of reviews by McCrea covers the period 1949-1995. Publications correspondence documents McCrea in a number of advisory roles including journal editor. The largest group of papers relates to the Cambridge University Press, 1964-1991 where McCrea was an editor of the Press's General Relativity series and of the Cambridge Monographs on Mathematical Physics from the conception of the series in 1972. Correspondents include fellow editor D.W. Sciama. Of particular interest is a much shorter sequence of correspondence and papers relating to *The Observatory Magazine*. McCrea became an editor in 1935 and is referred to as a former editor in 1939. Correspondents include fellow editor R.v.d.R. Woolley and contributors S. Chandrasekhar, T.G. Cowling and E.A. Milne, and offering a paper 'as an outsider' J.B.S. Haldane.

Section E, Lectures, presents a major chronological sequence of drafts and related material for McCrea's public and invitation lectures, 1931-1993. The sequence documents the great variety of topics on which McCrea talked and the range of his audiences in Britain and overseas from Oslo in 1936 to Brioni, Croatia in 1990. Also presented here are a small group of lectures by other scientists including a notebook used for McCrea's notes of lectures by A.C. Aitkin, W.O. Kermack and E.T. Whittaker, possibly at an occasion at Queen's University Belfast while McCrea was professor there, and a duplicated typescript copy of a lecture on the meaning of wave mechanics given by Erwin Schrödinger in Dublin in 1952.

Section F, Societies and organisations, presents records of McCrea's association with twenty-five UK and international organisations including the British Association, Dublin Institute for Advanced Studies, a proposed UK Institute for Theoretical Astronomy, the International Astronomical Union (IAU), the Royal Astronomical Society (RAS), Royal Greenwich Observatory (RGO), Royal Society and the UK Science Research Council (SRC) / Science and Engineering Research Council (SERC). McCrea's British Association papers cover an extended period 1934-1983 including an early period

from 1934 to the beginning of the Second World War when he was involved in various capacities with the work of the Committee of Section A (Mathematical and Physical Sciences). Although the Dublin Institute for Advanced Studies material covers a very short period 1940-1942, this represents the founding of the Institute. McCrea was a member of the Governing Board of the School of Theoretical Physics from 31 October 1940. There is significant documentation of the proposed UK Institute for Theoretical Astronomy, 1960-1966, possible locations being Cambridge (its eventual home) and Brighton. McCrea was a member (later Chairman) of the Subcommittee of the British National Committee for Astronomy which considered the proposed Institute. IAU papers principally relate to its general assemblies and symposia, 1955-1988, the 1935 Paris General Assembly being represented by historical reflections written by McCrea in 1988. McCrea's long association with the Royal Astronomical Society is documented by one of the largest components of the archive. There is a good record in correspondence and other papers of his Presidency, 1961-1963 and of the RAS Club, of which McCrea was President for many years. The most substantial group of RAS papers relates to the history of the Society, McCrea contributing a chapter on the 1930s in the second volume of its history (published 1987) covering the period, 1920-1980. McCrea also had a very long association with the Royal Greenwich Observatory which is extensively documented. There are records of the Admiralty Board of Visitors and its successor, the SRC RGO Committee and of the celebrations of the RGO Tercentenary (1675-1975) in which McCrea took a leading role. He prepared an historical review of the Observatory which was published by the HMSO in 1975, gave a number of papers on the RGO's history and wrote an article for the tercentenary exhibition catalogue. The most significant of his RGO papers, however, are probably those which relate to the decision of the SERC to move the RGO from Herstmonceux Castle in Sussex. McCrea was a very active campaigner against the move. He corresponded with politicians and colleagues and a number of colleagues copied their letters to him. He also wrote on a number of occasions to *The Times* which published an article by him on 23 April 1986. He attended a meeting of Fellows at the Royal Society, 23 May 1986, and a meeting convened by Patrick Moore, 6 June 1986, to express and to co-ordinate opinions that opposed the SERC's decision. Records of McCrea's Royal Society committee service illuminate developments in British astronomy and space science in the decades following the Second World War. There are also papers relating to two discussion meetings he helped organise: the origin and early evolution of the galaxies in 1979 and the constants of physics in 1983. Finally, McCrea's SRC / SERC material, 1966-1985, provides further documentation relating to British astronomy and space science and the future of the RGO.

Section G, Visits and conferences, provides a useful but incomplete record of McCrea's travel in the UK and overseas to attend all kinds of scientific meetings and conferences. The papers cover the period 1954-1989 and include his Visiting Professorships at University of California, Berkeley in 1956 and 1967, University of Cairo in 1973 and University of Otago, Dunedin, in 1979 and his visits as Royal Society Exchange Visitor to the USSR in 1960 and 1968 and to Egypt in 1981. He was a

regular visitor to the University of Liege, Belgium to attend international astrophysical symposia and to the USA to attend Texas Symposia on relativistic astrophysics. Meetings held under IAU and Royal Society auspices are also to be found in Section F.

Section H, History of science and scientific biography, represents a major interest and commitment of McCrea. He wrote and lectured on historical and biographical aspects of areas of his scientific interest, especially associated with major anniversaries. He also wrote many obituaries and the Royal Society biographical memoirs of H.H. Plaskett and R.v.d.R. Woolley. There are particularly large accumulations of material relating to Einstein, R.H. Fowler, E.A. Milne, Plaskett, E. Schrödinger and Woolley. Records of his principal historical writing on the Royal Astronomical Society and the Royal Greenwich Observatory are to be found in Section F.

Section J, Correspondence, is extensive and important and is presented in a number of alphabetical and chronological series suggested by McCrea's own arrangement. It covers the period 1942-1996. There is correspondence with colleagues and others relating to all aspects of his work including research, publications, lectures and visits and conferences. There are many examples of correspondence and papers from members of the public and amateur scientists on such topics as cosmology and relativity theory. Furthermore, there is significant correspondence in other parts of the archive, for example in association with his publications work and his professional affiliations with scientific societies and organisations. Taking the archive as a whole, there is correspondence of note with most of the major scientific figures in his areas of interest and the following list of principal correspondents is therefore highly selective: H. Bondi, S. Chandrasekhar, T.G. Cowling, H. Dingle, J.A. Jacobs, A.C.B. Lovell, R.A. Lyttleton, S.K. Runcorn, D.W. Sciama, J.L. Synge, R.J. Tayler, A. Unsöld, G.J. Whitrow, A.W. Wolfendale and R. v.d.R. Woolley.

There is also an index of correspondents.

Peter Harper
Bath 2005

SECTION A **BIOGRAPHICAL, A.1-A.228** **1890-2004**

- A.1 OBITUARIES
- A.2-A.40 BIOGRAPHICAL AND BIBLIOGRAPHICAL
- A.41-A.79 EDUCATION
- A.80-A.118 CAREER, HONOURS AND AWARDS
- A.119-A.142 SCRAPBOOKS
- A.143-A.200 OTHER MEMORABILIA
- A.201-A.211 PERSONAL CORRESPONDENCE
- A.212-A.220A MISCELLANEOUS BIOGRAPHICAL ITEMS
- A.221-A.228 PHOTOGRAPHS

Biographical, A.1-A.228

A.1	OBITUARIES	1999
	<i>Daily Telegraph</i>	
	<i>The Independent</i> by Leon Mestel	
	<i>The Observatory Magazine</i> by Robert Smith and Leon Mestel	
	<i>The Times</i> by R.C. Smith	
A.2-A.40	BIOGRAPHICAL AND BIBLIOGRAPHICAL	1947-1992
A.2-A.9	Interviews	1978-1985
A.2-A.4	Transcript of taped interview for American Institute of Physics with related manuscript notes and correspondence Three folders. The interview was carried out by Robert Smith of the Merseyside County Museum on 22 September 1978.	1978-1979
A.5-A.9	'1984 P. Dolan Interviews' Contents of folder so inscribed divided into five for ease of reference: transcripts, manuscript notes, photocopied papers.	1984-1985
A.10-A.14	Autobiographical writings	1991-1992
A.10-A.13	Manuscript and photocopied manuscript drafts relating to McCrea's research interests Four folders.	1991-1992
A.14	'W.H. McC 1991 M.S. not xeroxed'	1991

Biographical, A.1-A.228

Contents of folder so inscribed: miscellaneous shorter manuscript drafts including notes on involvement with RGO, parentage etc.

A.15-A.21 Biographical articles 1947-1967, n.d.

Contents of folder divided into seven for ease of reference: chiefly published articles that include a reference to McCrea and his work.

At A.19 are manuscript notes headed 'Tennis problem' and 'WHMcC 1966 May 16'.

A.22-A.25 Entries for biographical directories 1966-1990

Four folders.

A.26-A.35 Lists of publications

Includes lists organised chronologically, by topic and by publication type.

There does not appear to be a complete list of McCrea's publications.

At A.33 is the contents of folder inscribed 'List of reprints on shelves'

At A.35 are file lists, 1970 and 1972 and list of unpublished writings, 1978 found with publications lists.

Ten folders.

A.36-A.40 'Original MSS' 1971-1972

Contents of folder so inscribed divided into five for ease of reference.

For the principal chronological sequence of drafts for McCrea's publications see Section D.

Biographical, A.1-A.228

A.41-A.79	EDUCATION	1923-1929
	University of Cambridge notes and notebooks. McCrea was an undergraduate student and research student at Trinity College, Cambridge.	
A.41-A.42A	Undergraduate notes	1925, 1929
A.41, A.41A	'Elliptical functions S. Pollard Easter Term'	1925
	Contents of envelope of envelope so inscribed divided into two for ease of reference: manuscript notes, April-May 1925	
A.42, A.42A	'Dirac Michaelmas 1929'	1929
	Contents of envelope so inscribed divided into two for ease of reference: manuscript notes, softback notebook inscribed inside front cover with McCrea's name and Cambridge College and 'Modern Quantum Mechanics Michaelmas 1929'.	
A.43-A.79	Undergraduate and postgraduate notebooks	1923-1929
A.43	Chesterfield Grammar School notebook inscribed 'English Essays', 'VI Lower' and '1919' on front cover.	1923
	The Chesterfield Grammar School work has been torn out. Remaining notes relate to McCrea's work at Trinity College Cambridge.	
	Inscribed on first page 'Mr Birtwistle Pembroke Applied Math'. 1p notes only dated in '26.10.23'.	
A.44	Notebook inscribed on front cover with McCrea's name and College and 'Applied Maths Mr Birtwistle and Mr Dean'	
	Used from '12.11.23'.	

Biographical, A.1-A.228

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|------|--|------|
| A.45 | Notebook inscribed on front cover with McCrea's name and College and 'Infinitesimal Calculus Mr Pollard' and on first page with McCrea's name and College and 'Analysis. Mr Pollard (Trin) Michaelmas 1923' | 1923 |
| A.46 | Notebook inscribed on front cover with McCrea's name and College and 'Electricity Mr Birtwistle 1923' | 1923 |
| A.47 | Notebook inscribed inside front cover with McCrea's name and College and '1923 Solid Geometry Mr Welsh' | 1923 |
| A.48 | Notebook inscribed on first page with McCrea's name and College and '1923 Algebraic Solid Geometry II'

Used for solutions to examples from '24.11.23' | 1923 |
| A.49 | Notebook inscribed on front cover with McCrea's name and College and 'Electricity' and inside front cover with McCrea's name and College and 'Electricity - Mr Birtwistle' and 'Electron Theory - Mr Cunningham'

First page of notes headed 'Electron Theory'. In use Lent, Easter and Michaelmas Terms 1924. | 1924 |
| A.50 | Notebook inscribed in ink on first page with McCrea's name and College and 'Lent Term 1924 Dynamics Mr Dean' and in pencil 'Easter Term Mr Birtwistle' and 'Mr Pars'

Loose papers enclosed. | 1924 |
| A.51 | Notebook inscribed on first page with McCrea's name and College and 'Lent Term 1924. Differential Geometry Mr Welsh' | |
| A.52 | Notebook inscribed inside front cover with McCrea's name and College and on first page 'Analysis Theory of Series Mr Littlewood Lent Term 1924' | 1924 |

Biographical, A.1-A.228

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| A.53 | <p>Notebook inscribed inside front cover with McCrea's name and College and 'Thermodynamics Mr Fowler Easter Term 1924 Mr Milne Michaelmas Term 1924 7 lectures in Lent Term 1925'</p> <p>First page of thermodynamics notes dated '24.4.24'. Loose papers enclosed.</p> | 1924-1925 |
| A.54 | <p>Notebook inscribed inside front cover with McCrea's name and College and 'Michaelmas Term 1924 Electron Theory Mr Cunningham'.</p> <p>First page of electron theory notes dated '17.11.24'. Loose papers enclosed.</p> | 1924 |
| A.55 | <p>Notebook inscribed on first page with McCrea's name and College and 'Hydrodynamics. Mr Birtwistle'</p> <p>First page of hydrodynamics notes headed 'Michaelmas 1924 14.10.24'. Loose papers enclosed.</p> | 1924 |
| A.56 | <p>Notebook inscribed on first page with McCrea's name and 'Thermodynamics B. (contd in Lent Term 1925)'</p> <p>First page of notes dated '17.1.25'. Loose papers enclosed.</p> | 1925 |
| A.57 | <p>Inscribed inside front cover with McCrea's name and College and 'Lent Term 1925 Volume & Surface Integrals. Mr Pollard'</p> <p>First page of notes dated '16.1.25'.</p> | 1925 |
| A.58 | <p>Notebook inscribed on first page with McCrea's name and College and 'Lent Term 1925 Volume & Surface Integrals. II Mr Pollard'</p> | 1925 |
| A.59 | <p>Notebook inscribed on front cover with McCrea's name and College and 'Kinetic Theory of Gases Mr Fowler Mich. 1925'</p> <p>First page of notes dated '17.10.25'.</p> | 1925 |

Biographical, A.1-A.228

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|------|--|------------------|
| A.60 | Notebook inscribed on front cover with McCrea's name and College and 'Operational Methods Mr Jeffreys Michaelmas Term 1925' | 1925 |
| A.61 | Notebook inscribed on front cover with McCrea's name and College and 'Lent 1926 Mr Francis Algebra'

Loose papers enclosed. | 1926 |
| A.62 | Notebook inscribed on front cover with McCrea's name and College and 'Mr Dirac Easter 1926'

First page of notes headed 'Einstein-Burgers Stat. Mechs' and dated '27.4.26'. Loose papers enclosed. | |
| A.63 | Notebook inscribed on front cover with McCrea's name and College and 'May 1926. Mr Cunningham Crystal Lattices' (contd).

First page of notes dated '26.5.26'. | 1926 |
| A.64 | Notebook inscribed on front cover with McCrea's name and College and 'Statistical Mechanics'

Used by McCrea for notes on the literature. | [? 1926] |
| A.65 | Notebook inscribed on front cover with McCrea's name and College and 'Mr Fowler. Lent 1927'

First page of notes headed 'New Quantum Mechs' and dated '18.1.27'. Loose pages enclosed. | 1927 |
| A.66 | Notebook inscribed inside front cover with McCrea's name and College and 'Lent 1927 Mr Hartree - Physics of the Quantum Theory'

First page of notes dated '17.1.27'. | 1927 |
| A.67 | Notebook inscribed inside front cover with McCrea's name and College and 'Lent 1927' | 1927

/... |

Biographical, A.1-A.228

- /... Also inscribed inside front cover with ? German address 'Kreuz bergweg 8' [? Göttingen].
- From the front are notes on Eddington's *Internal Constitution of the Stars*. Eddington's book of this title was published 1926. There are also notes from the back beginning with questions in German.
- A.68 Notebook inscribed inside front cover with McCrea's name and College and 'Easter Term 1927 Prof. Eddington' 1927
- First page of notes dated '23.3.27'. Loose papers enclosed.
- A.69 Notebook inscribed inside front cover with McCrea's name and College 1927
- Used for manuscript notes from '30.4.27'.
- A.70 Notebook inscribed inside front cover with McCrea's name and College 1927
- Used for manuscript notes from '13.10.27'.
- A.71 Notebook inscribed on front cover with McCrea's name and College 1927
- Used from both ends for notes on the literature, latest bibliographic references, 1927. Loose papers enclosed.
- A.72 Notebook inscribed on front cover with McCrea's name and 'Dirac' 1928
- In use from '21.2.28'.
- A.73 Notebook inscribed inside front cover with McCrea's name and College and 'Easter Term 1928' and on first page 'Prof. Eddington Stellar Astronomy'. 1928
- A.74 Notebook inscribed inside front cover with McCrea's name and College and on first page with 'Mr Stratton Stellar 1928

Biographical, A.1-A.228

	Physics Easter Term 1928'	
A.75	Notebook inscribed on front cover with McCrea's name Used for manuscript working, manuscript draft in German, 'Übungen, 23.1.29'.	1929
A.76	Notebook used from both ends for notes on the literature, manuscript working etc from October 1929	1929
A.77	Notebook Inscribed inside front cover with McCrea's name and College and 'Göttingen Kurze Geismar Strasse 13/14' From the front manuscript notes on 'Prof. Milne's Papers on Chromosphere etc'. Loose papers enclosed. Latest bibliographical reference 1929.	1929
A.78	Notebook inscribed on front cover with McCrea's name and College and 'Turbulence [G.I.] Taylor Eddy Motion' Used for notes on the literature. Loose papers found enclosed. Latest bibliographical reference 1929.	1929
A.79	Notebook inscribed inside front cover with McCrea's name and College and 'Dec. 1929' Contents may relate to McCrea's teaching duties at Edinburgh University where he was mathematics lecturer, 1930-1932.	1929
A.80-A.118	CAREER, HONOURS AND AWARDS	1939-2004
A.80-A.94	Queen's University Belfast / Second World War McCrea was Professor of Mathematics at Queen's University Belfast, 1936-1944.	1939-1993
A.80-A.83	'Queen's Univ. Air Squadron'	1942-1944

Biographical, A.1-A.228

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|--------------|---|-----------|
| A.97 | Visiting Professorship, Case Institute of Technology, Cleveland, Ohio 1964 | 1961-1963 |
| | Invitations from Cleveland and related correspondence. McCrea was unable to accept an initial invitation because of his Presidency of the Royal Astronomical Society, 1961-1963. | |
| A.98-A.100 | University of Sussex | 1965-1966 |
| | McCrea was Professor of Theoretical Astronomy, 1966-1972 | |
| | Correspondence and papers <i>re</i> appointment. | |
| | Papers include 'Interim application for funds to support research in theoretical astronomy at the University of Sussex' and 'Collaboration with the Royal Greenwich Observatory, Herstmonceux'. | |
| | Three folders | |
| A.101, A.102 | Election to Fellowship, Imperial College London 1967 | 1967-1970 |
| | Correspondence and papers <i>re</i> McCrea's election, formal presentation of Fellows, etc | |
| | A little later material <i>re</i> the College is at A.102. | |
| A.103 | Honorary degree, Trinity College Dublin | 1972 |
| | McCrea's speech on behalf of the honorary graduands, 6 July 1972. | |
| A.104-A.105 | ' "Retirement", 1972 July 25' | 1972-1973 |
| | Contents of folder so inscribed divided into two for ease of reference: correspondence and papers <i>re</i> meeting in McCrea's honour, 25 July 1972. | |
| A.106 | Gold Medal of the Royal Astronomical Society | 1976 |
| | Letters of congratulation. | |

Biographical, A.1-A.228

- | | | |
|-------------|--|-----------|
| A.107 | Honorary degree, University of Sussex

Correspondence and papers including McCrea's speech of thanks. | 1978 |
| A.108 | 80th birthday

Includes notice for Royal Astronomical Society / University of Sussex meeting to celebrate McCrea's 80th birthday. | 1984 |
| A.109-A.111 | Knighthood 1985

Includes letters of congratulation and papers <i>re</i> Imperial Society of Knight Bachelor.

Three folders. | 1985-1998 |
| A.112 | Founder member European Astronomical Society

Certificate only. | 1992 |
| A.113 | Dinner on the occasion of the Sir William McCrea Centenary Lecture, Royal Holloway University of London

Signed table plan and menu. Photocopies. | 2004 |
| A.114-A.118 | 'Records'

Contents of two folders so inscribed divided into five for ease of reference: shorter correspondence and papers <i>re</i> career, honours and awards.

Includes letters of thanks for service, invitations to accept honours, etc.

Papers at A.114 relate to McCrea's time in Belfast and subsequent Irish connexions. | 1942-1988 |

Biographical, A.1-A.228

A.119-A.142	SCRAPBOOKS	1923-1997
	McCrea kept two series of scrapbooks: 'Personal' and 'General'.	
A.119-A.135	'Personal' scrapbooks	1923-1997
	The first personal scrapbook made available for cataloguing was no.3 in the series.	
	The scrapbooks include photographs, newspaper cuttings, programmes of meetings, invitation cards, table plans, etc.	
A.119	'Index to Personal Scrapbook W.H. McCrea'	
	Contents of ringbinder so labelled.	
A.120	'Book 3 1960-67 (personal) with a few earlier items'	1952-1967
	Scrapbook so inscribed on front cover. The first item is a page from the Cambridge University Reporter 30 July 1952 including notice of McCrea's election to a Comyns Berkeley Bye-Fellowship at Gonville and Caius College.	
	Loose items enclosed.	
A.121	'Book 3A W.H. McCrea 1966-68 Personal'	1962-1971
	Scrapbook so inscribed on front cover. Loose items enclosed.	
A.122	'Book 4 W.H. McCrea 1967 Nov - 1970 Feb (Personal)'	1923-1970
	Scrapbook so inscribed on front cover. Contents predominantly 1967-1970 but at the back of the book are a small number of significantly earlier items from Chesterfield School, Trinity College Cambridge etc.	
A.123	'Book 5 W.H. McCrea 1970-1971 June (Personal)'	
	Scrapbook so inscribed on front cover. Loose items enclosed.	

Biographical, A.1-A.228

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| A.124 | 'Book 6 W.H. McCrea 1971 May - 1972 Sep.' | 1960-1972 |
| | Scrapbook so inscribed on front cover. Content predominantly 1971-1972. A few earlier items at the back of the book. Loose items enclosed. | |
| A.125 | 'Book 7 W.H. McCrea 1972 Sep - 1975 (Personal)' | 1972-1975 |
| | Contents of scrapbook so enclosed. Loose items enclosed. | |
| A.126 | 'Book 8 W.H. McCrea 1975 - 1976 Nov' | 1975-1976 |
| | Scrapbook so inscribed on front cover. Loose items enclosed. | |
| A.127 | 'Book 9 W.H. McCrea 1976 Dec - 1977 Dec India 1976 Dec - 1977 Jan' | 1976-1977 |
| | Scrapbook so inscribed on front cover. | |
| A.128 | 'Book 10 W.H. McCrea 1978 Jan - 1980' | 1977-1980 |
| | Scrapbook so inscribed on the front cover. Loose items enclosed. | |
| A.129 | 'Book 11 W.H. McCrea 1979-82' | 1979-1983 |
| | Contents of scrapbook so enclosed. Loose items enclosed. | |
| A.130 | 'Book 12 W.H. McCrea 1984-86' | 1984-1986 |
| | Scrapbook so inscribed on front cover. Loose items enclosed. | |
| A.131 | 'Book 13 1986-88 W.H. McCrea' | 1986-1990 |
| | Scrapbook so inscribed on front cover. Loose items enclosed. | |

Biographical, A.1-A.228

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| A.132 | 'Book 14 1988 McCrea' | 1931-1990 |
| | Scrapbook so inscribed on front cover. Contents predominantly 1988 but a few earlier and later items are included. Loose items enclosed. | |
| A.133 | '15 W.H. McCrea 1989-1995 Personal' | 1929-1995 |
| | Scrapbook so inscribed on front cover. Contents predominantly 1989-1995 but a few earlier items are included. Loose items enclosed. | |
| A.134 | '16 W.H. McCrea Personal 1995 - ' | 1960-1995 |
| | Scrapbook so inscribed on front cover. Contents predominantly 1995 but a few earlier items are included. Loose items enclosed. | |
| A.135 | '17 W.H. McCrea Personal 1993-1997' | 1993-1998 |
| A.136-A.142 | 'General' scrapbooks | 1955-1997 |
| A.136 | '(A) W.H. McCrea 1960-1971 Cuttings (General)' | 1960-1971 |
| | Scrapbook so inscribed on front cover. Principally obituaries. Loose items enclosed | |
| A.137 | '(B) W.H. McCrea 1971-1977 General' | 1955-1977 |
| | Scrapbook so inscribed on front cover. Contents predominantly press-cuttings 1971-1977 but a few earlier items are included. Loose items enclosed. | |
| A.138 | (C) W.H. McCrea Cuttings General 1977-1984' | 1976-1984 |
| | Contents of scrapbook so inscribed. Includes many obituaries. | |

Biographical, A.1-A.228

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| A.139 | '(D) W.H. McCrea 1984-1989 General'

Scrapbook so inscribed on front cover. | 1984-1989 |
| A.140 | '(E) W.H. McCrea 1988-92 General and some personal'

Scrapbook so inscribed on the front cover. Predominantly press-cuttings including many obituaries with a few invitation cards. Loose items are enclosed. | 1988-1992 |
| A.141 | '(F) General 1992-5'

Scrapbook so inscribed on front cover. Includes many obituaries. | 1992-1995 |
| A.142 | '(G) General 1995-Dec '97'

Scrapbook so inscribed on front cover. Loose items enclosed. | 1995-1997 |
| A.143-A.200 | OTHER MEMORABILIA

Principally invitation cards, programmes, menu cards, seating plans and similar. Many relate to academic occasions, especially in the University of London or scientific occasions, for example at the Royal Society, Royal Astronomical Society, etc.

A chronological sequence with a separate sequence of newspapers and press-cuttings at A.188-A.198. At A.199-A.200 are a small group of Second World War civil defence booklets. | 1890-1992 |
| A.143 | 1925-1929 | |
| A.144 | 1930-1931 | |
| A.145 | 1936, 1938 | |

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Biographical, A.1-A.228

- /... 1938 material relates to British Association meeting at Cambridge.
- A.146 1945
Re centenary celebrations of Imperial College London.
- A.147, A.148 1946
Includes papers *re* celebration of tercentenary of Newton's birth (A.147) and centenary of the discovery of Neptune (A.148).
Two folders.
- A.149, A.150 1947
Includes papers *re* centenary of the Chemical Society (A.149).
Two folders.
- A.151-A.153 1948
Three folders.
- A.154 1949
- A.155 1950
- A.156 1951
- A.157-A.158 1952
Two folders.

Biographical, A.1-A.228

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| A.159-A.161 | 1953 | Three folders. |
| A.162, A.163 | 1954 | Two folders.

At A.163 is a little memorabilia relating to the International Congress of Mathematicians, Amsterdam, 1954. |
| A.164-A.167 | 1955 | Four folders.

At A.165 is memorabilia <i>re</i> general assembly of the International Astronomical Union, Dublin, September 1955. |
| A.168-A.170 | 1956 | Three folders.

Includes memorabilia <i>re</i> Visiting Professorship at the University of California (A.168, A.169). |
| A.171-A.173 | 1957 | Three folders. |
| A.174-A.176 | 1958 | Three folders. |
| A.177-A.179 | 1959 | Three folders. |
| A.180-A.182 | 1960 | Three folders. |

Biographical, A.1-A.228

A.183	1966	
A.184	1972, 1977	
A.185	1981-1984	
A.186	1990-1992	
A.187	N.d.	
A.188-A.198	Newspapers and press-cuttings Eleven folders.	1890-1991
A.199-A.200	Second World War civil defence booklets Two folders.	1939-1940
A.201-A.211	PERSONAL CORRESPONDENCE	1930-1992
A.201-A.204	'Personal 1966/67 Closed' Contents of folder so inscribed divided into four for ease of reference: includes personal invitations, letters of thanks, miscellaneous greetings.	1965-1969
A.205-A.207	'Personal (1967/68)' Contents of folder so inscribed divided into three for ease of reference: includes personal invitations, letters of thanks, miscellaneous greetings.	1966-1968

Biographical, A.1-A.228

A.208	'Personal 1969/70/71'	1966-1972
	Contents of folder so inscribed: includes personal invitations, letters of thanks, miscellaneous greetings.	
A.209	'1991 April (operation-time) Letters to W.McC.'	1991
	Contents of folder so inscribed.	
A.210-A.211	Miscellaneous personal correspondence	1930-1992
	Two folders.	
A.212-A.220A	MISCELLANEOUS BIOGRAPHICAL ITEMS	1929-1988
A.212-A.215	'Subscription'	1966-1972
	Contents of folder so inscribed divided into four for ease of reference: correspondence, receipts etc for McCrea's subscriptions to a number of organisations, principally scientific.	
A.216	Lists of ?things to do	c.1938, 1970-1982
A.217	'Howlers'	1937, n.d.
	Contents of folder so inscribed: manuscript and printed material.	
A.218	Account book	1929-1930
	Small format softbacked notebook used for accounts. Covers loose, one inscribed with three addresses for McCrea at Trinity College Cambridge, in Chesterfield and in Göttingen. Loose items enclosed include letter from Junior Bursar, Trinity College Cambridge, 30 September 1929, beginning 'The mathematical Electors to Fellowships are anxious to have an opportunity of questioning you on the subject of your theses'.	

Biographical, A.1-A.228

- A.219 Black hardback notebook inscribed inside front cover with McCrea' s personal address in London and the date '1935' 1935
- Used for 'Diary of Work' May to September 1935
- A.219A Softback 'Exercise Book' inscribed on front cover 'W.H. McCrea 1973 Feb 1 TOPICS' 1973
- Used ?for topics of prospective lectures and publications.
- A.220 Small format jotter 1975-1987
- Used from both ends for lists of things to do, telephone numbers etc.
- A.220A Small format jotter 1988
- Used for lists of things to do, miscellaneous jottings.
- A.221-A.228 PHOTOGRAPHS**
- Photographs of McCrea and colleagues are to be found in the scrapbooks at A.119-A.135.
- A.221 McCrea and S. Chandrasekhar 1935, 1975
- Print of photograph of McCrea and S. Chandrasekhar taken by D. Shoenberg, December 1935.
- The print was sent to McCrea, 21 April 1975, by Chandrasekhar, with a covering letter.
- A.222 Group photograph including McCrea at society of former pupils of Chesterfield School commemoration 1991
- With covering letter, 22 May 1991.

Biographical, A.1-A.228

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| A.223 | Three postcard format photographs

Includes group photograph ? with McCrea. | N.d. |
| A.224 | Group photograph of scientific colleagues including McCrea

?photograph taken at Sussex university. | N.d. |
| A.225 | Two photographs two scientific colleagues, one taken at Herstmonceux | N.d. |
| A.226 | Two astronomical photographs

Includes 1974 print inscribed on verso 'Sobral eclipse...Einstein experiment'. | ? 1931, 1974 |
| A.227 | Two photographs of Halley's comet

With covering letter from M.S. Longair, 30 January 1986 | 1986 |
| A.228 | 'Films'

Contents of Kitt Peak National Observatory envelope so inscribed: film strips ?recording a visit to Kitt's Peak where McCrea was consulting astronomer 1965 and 1975. | N.d. |

SECTION B UNIVERSITY CAREER, B.1-B.298 1934-1990

B.1-B.125 GENERAL CORRESPONDENCE AND PAPERS

B.126-B.298 TEACHING

B.1-B.125 GENERAL CORRESPONDENCE AND PAPERS 1934-1990

B.1-B.10 'IC [Imperial College London] and QUB [Queen's
University Belfast] ~ 1934 - 1942' 1934-1944

Contents of folder so inscribed.

McCrea was Reader in Mathematics, University of London
and Assistant Professor, Imperial College of Science,
1932-1936, and Professor of Mathematics, Queen's
University of Belfast, 1936-1944.

B.1 1934

B.2 1936-1937

B.3 1938

Includes correspondence *re* resignations from Zentralblatt
für Mathematik.

B.4 1939 January - June

Includes correspondence *re* resignations from Zentralblatt
für Mathematik.

B.5 1939 July - November

B.6 1940

Includes article on 'Federal Union Elections and
Government' by J.H. Humphreys, Secretary of the

University career, B.1-B.298

Proportional Representation Society,. This was sent to McCrea 'for acceptance ... for Federal Union News', 4 January 1940.

B.7	1941	
B.8	1942	
B.9	1943-1944	
B.10	N.d.	
	Includes manuscript and typescript notes.	
B.11-B.67	Royal Holloway University of London	1945-1984
	McCrea was Professor of Mathematics, University of London (Royal Holloway College), 1944-1966.	
	The sequence includes papers relating to the University of London more generally (B.25-B.67).	
B.11-B.14	'Royal Holloway College Secretary and Registrar 1948-58'	1947-1958
	Contents of folder so inscribed.	
B.11-B.13	Correspondence with College Secretary	1947-1958
	At B.12 are papers for meeting of Sub-Committee on Awards, October 1950.	
	Three folders.	
B.14	Correspondence with College Registrar	1948-1956
B.15-B.19	Royal Holloway College Mathematics Department	1950-1984

University career, B.1-B.298

B.15-B.17	'W.H. McCrea Some examining 1950-1964'	1950-1964
	Contents of folder so inscribed divided into three for ease of reference: printed, manuscript and duplicated typescript material.	
B.18, B.19	Correspondence and papers	1955-1984
	Includes photograph (B.18) and estimates for 1967-1972 quinquennium prepared 1965 and papers subsequent to McCrea's departure from Royal Holloway in 1966.	
	Two folders.	
B.20-B.24	Miscellaneous correspondence and papers <i>re</i> Royal Holloway affairs	1945-1984
	Five folders.	
	At B.22 are papers <i>re</i> Mary Bradburn dinner and presentation including drafts of McCrea's speech. She retired from her post as Senior Lecturer in the Mathematics Department in 1980.	
	At B.23 are papers <i>re</i> merger of Royal Holloway and Bedford Colleges.	
B.25-B.59	University of London Board of Studies in Mathematics	1945-1960
B.25-B.38	'Board of Studies 1945/58'	1945-1958
	A sequence of minutes of meetings so labelled presented by year.	
B.25	1945	
B.26	1946	
B.27	1947	
B.28	1948	

University career, B.1-B.298

B.42	1947	
B.43	1948	
B.44, B.45	1949	
	Two folders.	
B.46-B.48	1950	
	Three folders.	
B.49	1951, 1953	
B.50	1956	
B.51	1957-1958	
B.52-B.54	1959	
	Three folders.	
B.55-B.59	1960	
	Five folders.	
B.60-B.67	'University of London Computing Unit 1957-59'	1951-1959
	Contents of folder so inscribed divided into eight for ease of reference: correspondence and papers <i>re</i> establishment of the 'Computer Unit' including policy documents <i>re</i> quinquennium 1952-1957 and quinquennium 1957-1962.	

University career, B.1-B.298

B.68-B.125	University of Sussex	1959-1990
	McCrea was Professor of Theoretical Astronomy at Sussex, 1966-1972 and Director of the Research Group in Theoretical Astronomy.	
B.68-B.70	'Vice-Chancellor'	1970-1990, n.d.
	Contents of folder so inscribed: correspondence with Vice-Chancellors and other senior Sussex colleagues.	
B.68	1970	
B.69	1972	
B.70	1981-1990, n.d.	
B.71-B.111	Astronomy Centre	1966-1989
B.71	Manuscript notes by McCrea on Sussex, Astronomy and the Royal Greenwich Observatory headed 'written 1986' and 'Not used'	1986
B.72, B.73	'Working Party on Astronomy (1966/7)'	1966-1967
	Contents of folder so inscribed divided into two for ease of reference: correspondence and papers.	
	The working party was set up to decide how astronomy could be introduced into the undergraduate curriculum.	
B.74	'M.Sc. Course in Astronomy (1966-67)'	1966
	Duplicated course outlines etc.	
	The course was jointly organised by Sussex and the Royal Greenwich Observatory at Herstmonceux.	

University career, B.1-B.298

B.75-B.79	'1966 Oct → "Cosmology" Seminar' Contents of folder so inscribed divided into five for ease of reference: manuscript notes taken by McCrea at seminars, typescript drafts, printed material etc.	1966-1967
B.80-B.84	'M.Sc. Examination' Contents of folder so inscribed divided into five for ease of reference: manuscript, typescript and duplicated examination questions, practice questions, revision exercises etc.	1966-1972
B.85-B.88	'Postgraduates - General' Contents of folder so inscribed divided into four for ease of reference: typescript and duplicated papers <i>re</i> postgraduate students, M.Sc. course etc.	1966-1974
B.89-B.100	Science Research Council supported research group in theoretical astronomy	1965-1972
B.89	'S.R.C Grant for Research Group in Theoretical Astronomy 1966 (and previous)' Copies of correspondence and papers <i>re</i> establishment of a research group in theoretical astronomy at Sussex.	1965-1968
B.90-B.91	'S.R.C. Grant for Research Group in Theoretical Astronomy (1967)' Contents of folder so inscribed divided into two for ease of reference: correspondence and papers including manuscript and typescript versions of annual report on the work of the research group.	1967
B.92-B.94	'S.R.C. Grant for Research Group in Theoretical Astronomy (1968)' Contents of folder so inscribed divided into three for ease of reference: correspondence and papers including 'Theoretical Astronomy - notes on present position from	1968

University career, B.1-B.298

W.H. McCrea' and 'Theoretical Astronomy: work done during the past two years with support from the S.R.C. - note from W.H. McCrea', both dated 20 January 1968, and McCrea's annual report on the work of the research group, 29 May 1968.

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| B.95 | 'S.R.C. Grant for Research Group in Theoretical Astronomy (1969)' | 1969 |
| | Contents of folder so inscribed: correspondence and papers. | |
| B.96 | 'S.R.C. Group - Annual Report 1969' | 1969 |
| | Contents of folder so inscribed: correspondence and papers. | |
| B.97-B.100 | 'SRC Annual Report 1969-70 1970-71 1971-72' | 1970-1972 |
| | Contents of folder so inscribed divided into four for ease of reference: correspondence and papers including manuscript drafts. | |
| B.101 | 'Seminars and Colloquia - Astronomy Centre, 1966/67 Outside Speakers' | [1967] |
| | 1p typescript list. | |
| B.102 | 'Notes Visiting Professors 1969' | 1969 |
| | Contents of folder so inscribed: manuscript notes on ?seminars given by visitors to Astronomy Centre. | |
| B.103, B.104 | Lists of seminars and lectures | 1970-1972 |
| | Two folders. | |
| B.105-B.111 | Miscellaneous correspondence and papers <i>re</i> the astronomy centre and astronomy at Sussex | 1969-1989 |
| | Seven folders. | |

University career, B.1-B.298

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|--------------|---|-----------|
| B.112-B.125 | Miscellaneous correspondence and papers <i>re</i> Sussex affairs | 1959-1986 |
| B.112-B.120 | Committee on Physics Courses for Mathematicians
Correspondence and papers.
Nine folders.
McCrea chaired the Committee. | 1970-1972 |
| B.121 | Arts Science Seminar
Manuscript notes by McCrea. | 1966 |
| B.122, B.123 | Howard Society
At B.123 is manuscript draft of a talk by McCrea to the Society, 16 November 1976.
The Howard Society is described as being affiliated to the Union of Catholic Students. McCrea was President of the Society in 1976. | 1975-1986 |
| B.124 | SIGMA The official organ of Sussex University Mathematics Society
Copy of SIGMA with manuscript notes and correspondence enclosed. | 1959-1974 |
| B.125 | 1972-1979, n.d. | |

University career, B.1-B.298

B.126-B.298	TEACHING	c.1929-1974
B.126-B.288	Teaching by McCrea	c.1929-1974
B.126-B.278	Notes and drafts	c.1929-1974
B.126-B.130	'Curves and Curve-tracing' Contents of folder so inscribed divided into five for ease of reference: manuscript notes. These notes may have been prepared and used over an extended period of time. Questions of dating are complicated by the use of both sides of many papers for different purposes at different times. Latest bibliographical reference 1942.	c.1929-c.1942
B.131-B.148	'W.H. McCrea Final Honours General Analysis Complex Variable Tutorials Some lecture notes included Lent 1931 QUB 1939 1941' Contents of folder so inscribed.	1930-1944
B.131-B.133	'Lecture Notes' Papers enclosed within wrapper so inscribed divided into three for ease of reference. First page headed 'Function of a Complex Variable'	
B.134	'Complex Variable' Manuscript notes so titled found clipped together	
B.135-B.139	Groups of manuscript notes found clipped together: 'Analytic continuation', 'The Gamma Function', 'Bessel Coefficients', 'Legendre functions', 'The Fourier Integral', 'Further deductions for Cauchy's Th[eorem].', 'Complex Variable Theory', 'Elliptic functions', untitled. Five folders.	

University career, B.1-B.298

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| B.140-B.148 | 'Examples' | |
| | <p>Papers enclosed within wrapper so inscribed divided into nine for ease of reference: includes notes headed 'Final honours' for dates in October-November 1930, 'General Analysis' for dates in December 1930, 'Complex Variable' for December 1938 and 1939, 'Honours Analysis' for November-December 1941.</p> | |
| B.149-B.151 | 'Elementary Conics' | 1930-1931 |
| | <p>Contents of Queen's University Belfast envelope so inscribed divided into three for ease of reference: manuscript notes on 'Conics' dated 'Summer 1931', 'Analytical Geometry', n.d. and 'The Ellipse', including date '14.5.30'.</p> | |
| B.152-B.155 | 'Notes on Quantum Theory / Metals Molecules' | 1934 |
| | <p>Contents of folder so inscribed divided into four for ease of reference: ? predominantly <i>re</i> teaching by McCrea but includes his notes on colloquiums by R.L. Rosenberg dated '28.2.34' and '7.3.34'.</p> | |
| B.156-B.161 | 'Course I Algebra' | N.d. |
| | <p>Contents of folder so inscribed divided into six for ease of reference: manuscript notes.</p> <p>The original folder was also inscribed with McCrea's name and addresses at Imperial College (crossed out) and Queen's University Belfast. McCrea moved to Imperial in 1932 and Belfast in 1936.</p> | |
| B.162 | 'Remainder of Exx / Rest loaned to S.C. June 1935' | 1935 |
| | <p>Papers enclosed within wrapper so inscribed: includes manuscript notes headed 'Potential', 'Molecular optics' and 'Wave Mechanics'.</p> | |
| B.163 | 'Approximate solutions of Wave Equations' | N.d. |
| | <p>Contents of Imperial College of Science and Technology envelope so inscribed: manuscript notes.</p> | |

University career, B.1-B.298

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| B.164-B.168 | 'Projective Geometry Exx and Solutions ~ 1936-9.
Looked at 1972' | 1936-1940 |
| | Contents of envelope so inscribed divided into five for ease of reference: manuscript notes, duplicated papers. | |
| B.169-B.199 | Sequence of notes found together | N.d., 1932-1935 |
| | Predominantly undated. | |
| B.169 | 'Approx. of Wentzel-Brillouin applied to potential barrier after the manner of Gamov' | |
| | Manuscript notes so titled. | |
| B.170 | 'Special Relativity Early Notes in E.M.' | |
| | Manuscript notes so labelled. | |
| B.171 | 'Some notes from Lorentz Theory of Electrons' | |
| | Manuscript notes so labelled. | |
| B.172 | 'Molecular Optics' | |
| | Manuscript notes so titled. Includes bibliographical reference, 1933. | |
| B.173 | 'Potentiality of a cone' | |
| | Manuscript notes so titled. | |
| B.174 | 'Remainder of Notes on Electromagnetic Theory ...' | |
| | Manuscript notes so labelled. | |
| B.175 | 'Remainder of Notes on Elementary Quantum Theory others included in notes on Electromagnetic Theory' | |
| | Manuscript notes so labelled. | |

University career, B.1-B.298

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| B.192 | 'Theory of Radiation' | 1932-1933 |
| | Manuscript notes including papers dated '20.12.32' and '10.1.33'. | |
| B.193 | 'Some miscellaneous notes on heterogeneous systems, including method of cycles / elementary treatment of osmotic pressures / general criteria of equilibrium in terms of F etc' | |
| | Manuscript notes so titled. | |
| B.194-B.199 | Manuscript notes on thermodynamics, etc | c.1935 |
| | Includes softback notebook (B.196). Predominantly undated. Latest bibliographical reference, 1935. | |
| | Six folders. | |
| B.200 | 'Albert Algebra Incl. Solutions of examples. Course III Algebra' | N.d. |
| | Contents of folder so inscribed: manuscript notes. A.A. Albert's <i>Higher Modern Algebra</i> was published in 1937. | |
| B.201-B.204 | 'Algebra Chiefly Cartan Spinors etc' | N.d. |
| | Contents of folder so inscribed divided into four for ease of reference: manuscript notes. Elie Cartan published his 'Lecons sur la theorie des spineurs' in 1938. Latest bibliographical reference, 1939. | |
| B.205-B.207 | 'Conics Elementary Examples ' | 1941-1943 |
| | Contents of envelope so inscribed divided into three for ease of reference: manuscript notes and duplicated papers. Includes duplicated papers for 'R.A.F. Pre-Entry Course', 1943. The envelope was addressed to McCrea at Queen's University Belfast. | |

University career, B.1-B.298

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| B.208-B.213 | <p>'Air Training Corps War Time Air Navigation'</p> <p>Contents of envelope so labelled: manuscript notes, duplicated papers and three Royal Air Force soft-backed exercise books.</p> <p>Six folders.</p> | 1941-1942 |
| B.214-B.217 | <p>'Mathematics and Natural Philosophy'</p> <p>Contents of folder so inscribed divided into four for ease of reference: manuscript notes, etc for McCrea's course of lectures on this topic for University of London Intercollegiate Lectures in Mathematics, 1947-1948.</p> <p>Includes at B.217 on verso of teaching notes manuscript draft by McCrea for Royal Holloway College Colloquium on 'The origin of fundamental problems in physics', 3 February 1948.</p> | 1947-1948 |
| B.218-B.223 | <p>'Theories of Relativity Autumn 1954'</p> <p>Contents of folder so inscribed divided into six for ease of reference: manuscript notes etc for McCrea's course of lectures on this topic for University of London Intercollegiate Lectures in Mathematics 1954-55. Include 'Newtonian Theory'; 'Special Relativity', 'General Relativity', etc.</p> | 1951-1954 |
| B.224-B.231 | <p>'W.H. McCrea 1956 Feb-June Berkeley Notes for Lectures Interaction between Stars and Interstellar Matter'</p> <p>Contents of folder so inscribed divided into eight for ease of reference: outline of proposed lecture course, manuscript notes etc for course given by McCrea at University of California, Berkeley as Visiting Professor.</p> <p>At B.227 is duplicated typescript of preliminary communication by McCrea on 'Motions of stars through clouds - accretion' for IUTAM-IAU symposium, July 1953.</p> | 1953-1956 |
| B.232-B.234 | <p>'Differential Geometry Elementary Lecture Notes ~ 1956 No Permanent Value'</p> <p>Contents of folder so inscribed divided into three for ease of reference: manuscript notes.</p> | 1956 |

University career, B.1-B.298

B.235-B.237	'Postgraduate problems'	1958-1962
	Contents of folder so inscribed divided into three for ease of reference: off-prints, 1958-1961; manuscript notes including 1p headed 'Postgrad problems', latest bibliographical reference 1962.	
B.238-B.241	'Relativity Lectures and Examples'	1958-1963
	Contents of folder so inscribed divided into four for ease of reference: manuscript notes, etc.	
B.242-B.246	'W.H. McC. Electromagnetism and Special Relativity 1962-3 Lectures'	1962-1963
	Contents of folder so inscribed divided into five for ease of reference: typescript outline of lecture course, manuscript notes, etc.	
B.247	'Relativity Some Questions (U. of London) 1963-5'	1961-1965
	Contents of folder so inscribed: printed papers.	
B.248	'Cosmology Lectures 1963'	1963
	Contents of folder so inscribed: manuscript notes.	
B.249, B.250	'Cosmol. Misc Notes ~ 1964'	1963-1964
	Contents of folder so inscribed divided into two for ease of reference.	
B.251-B.258	'Electromagnetism and Special Relativity 1964-5 Examples'	1959-1965
	Contents of folder so inscribed divided into eight for ease of reference: manuscript notes, typescript, duplicated and printed papers.	

University career, B.1-B.298

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| B.259-B.267 | <p>'Cosmology Lectures Case 1964 Kitt Peak (some) 1965'</p> <p>Contents of folder so inscribed divided into nine for ease of reference: includes manuscript notes for course of lectures on cosmology at Case Institute of Technology, Cleveland, Ohio as Visiting Professor.</p> <p>He was consulting astronomer at the Kitt Peak National Observatory, Arizona, 1965.</p> | 1960-1965 |
| B.268-B.271 | <p>'1967 Berkeley Seminar Cosmology Notes by WHMcC Topics by students'</p> <p>Contents of folder so inscribed divided into four for ease of reference: manuscript notes, etc.</p> <p>McCrea was Visiting Professor in the Astronomy Department, University of California, Berkeley, 1967.</p> | 1967 |
| B.272-B.277 | <p>W.H. McCrea 1973 after Cairo Cosmology Lecture Notes Micellaneous'</p> <p>Contents of folder so inscribed divided into six for ease of reference: manuscript notes for University of Sussex M. Sc. 1967 -1970-71, 'Kitt Peak 1965 July', etc. McCrea's 1967 notes for the Sussex course have his later (1973) comments on them.</p> <p>McCrea was Royal Society Leverhulme Visiting Professor of Astronomy at Cairo University, 1973.</p> | 1965-1973 |
| B.278 | <p>'RA 1974 Feb 9'</p> <p>Contents of folder so inscribed: manuscript notes, printed papers etc.</p> <p>McCrea contributed to a one day special relativity course at Sussex 'Special Relativity as background to school courses', 9 February 1974.</p> | 1972-1974 |
| B.279-B.288 | <p>Notebooks</p> <p>These notebooks were not always easy to assign but probably relate more to teaching than research or other activities.</p> | 1930-1957 |

University career, B.1-B.298

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| B.279 | <p>Notebook inscribed inside front cover with McCrea's name and address 'Math. Inst. Edinburgh' and dated '1930 January'</p> <p>Used ?for McCrea's mathematical teaching at Edinburgh. Loose papers enclosed.</p> | 1930 |
| B.280 | <p>Notebook inscribed on first page with McCrea's name and address 'Mathematical Department University of Edinburgh' and dated 'Easter Term 1930'</p> <p>First page of notes headed 'Geometries without a matrix' and dated '22.4.30'</p> | 1930 |
| B.281 | <p>Notebook inscribed on first page with McCrea's name and address 'Mathematics Department University of Edinburgh' and dated '5.6.30'</p> <p>Used for ?teaching notes on relativistic cosmology. Loose papers enclosed.</p> | 1930 |
| B.282 | <p>Notebook inscribed on front cover with McCrea's name and address 'Mathematical Dept University of Edinburgh'</p> <p>Used for ?mathematical teaching notes.</p> | N.d. |
| B.283 | <p>Notebook inscribed on first page 'W.H. McCrea'</p> <p>Used for notes ?for teaching notes on 'The Uncertainty Principle', 'Determinism', 'Prediction in Q[uantum] Mechanics', etc., October-December 1931 and 'Lent Term 1932'.</p> | 1931-1932 |
| B.284 | <p>Notebook inscribed inside front cover with McCrea's name and address 'Dept of Math. University of Edinburgh'</p> <p>Used for ?teaching notes on 'Geometry of Paths', 'Principle of equivalence', 'Quasi-uniform field', ' "Instantaneous space" ', etc., January-March 1932. Loose pages enclosed.</p> | 1932 |

University career, B.1-B.298

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| B.285 | Notebook inscribed on first page 'W.H. McCrea'

Used for ?teaching notes on 'Null geodesics', 'Doppler Effect in General Relativity', etc, April-May 1932. | 1932 |
| B.286 | Notebook with address label on front cover with McCrea's name and address 'Holmwood, Sunninghill, Berkshire'

Used for records of external examining in Britain and Ireland. | 1948-1949 |
| B.287 | Notebook with address label on front cover 'Holmwood, Larch Avenue, Sunninghill, Berks' inscribed with McCrea's name, 'Cosmology' and date '22.7.49'

Used ?for teaching notes on cosmology. Loose papers enclosed. | 1949 |
| B.288 | Notebook inscribed with McCrea's name inside front cover

Used from both ends ?for mathematical teaching notes. | 1957 |
| B.289-B.298 | Teaching by others

Teaching by others that formed part of McCrea's undergraduate and postgraduate education is at A.41-A.79. | 1930-1937 |
| B.289-B.294 | Notes and drafts

'Complex Variable Theory (Final Hons)'. Contents of envelope so inscribed divided into six for ease of reference; duplicated manuscript notes entitled 'The Theory of Functions of a Complex Variable. Being Notes for Lectures delivered in 1935 at The Queen's University of Belfast John Todd 1935'. | 1935 |
| B.295-B.298 | Notebooks | 1930-1937 |
| B.295 | Notebook inscribed on first page 'W.H. McCrea Michaelmas 1930 Lectures by Prof Whittaker' | 1930 |

University career, B.1-B.298

Notes begin with 'Heisenberg's Principle of Imperfect [?]',
14 October 1930.

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|-------|---|-----------|
| B.296 | Notebook inscribed inside front cover 'W.H. McCrea
Edinburgh Lent 1931 Professor Whittaker Research
Lectures'.

Loose papers enclosed. | 1931 |
| B.297 | Notebook inscribed on first page with McCrea's name

Used for notes on lectures of [C.G.] Darwin on Wave
Mechanics, etc. No location or date is given but the
notebook was purchased in Edinburgh and Darwin was
Tait Professor of Natural Philosophy at Edinburgh from
1924 until he was elected Master of Christ's College,
Cambridge in 1936. | N.d. |
| B.298 | Notebook inscribed inside front cover 'W.H. McCrea
Queen's University Belfast'

Used for notes by McCrea of lectures by R. Cooper on
Complex Variable Autumn 1936 and J. Todd on Algebra
1937 January-March. Duplicated sheets enclosed at the
back of the book. | 1936-1937 |

SECTION C	RESEARCH, C.1-C.301	1928-1987
C.1-C.8	<p>'Sundry calculations on continuous spectra of stars'.</p> <p>Contents of large envelope so inscribed divided into eight for ease of reference: includes notebook (without covers) used from both ends, mostly unused; manuscript working enclosed loose in notebook including 76pp paginated sequence divided into five for ease of reference (C.2-C.6); manuscript working enclosed with folded duplicated typescript (in German). N.d. but includes envelope addressed to McCrea in Göttingen and postmarked in 1928.</p>	N.d, 1928
C.9-C.21	<p>'W.H. McCrea. 1. The mechanics of the corona and chromosphere. With preface to other theses. 2. Researches on the outer regions of the sun and stars. 3. The quantum theory of molecules with special reference to the specific heats of gases. 4. Problem of ionised gases'</p> <p>Contents of cardboard container so inscribed divided into thirteen for ease of reference: 4 typescript thesis-type documents <i>re</i> McCrea's research, possibly assembled as his Cambridge D.Sc. submission. N.d., latest bibliographical reference 1929.</p> <p>The essay on the quantum theory of gases, C.16-C.19, was submitted for the Smith's and Rayleigh Prizes, December 1927.</p> <p>The original folder for the typescript on the problem of ionised gases is retained as C.21. It is inscribed 'Come & talk to me about this RHF[owler]'.</p>	N.d., c.1929
C.22-C.24	<p>'W.H. McCrea Early attempt to study perturbation of Einstein universe ~ 1930 I sent draft to McVittie We published a different paper I do not know what became of my draft Never seen again'</p> <p>Contents of envelope so inscribed divided into three for ease of reference: manuscript working. Includes sequence headed 'Modified Einstein World' paginated 1-17.</p>	c.1930
C.25-C.30	<p>'Astrophysics Notes'</p> <p>Contents of folder so inscribed, also inscribed with McCrea's name and address 'University of Edinburgh</p>	1931

Research, C.1-C.301

Maths. Dept', divided into six for ease of reference: manuscript working, latest bibliographical reference 1931, letters from G.C. McVittie and offprints, 1931.

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| C.31-C.44 | 'Relativity Various notes & calculations on Special Relativity' | 1930-1934 |
| | <p>Contents of Queen's University of Belfast envelope so inscribed divided into fourteen for ease of reference: variously titled manuscript working and calculations, some with comments in red ink. Includes contents of folder inscribed 'Some rough notes on questions of relativity 1934' (C.34-C.36); manuscript draft of paper by McCrea on 'A "cubical" universe' (Proc. Edinb. Math. Soc. Series 2. 2 158-163), 'Received 20 Sept 1930' (C.43) and manuscript notes titled 'Mass condensations & the size of the Universe' (C.44) for ? lecture at 'Glasgow 5.12.30'.</p> <p>A number of references to chapters suggest that some at least of the material relates to McCrea's 1935 book <i>Relativity Physics</i>.</p> | |
| C.45-C.48 | 'W.H. McCrea Relativity (jottings) K.M. and Whitt. Orbits in expanding universe' | 1930-c.1932 |
| | <p>Contents of Imperial College of Science and Technology envelope so inscribed divided into four for ease of reference: includes offprints 1930 and 1931. Latest bibliographical reference 1932.</p> | |
| C.49 | 'Quantum Theory (jottings)' | c.1932 |
| | <p>Contents of Imperial College of Science and Technology envelope so inscribed: manuscript notes, latest bibliographical reference, 1932</p> | |
| C.50-C.53 | 'Quantum Theory Various notes & abstracts related chiefly to line widths. Rotational sp. heats and two forms of H ₂ ' | N.d., 1932 |
| | <p>Contents of McCrea's envelope so inscribed divided into four: includes manuscript working, notes for lecture on 'Rotational Sp. Heats and the two forms of H₂' for Physics Colloquium, Edinburgh '4.3.32'.</p> | |

Research, C.1-C.301

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| C.54, C.55 | 'Kermack - McCrea Problems' | 1931-1934 |
| | Contents of folder so inscribed, also inscribed later 'Kermack and McCrea c.1932', divided into two for ease of reference: includes 'Notes for Kermack & McCrea III' and off-prints. | |
| C.56-C.77 | 'Notes for various papers by Kermack and McCrea' | N.d., 1932 |
| | Contents of large envelope so inscribed divided into twenty-two for ease of reference: variously paginated and unpaginated sequences of manuscript notes, calculations, etc. Principally undated but includes reference to 'new m.s. sent to K 9.10.32' (C.69). | |
| C.78-C.82 | 'Operators c 1932' | 1931-1933,
1954 |
| | Contents of folder so inscribed divided into five for ease of reference: includes manuscript working, manuscript draft 'On integral transforms and their inverses' and off-prints. | |
| C.83 | 'W.H. McCrea Rotation in an Electromagnetic Field' | N.d., 1932 |
| | Contents of Imperial College of Science and Technology envelope so inscribed. Includes offprint 1932 | |
| C.84-C.86 | 'W.H. McCrea Notes on width of spectral lines' | N.d., 1933 |
| | Contents of Imperial College of Science and Technology envelope so inscribed divided into three for ease of reference. Includes 'Outline of Colloq. on Widths of Spect. Lines R.C.S. 7.2.33'. | |
| C.87, C.88 | 'Old notes on McCrea and Newing etc' | c.1933 |
| | Contents of Imperial College of Science and Technology envelope divided into two for ease of reference: manuscript working with additional comments in red ink. | |
| | Two papers by McCrea and R.A. Newing on boundary conditions for the wave equation were published in 1933. | |

Research, C.1-C.301

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| C.89-C.100 | <p>'Projection Relativity & Unified Field Theories'</p> <p>Content of hard back binder so inscribed divided into twelve for ease of reference: manuscript notes and drafts, correspondence, off-prints, etc.</p> <p>The papers relate to McCrea's preparation for his contribution to a British Association discussion on unified field theories in physics, September 1934.</p> <p>The papers at C.91 were found enclosed in the off-print at C.90.</p> <p>The original binder was also inscribed with McCrea's name with address at Edinburgh (crossed out) replaced and with 'Maths Dept Royal College Science'.</p> | 1928-1934 |
| C.101-C.104 | <p>'Chandra etc'</p> <p>Contents of folder so inscribed divided into four for ease of reference: 2 letters from S. Chandrasekhar, 1935, manuscript notes, off-prints.</p> | 1934-1935 |
| C.105-C.116 | <p>'Milne Theory' and 'Statistical Mechanics'</p> <p>Contents of folder so inscribed divided into twelve for ease of reference: includes correspondence and drafts for unpublished paper 'The Geometrical Representation of Milne's Kinematical Relativity', manuscript material for 'Statis Mechs (proposed course of lectures)', variously titled sequences of manuscript notes etc. 1937.</p> <p>Although there is significant identifiable material relating to both publication and teaching it was felt best to keep the contents of the folder together in the order in which it was found and that the Research section was the most appropriate place to do this.</p> <p>A manuscript draft letter from McCrea to E.A. Milne, 24 August 1937, is at C.105.</p> <p>See D.28-D.31 for material <i>re</i> related 1938 publication.</p> | 1937 |
| C.117 | <p>'[Symbol not reproducible] $n^2 = P^2$'.</p> <p>Contents of folder so inscribed: manuscript notes headed on first page 'Prof. Rankine's notes on [Symbol not reproducible] $n^2 = P^2$'.</p> | N.d. ? 1930s |

Research, C.1-C.301

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| C.118-C.124 | <p>'Stellar Structure Mostly misc. notes made 1946-9 in preparation for report that was never written'</p> <p>Contents of folder so inscribed divided into seven for ease of reference: manuscript notes, calculations, notes on the literature, correspondence etc.</p> | 1946-1949 |
| C.125-C.128 | <p>'Stellar models by successive approximations Some notes & calculations An account of such work was given in M.Sc. thesis by Kathleen M. Stephens ~ 1947'</p> <p>Contents of folder so inscribed divided into four for ease of reference.</p> | c.1947 |
| C.129, C.130 | <p>'Mikhail'</p> <p>Contents of folder so inscribed divided into two for ease of reference: manuscript drafts of work sent to McCrea by F.I. Mikhail, 1951.</p> <p>Titles of Mikhail's drafts include 'Boundary conditions on a surface of discontinuity', 'Boundary conditions for a cohesive rotating system' and 'The time interval, as reckoned by two different observers, between the two events of their parting company and meeting again'.</p> <p>For joint publication see D.103-D.116.</p> | 1951 |
| C.131-C.152 | <p>'Binaries'</p> <p>Contents of bundle so labelled: manuscript notes, drafts, calculations, off-prints, etc. Includes letters from K.N. Dodd, 1951-1952 (C.148), notes for ?talk on 'Accretion & binaries', Cambridge, 20 February 1952 (C.146) and 'Notes on binary-star problem' ?for talk to Cambridge Observatory Club, 19 May 1952 (C.149). The papers at C.139-C.144 were found clipped together. The papers at C.151, C.152 were found in a folder inscribed 'Stellar rotation Binary systems'.</p> <p>22 folders.</p> | 1951-1955 |
| C.153-C.155 | <p>'Compressible Flow ~ 1955'</p> <p>Contents of folder so inscribed divided into three for ease</p> | 1954-1955 |

Research, C.1-C.301

of reference: manuscript notes, manuscript working, etc. Includes notes headed 'Amsterdam 1954 Sept 8' and 'RHC [Royal Holloway College]1955 Nov 29' (C.153).

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| C.156 | 'Synthesis of nuclei in stars' and 'Nucleosynthesis Burbidge et al 1955' | 1955 |
| | Contents of folder so inscribed: includes correspondence with G.R. Burbidge <i>re</i> paper sent by Burbidge to McCrea for comment. | |
| C.157-C.171 | 'T. Ramesan' | 1955-1960 |
| | Contents of folder so inscribed divided into fifteen for ease of reference: typescript drafts, manuscript notes, correspondence, etc <i>re</i> Ramesan's thesis work on model stellar atmospheres. | |
| C.172-C.174 | 'W.H. McC Star Formation Notes from 1956 Berkeley (with M.S. Roberts)' | 1956, 1960 |
| | Contents of folder so inscribed divided into three for ease of reference: manuscript notes and drafts; also includes letter from F. Kahn, 22 April 1960. | |
| C.175-C.178 | 'Negative mass' | 1956-1957 |
| | Contents of folder so inscribed divided into four for ease of reference. The papers at C.176-C.178 were found in a smaller folder inscribed 'Gravitational Mass 1957' which was found in the larger folder. 'McNally's notes of talk by Gold ?' are at C.175 and correspondence with C.G. Darwin and typescripts by Darwin on 'The Clock Paradox in Relativity' 1957 are at C.176 and C.178. | |
| C.179, C.180 | 'Conics and Triangles 1958 Feb.' | 1958 |
| | Contents of folder so inscribed divided into two for ease of reference: manuscript notes, drafts, calculations etc. Includes draft inscribed 'Some focal points of conics'. Folder also inscribed 'W.H. McC 1972'. | |

Research, C.1-C.301

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| C.181-C.186 | 'Crampin J ~ 1958 Gravitating Spheres' | 1958 |
| | Contents of folder so inscribed divided into six for ease of reference: manuscript notes and drafts by ?Joan Crampin ?McCrea's PhD student. Includes papers dated in April, May and July 1958. | |
| C.187-C.189 | 'Energy tensor 1959' | 1957, 1959 |
| | Contents of folder so inscribed divided into three for ease of reference: manuscript drafts entitled 'Energy - tensor', 'The cosmical constant in relativity' and 'The interpretation of general relativity', also off-prints, 1957. | |
| C.190-C.194 | 'Star formation 1959' | 1957, 1959 |
| | Contents of folder so inscribed divided into five for ease of reference: manuscript notes, drafts, calculations etc in a number of hands. Includes letter, 1 August 1957. | |
| C.195 | 'Time 1959' | 1956-1959 |
| | Contents of folder so inscribed: off-prints, 1956-1958, letter from C.G. Darwin, 30 January 1959 and manuscript draft reply from McCrea. | |
| C.196-C.201 | 'Interstellar molecules 1962 -' | 1961-1962 |
| | Contents of folder so inscribed divided into six for ease of reference: includes typescript draft from D.McNally based on his thesis work 'Some problems connected with the free expansion of gas into vacuum', correspondence from McNally, 1961-1962. | |
| C.202-C.205 | 'W.H. McCrea 1964 Continual Creation Rough Notes and Calculations' | 1964 |
| | Contents of folder so inscribed divided into four for ease of reference: includes manuscript notes and drafts dated February-March 1964. | |

Research, C.1-C.301

- C.206, C.207 'W.H. McC 1964 Quasars Early notes'
- Contents of folder so inscribed divided into two for ease of reference: includes manuscript draft of letter from McCrea to A.R. Sandage and typescript draft of paper 'Quasi-stellar radio-sources' by M.R.C. McDowell and I.P. Williams.
- C.208-C.211 'W.H. McC 1964 Cleveland QSR 1964' 1954-1965
- Contents of folder so inscribed divided into four for ease of reference: off-prints, correspondence including carbon of letter from McCrea to Sandage, 13 May 1964, manuscript notes, data, off-prints, 1954-1965.
- C.212 'Variational J. Stauffer 1964 →' 1964
- Manuscript notes so titled, found clipped together.
- C.213-C.215 'W.H. McC 1965 QSR' 1963-1965
- Contents of folder so inscribed divided into three for ease of reference: off-print, 1963, manuscript notes and data including work from Cleveland, March, April 1964.
- C.216-C.220 'Tucson 1965 QSS QSQ W.H. McC' 1965
- Contents of folder so inscribed divided into five for ease of reference: manuscript notes and data, July-August 1965.
- C.221 'McCrea 1965 Sandage - Veron objects' 1965
- Contents of folder so inscribed: manuscript data including sheet dated '1965 Sept 11'.
- C.222 'W.H. McCrea 1965 Further problems QSS etc.' 1965
- Contents of folder so inscribed: manuscript notes and data.

Research, C.1-C.301

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| C.223 | 'W.H. McCrea 1965 Empirical properties of QSS' | 1965 |
| | Contents of folder so inscribed: includes manuscript data and photocopied letter from McCrea at Kitt Peak to S. Chandrasekhar, 20 September 1965. | |
| C.224-C.226 | 'W.H. McCrea 1965 Kitt Peak' | 1965 |
| | Contents of folder so inscribed divided into three for ease of reference: miscellaneous papers <i>re</i> McCrea's time at Kitt Peak including manuscript notes and photocopied letter <i>re</i> paper on 'Empirical properties of quasi-stellar sources', 25 September 1965. | |
| C.227, C.228 | '1965 Nov Special Rely ^U . Caln ^{of q} ' | 1965 |
| | Contents of folder so inscribed divided into two for ease of reference: manuscript notes, drafts including draft date stamped 'Oct 17 1965' and titled 'Observations of quasi-stellar sources interpreted by special relativity'. Folder also inscribed 'Cosmol 1965 Sp. Rel. U.' | |
| C.229-C.232 | 'W.H. McCrea / 1966 QSS / Misc Notes Reprints' | 1966 |
| | Contents of folder so inscribed divided into four for ease of reference. | |
| C.233 | 'Partial eclipse' | 1967 |
| | Manuscript data so headed on first page and dated '1967 May 5'. | |
| C.234-C.237 | '1967 June W.H. McC work to carry' | 1963-1967 |
| | Contents of folder so inscribed divided into four for ease of reference: correspondence, off-prints, manuscript notes, etc. Folder also labelled 'Visiting Professorship-University of California, Berkeley. April/June 1967'. | |
| C.238 | 'Theoretical astronomy - notes on present position from W.H. McCrea' | 1968 |
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Research, C.1-C.301

/...	Manuscript and typescript drafts of McCrea's notes astronomy, January 1968 found with typescript draft 'Theoretical astronomy: work done during the past two years with support from the S.R.C. - note from W.H. McCrea', 20 January 1968.	
C.239	'W.H. McCrea Background Radiation 1970' Contents of folder so inscribed: manuscript notes, off-prints, etc.	1968-1970
C.240, C.241	'1970 Nuclei of Galaxies' Contents of folder so inscribed divided into two for ease of reference: off-prints by others, etc.	1969-1970
C.242, C.243	'WHMcC 1970-1 Moon' Contents of folder so inscribed divided into two for ease of reference: manuscript notes, newspaper cuttings, off-prints etc	1962-1970
C.244-C.246	'1971 Galaxies Miscellaneous' Contents of folder so inscribed divided into three for ease of reference: pre-prints, off-print etc.	1970-1971
C.247, C.248	'W.H. McCrea 1971 QSOs Misc. Notes' Contents of folder so inscribed divided into two for ease of reference: manuscript notes, off-prints etc.	1967-1969
C.249, C.250	'1971 September QSOs Misc Notes Reprints' Contents of folder so inscribed divided into two for ease of reference: manuscript notes, printed and duplicated material and typescript by McCrea 'Quasi-stellar objects: what are they?', 16 April 1971.	1967-1971

Research, C.1-C.301

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| C.251-C.253 | '1971 W.H. McCrea Solar System Misc. Notes' | 1960-1969 |
| | Contents of folder so inscribed divided into three for ease of reference: manuscript notes, data, off-prints, etc | |
| C.254, C.255 | '1972 Clusters of Galaxies' | 1966-1972 |
| | Contents of folder so inscribed divided into two for ease of reference: letter dated, 26 October 1972, untitled manuscript draft and background material. | |
| C.256 | '1972 → Ideas' | 1972 |
| | Contents of folder so inscribed: includes manuscript note on 'Nuclear abundances', 29 August 1972. | |
| C.257 | '1972 Cosmology Misc.' | 1964-1965 |
| | Contents of folder so inscribed: manuscript note, letter, background material. | |
| C.258-C.264 | '1972 Solar System Manuscript Notes and Questions' | 1968-1976 |
| | Contents of folder so inscribed divided into seven for ease of reference: off-prints, manuscript notes, M.Sc. project, etc. Folder also inscribed 'Solar System / Ashton G. Essay / Cleveland 1972 notes / Diagrams and tables / Papers by Lyttleton Dole etc'. | |
| C.265 | '1972 Solar System Notes on papers by Dole [not found] Cameron [not found] Urey etc' | 1970-1971 |
| | Contents of folder so inscribed: manuscript notes, off-prints. Folder also inscribed 'Various papers S-S'. | |
| C.266-C.269 | '1972 Solar System Graphs and Tables' | 1971-1975 |
| | Contents of folder so inscribed divided into four for ease of reference: manuscript notes, calculations, graphs, tables, figures, off-print. | |

Research, C.1-C.301

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| C.270 | '1973 Variational Principles' | 1957-1972 |
| | Contents of folder so inscribed: manuscript notes, off-prints. | |
| C.271-C.273 | 'Asteroids' | 1974-1983 |
| | Contents of folder so inscribed divided into three for ease of reference: predominantly printed and duplicated material assembled by McCrea. Manuscript draft letter from McCrea to R.A. Lyttleton, 2 December 1978, is at C.271. | |
| C.274 | 'Galaxies / Spiral Structures Seyferts 1975' | 1975-1976 |
| | Contents of envelope so inscribed: manuscript notes, background material. Includes 2pp manuscript notes possibly for lecture headed '1975 June 12 Sy. phenom. And QSO phenom.' | |
| C.275 | Manuscript notes, off-print <i>re</i> globular clusters | 1976-1977 |
| | Found clipped together. | |
| C.276-C.279 | '~1982 Oort Comet Cloud' | 1982, 1984 |
| | Contents of folder so inscribed divided into four for ease of reference: copies of correspondence between S.V.M. Clube and J.H. Oort, 1982 (C.276), manuscript notes on 'Cometary Origin' and 'Oort Cloud', off-prints, etc. | |
| C.280, C.281 | '1984 Life' | 1984 |
| | Contents of folder so inscribed divided into two for ease of reference: printed and duplicated material, manuscript notes headed 'Hoyle 1984 Aug 13' and photocopy of letter from McCrea to N.C. Wickramasinghe, 3 November 1984. | |
| C.282-C.294 | '1984 Time' | 1984-1985 |
| | Contents of folder so inscribed divided into thirteen for | |

Research, C.1-C.301

ease of reference: manuscript notes, correspondence, manuscript and typescript drafts, printed and duplicated material.

C.295, C.296	'1987 Condensation'	1983-1987
	Contents of folder so inscribed divided into two for ease of reference: manuscript notes including notes on star formation 'from 1985', typescript draft 'Thoughts on fragmentation', off-prints etc.	
C.297, C.298	Miscellaneous shorter notes Predominantly manuscript 2 folders.	1964-1978, n.d.
C.299-C.301	Notebooks	1930s-1949
C.299	Softback 'Exercise Book' used for data	1930s
C.300	Hardback notebook inscribed with McCrea's Imperial College address inside front cover. Used for 'Problems with References'. McCrea was based at Imperial College, 1932-1936.	1930s
C.301	Hardback notebook inscribed with McCrea's private address (Sunninghill, Berks) inside front covers. Used for manuscript notes on the literature from both ends, latest bibliographical reference 1949.	c.1949

SECTION D PUBLICATIONS, D.1-D.733 1928-1997

D.1-D.628 DRAFTS

D.629-D.733 CORRESPONDENCE *RE* PUBLICATIONS

D.1-D.628 DRAFTS 1928-1997

A chronological sequence of drafts and related material for McCrea's publications.

Because of the non-availability of a reliable bibliography of McCrea's publications, especially for the period after 1970, the designation of drafts as intended for publication is sometimes tentative.

For lists of McCrea's publications see A.26-A.35. There is also at A.36-A.40 a group of 'Original MSS' 1971-1972 kept together by McCrea.

The contents of the original folders are presented in the order found.

A sequence of drafts of reviews by McCrea, 1949-1994, is presented at D.583-D.628.

D.1 'Problems of the Solar Chromosphere' 1928

Typescript retained in original folder so labelled. Also inscribed 'M.N.R. Astrom. Soc. Oct. 1928'.

The typescript ?thesis was presented in two parts 'The Hydrogen Chromosphere' and 'A note on Dr P.A. Taylor's Paper 'The equilibrium of the Calcium Chromosphere'. 'A note on the hydrogen chromosphere' was published in *Proc. Camb. Phil. Soc.* vol 24, 438, and 'A note on Dr P.A. Taylor's Paper "The equilibrium of the Calcium Chromosphere"' appeared in *Mon. Not. R. Astr. Soc.* vol 88, 729-740.

D.2-D.6 'On Professor Whittaker's solution of differential equations by definite integrals: Part I (with W.O. Kermack). Proc. Roy. Soc. Edin. Vol. LI. Pt.II (no.22). January 1931' 1931-1933

Off-print of paper with manuscript notes and drafts found enclosed within it:

Publications, D.1-D.733

Manuscript draft titled 'A Formal Solution of D.E.'s by series of functions'. A paper of this title was published by the *Philosophical Magazine*, September 1932.

Manuscript draft titled 'Operation proofs of some identities'. A paper of this title was published by the *Mathematical Gazette*, February 1933.

Manuscript draft titled 'Extension of Whittaker's Th[eore]m to evaluation of [illegible] or [illegible] of D.E.s by series of functions'.

Manuscript draft titled 'Operation proofs of some identities April, 1931. C. Maths. Soc. 1.5.31.'

5 folders.

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| D.7-D.13 | 'Model Stellar Atmospheres', <i>Mon. Not. R. Astr. Soc.</i> vol. 91 no.8. June 1931 | 1930-1931 |
| | 'Calculations for Model Stellar Atmospheres'. Contents of Royal Society, Edinburgh envelope so inscribed: includes manuscript draft of paper on stellar atmospheres. | |
| | 7 folders. | |
| D.14 | 'On properties of null geodesics, and their application to the theory of radiation' (with W.O. Kermack and E.T. Whittaker). <i>Proc. Roy. Soc. Edin.</i> vol. 53l. pt.1. (no.4). December 1932 | 1932 |
| | 27pp manuscript draft. | |
| D.15 | 'On nets of polygons occurring in Nature', <i>Math. Notes. Edinb. Math. Soc.</i> no.28, 8-12 1933 | 1931 |
| | 'Nets of Polygons'. Contents of Imperial College of Science and Technology envelope so inscribed: manuscript and typescript drafts of paper, letter on its unsuitability for publication in <i>Annals of Mathematics</i> and referee's report, 1931. | |
| D.16, D.17 | 'On compatible differential equations and the orthogonal properties of their solutions' (with W.O. Kermack), <i>Quart. Journal of Mathematics.</i> Oxford Series. vol.4. no.14. March 1933 | 1932-1933 |
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Publications, D.1-D.733

- /...
- Manuscript and typescript drafts.
- 2 folders.
- D.18-D.21 'On Milne's Theory of World Structure' (with W.O. Kermack), *Mon. Not. R. Astr. Soc.* vol. 93. no.7. May 1933 1933
- 'Some notes on Milne's Theory of World Structure with notes for Kermack & McCrea on the subject'. Contents of folder so inscribed: includes manuscript and typescript drafts for the joint paper, April 1933.
- 4 folders.
- D.22-D.26 'On the interpretation of Einstein's Unified Field Theory', *Philosophical Magazine*, vol 16, ser. 7. September 1933 1933
- Some notes on Unified Field Theories'. Contents of folder so inscribed: includes manuscript drafts of McCrea's 1933 paper.
- 5 folders.
- D.27 *Relativity Physics*. London: Methuen Co & Ltd, 1935 (2nd edition 1947, 3rd edition 1949, 4th edition revised 1954, reprinted 1962). 1948, 1952
- 'Special Relativity'. Contents of folder so inscribed: correspondence etc arising from 2nd edition.
- See also C.31-C.44.
- D.28-D.31 'The geometrical foundations of certain relativity theories', *Proc. Edinb. Math. Soc.* Series 2 5, 211-219. 1938. 1938
- 'Milne's Theory'. Contents of folder so inscribed divided into four for ease of reference: manuscript and typescript notes and drafts including typescript draft and proof of 1938 paper.
- D.32-D.36 'E-numbers & Quarternions' 1938-1940
- Contents of folder so inscribed divided into five for ease of reference: manuscript working, drafts and off-prints. /...

Publications, D.1-D.733

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McCrea published a number of papers on Eddington's E-numbers and quaternions, 1938-1940:

'On the representation of Eddington's E-numbers by matrices', *Proc. Camb. Phil. Soc.* vol. 35, pt 1. October 1938.

'A theorem concerning Eddington's E-numbers', *Journal of the London Math. Soc.* vol. 13. November 1938.

'On matrices of quaternions and the representation of Eddington's E-numbers', *Proc. Roy. Irish Academy* vol. 45, Sect. A. August 1939.

'Quaternion analogy of wave-tensor calculus', *Philosophical Mag.* ser. 7. vol. 30. October 1940.

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|-----------|--|------------|
| D.37-D.39 | 'Expanding Universe' section of Cosmogony article for <i>Encyclopaedia Britannica</i> | 1945-1946 |
| | ' "Astronomy" for Encyclopaedia Britannica'. Contents of folder so inscribed divided into three for ease of reference: correspondence, November 1945-April 1946; manuscript and typescript drafts, April 1946. | |
| D.40 | 'Fundamental Magnetisation' | 1948 |
| | 5pp typescript, 31 December 1948 + bibliographical references. Unpublished. | |
| | See also D.466-D.470, D.473, D.474. | |
| D.41 | 'The size of interstellar clouds', <i>Observatory</i> vol 70 100-103, 1950 | 1950 |
| | 'W.H. McCrea 1950 Interstellar Matter'. Contents of folder so inscribed: typescript draft, manuscript notes, letter from E.M. Burbidge, 23 February 1950. | |
| D.42-D.59 | <i>Physics of the Sun and Stars</i> , London, 1950 | 1960, 1969 |
| | Although McCrea worked on a revised version of his 1950 book ten years later, a second edition does not appear to have been published. | |

Publications, D.1-D.733

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|-----------|---|-------------|
| D.70-D.73 | <p>'The Fitzgerald-Lorentz contraction-some paradoxes and their resolutions'. <i>Sci. Proc. Roy. Dublin Soc</i> vol 26, 27-36. 1952.</p> <p>'Relativity / Rotating ring Kilmister Dublin-Fitzgerald McC Ives'. Contents of folder so inscribed divided into four for ease of reference: manuscript notes headed 'C.W.Kilmister ~ 1957, manuscript drafts of McCrea's paper, typescript initialled 'H.E.I[ves]' on 'The Fitzgerald Contraction', latest bibliographical reference 1951, typescript paper 'An Irish Pioneer in Science' given at a Royal Dublin Society meeting to mark the centenary of G.F. Fitzgerald's birth in 1851.</p> | c.1951-1957 |
| D.74-D.76 | <p>'Binaries stars with massive components' (with K.N. Dodd).</p> <p>Manuscript and typescript drafts dated 28 March 1953. ?Not published.</p> <p>3 folders.</p> | 1953 |
| D.77 | <p>'Forces in a deformable dielectric'</p> <p>Duplicated manuscript draft, latest bibliographical reference, 1953. ?Not published.</p> | c.1953 |
| D.78-D.81 | <p>'General Relativity'</p> <p>Contents of untitled folder divided into four for ease of reference: agreement between McCrea and H. Bondi and Cambridge University Press for a book of this title, 1953; correspondence with Bondi and the University Press, 1953-1958; manuscript and typescript notes and drafts including outline of proposed book.</p> <p>The project was abandoned.</p> | 1953-1958 |
| D.82-D.89 | <p>'Astrophysical considerations regarding Freundlich's red-shift', <i>Phil. Mag. ser. 7</i>, vol 45, 1010-1018. 1954</p> <p>'Red Shift'. Contents of folder so inscribed divided into eight for ease of reference: includes typescript draft of McCrea's paper, manuscript notes on Freundlich's work, typescript of paper by E.M and G.R. Burbidge, manuscript</p> | 1953-1954 |

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draft by B.E.J. Pagel, correspondence with M.G. Adam, A. Beer, G.R. Burbidge, and D. Sciama, off-print by Freundlich etc.

Also (at D.89) contents of smaller folder (found within the larger folder) inscribed 'Red-shift A122 A124 Freundlich & Born 1953 July Reports': referee's reports by McCrea on papers by Freundlich and typescript carbon and manuscript draft of letter from McCrea to Born, 3 July 1953.

D.90-D.102	'Newtonian Cosmology'	1954-1955
	Contents of folder so inscribed divided into thirteen for ease of reference: manuscript and typescript drafts, correspondence etc <i>re</i> three papers of McCrea's published in 1955: 'Newtonian Cosmology', <i>Nature</i> vol 175, 925; 'On the significance of Newtonian Cosmology', <i>Astro. J.</i> vol 60, no.7 271-274; and 'On Newtonian Frames of Reference', <i>Math. Gaz.</i> vol 39, 2877-291.	
D.103-D.116	'Vector-tetrads and the creation of matter' (with F.I. Mikhail) <i>Proc. Roy.Soc. A</i> vol 235, 11-22. 1956.	1940-1955
D.103-D.105	'Vector tetrads and creation of matter McC. and Mikhail Drafts'	1955
	Contents of folder so inscribed divided into three for ease of reference: manuscript and typescript drafts.	
D.106-D.111	'Quadruplet fields McC. & Mikhail Various drafts'	N.d.
	Contents of folder so inscribed divided into six for ease of reference: manuscript and typescript drafts of papers by McCrea and F.I. Mikhail variously titled 'Orthogonal quadruplets and extensions of general relativity', 'Orthogonal quadruplets in relativity theory', 'Orthogonal quadruplets and the creation of matter'; also typescript by Mikhail 'Quadruplet Spaces and the Generalization of Relativity Theory'. The drafts are undated latest bibliographical reference, 1954.	
D.112-D.116	'Orthogonal quadruplets (with F.I. Mikhail)'	1940, 1951-1952
	Contents of folder so inscribed divided into five for ease of reference: manuscript drafts for paper 'Orthogonal	

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quadruplets in relativity theory', manuscript working, manuscript notes for talk at Imperial College, correspondence, off-prints.

- D.117-D.121 'Relativity and space travel, *Nature*. April 1956 1955-1956
- 'Clock Paradox Dingle'. Contents of folder so inscribed divided into five for ease of reference: manuscript working, typescript drafts, correspondence with *Nature*, H. Dingle and G.P. Thomson, 1955-1956, off-prints.
- D.122 'A problem in relativity theory: reply to H. Dingle', *Proc. Phys. Soc. A* vol 69, 935. 1956
- 4pp typescript, dated '1956 August 11' with manuscript inscription at the head of the first page 'Withdrawn because Dingle had altered his article & because Phys. Soc. wanted some changes'. When he withdrew the paper, McCrea submitted a shorter two paragraph note of the same title.
- D.123-D.136 'W.H. McCrea 1972 Clock Paradox Misc Notes : Letters Historic Interest!' 1953-1960
- Contents of folder so inscribed divided into fourteen for ease of reference: includes typescript drafts and proof of longer version of 'A problem in relativity theory: reply to H. Dingle', typescript draft of shorter version, *Proc. Phys. Soc. A* vol 69, 935, 1956, typescript draft of 'Relativity and Space Travel', *Nature*, 1956, correspondence with Dingle and others, copies of letters received by Nature in response to articles by McCrea and Dingle, manuscript draft 'Clock Paradox', 10 March 1953, manuscript notes for lecture on 'Time and Space-travel', Birmingham, 1957, typescript drafts on the clock paradox by W. Cochran, 1957, off-prints, etc.
- D.137-D.142 'Shock waves in steady radial motion under gravity', *Astrophys. J.* vol 124, 461-468. 1956 1956
- D.137 'Shock waves in steady radial motion under gravity'
- Manuscript and typescript drafts, typescript draft having manuscript note of the date received 'March 2. 1956'.

Publications, D.1-D.733

- D.138-D.142 '1972 Professor W.H. McCrea Shock waves under gravity Old notes ~ 1956'
- Contents of folder so inscribed divided into five for ease of reference: manuscript working, typescript drafts including one with manuscript inscription 'This is longer version Curtailed version accepted for pubn', etc
- D.143 'Relativistic ageing', *Nature* vol 179, 909-910, 1957 1957
- 4pp typescript dated '1957 January 24'.
- D.144-D.147 'Hertzian electromagnetic potentials', *Proc. Roy. Soc. A* 1955-1957
vol 240, 447-457. 1957
- 'W.H. McCrea Hertzian E-M Potentials and Related Theory'. Contents of folder so inscribed divided into four for ease of reference: typescript draft, manuscript working, correspondence, off-prints, etc.
- D.148-D.150 'The Formation of Population I Stars. Part I. Gravitational Contraction'. *Mon. Not. R. Astr. Soc.* vol. 117 no.5. May 1957 c.1957
- 'Isothermal Sphere c 1957'. Contents of folder so inscribed divided into three for ease of reference: includes manuscript draft of paper on formation of population I stars.
- D.151-D.157 'Observable relations in relativistic cosmology III' (with P.S. Florides). *Zeits. für Astroph.* vol 48, 52-71. 1959 1958-1959
- Manuscript and typescript drafts, correspondence, off-print.
- 7 folders.
- D.158-D.168 'A class of transformations in special relativity' (with J. Crampin and D. McNally). *Proc. Roy. Soc. A* vol 252, 156-176. 1959 1959
- Contents of folder inscribed 'Relativity Trans 1959' divided into four (D.158-D.161), and two untitled folders divided into five (D.162-D.166) and two (D.167, D.168)

Publications, D.1-D.733

respectively: manuscript and typescript drafts, manuscript working.

The three folders were found together.

- D.169-D.179 'Rotational Distortion and break-up of a Star'
- A paper of this title appears to have been written by McCrea for publication (with J. Crampin) but remained unpublished.
- D.169 Typescript draft 'Rotational Distortion and break-up of a Star' with correspondence 1959
- D.170-D.177 'Rotational distortion and break-up McCrea ~ 1956' 1956-1959
- Contents of folder so inscribed divided into eight for ease of reference: manuscript notes and calculations, manuscript drafts including 'First draft', correspondence.
- D.178, D.179 'Rotational Breakup 1960-' 1959-1960
- Contents of folder so inscribed divided into two for ease of reference: typescript draft, manuscript notes and calculations, correspondence.
- D.180-D.182 'Formation of stars from interstellar matter', *Les Congrès et Colloques de l'Université de Liège*, vol 16, 332-341. 1960 1959-1960
- Correspondence, manuscript and typescript drafts.
- 3 folders.
- D.183-D.189 'The origin of the solar system'. *Proc. Roy. Soc. A* vol 256, 245-266. 1960 1959-1960
- D.183-D.187 'Origin of SS RS paper'
- Contents of folder so inscribed divided into five for ease of reference: manuscript drafts, manuscript working.

Publications, D.1-D.733

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| D.205-D.207 | <p>'Star formation with stellar clusters'. <i>Proc. Roy. Soc. A</i> vol 260, 152-159. 1961</p> <p>'Star formation with special reference to stellar clusters'. Contents of folder so inscribed divided into three for ease of reference: typescript and manuscript drafts, correspondence, 1959-1960.</p> | 1959-1960 |
| D.208, D.209 | <p>'Examples of gravitational mass in general relativity'</p> <p>'Gravitational mass (& rotation)'. Contents of folder so inscribed divided into two for ease of reference: includes manuscript draft on gravitational mass in general relativity ? intended for publication but not published.</p> <p>At D.208 are manuscript notes on headed notepaper of 'Conference on Relativistic Theories of Gravitation, Warszawa - Jablonna 25-31 July 1962 R'.</p> | 1962 |
| D.210-D.225 | <p>'Electromagnetic effects in cosmology' (with P. Dolan)</p> <p>A paper of this title appears to have been submitted to the Royal Society for publication but was later withdrawn and not published. It may have gone through more than one version before being finally withdrawn.</p> | 1962-1969 |
| D.210 | <p>'Electronic effects in Cosmology'</p> <p>Contents of folder so inscribed: correspondence with collaborator P. Dolan, H. Bondi and R. Lyttleton whose work the paper discusses and the Royal Society <i>re</i> comments of referees and revision of the paper, typescript and manuscript notes</p> | 1962-1963 |
| D.211-D.221 | <p>'Fundamental identity etc with P. Dolan'</p> <p>Contents of filing cabinet divider so labelled.</p> | 1962-1969 |
| D.211-D.214 | <p>Manuscript notes and drafts, etc found loose at the front of divider</p> <p>At D.211 is referee's report on the paper.</p> <p>4 folders.</p> | N.d. |

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D.215, D.216	<p>'1965 Fundamental identity of electrodynamics in general relativity P. Dolan W.H. McCrea'</p> <p>Contents of folder so inscribed divided into two for ease of reference: manuscript notes and drafts ?by Dolan, 1965; typescript 'Second copy' of paper by Dolan and McCrea with manuscript inscription 'This paper withdrawn'.</p>	1965
D.217	<p>'W.H. McC P.D. "Variational" Treatments 1963-'</p> <p>Contents of folder so inscribed: includes referee's report.</p>	c.1963
D.218, D.219	<p>'Variation. Rough Notes'</p> <p>Contents of folder so inscribed divided into two for ease of reference: manuscript notes and drafts. Includes manuscript notes headed '1962 May 31 Cambridge'.</p>	1962
D.220, D.221	<p>Papers loose at rear of divider: typescript draft and off-prints</p> <p>2 folders.</p>	N.d., 1969
D.222	<p>'Fundamental identity in Electrodynamics and General relativity Draft by P. Dolan W.H. McCrea (1963)'</p> <p>Contents of folder so inscribed: typescript draft.</p>	1963
D.223	<p>'Dolan & McC rough notes'</p> <p>Contents of folder so inscribed: manuscript drafts.</p>	N.d.
D.224, D.225	<p>'1969 W.H. McCrea Conservation of Mass'</p> <p>Contents of folder so inscribed divided into two for ease of reference: includes typescript draft of Dolan and McCrea's paper 'Electromagnetic effects in cosmology', with manuscript 'Note to printer' attached. The first page of the typescript has a manuscript addition 'Received 11 April 1962'.</p> <p>At D.224 are manuscript notes dated in March 1969.</p>	1962, 1969

Publications, D.1-D.733

- D.226 'Some current problems in Cosmology'. *Proc. Math. Soc. Univ. Southampton* vol 5, 15-21. 1962 1962
Typescript draft dated '1962 March 22'.
- D.227-D.233 'A suggested process of formation of planetesimals and terrestrial planets' (with I.P. Williams) 1963
Unpublished.
- D.227-D.232 'Condensation of Planets 1963' 1963
Contents of folder so inscribed divided into six for ease of reference: manuscript and typescript drafts of paper, manuscript working , off-prints, etc. Typescript draft of paper, 5 April 1963, is at D.229. At D.231 is manuscript draft of lecture by McCrea to the London Mathematical Society, Reading, 16 May 1963.
- D.233 Typescript draft of paper, 6 September 1963, with manuscript inscription at the head of the first page 'Not published'. 1963
- D.234-D.236 'The interpretation of the Schwarzschild metric and the release of gravitational energy' *Astrophysica Norvegica* vol 9, 89-94. 1964 1961-1964
'Astrophys. Norv. Vol. X, 1964 Article (to celebrate Svein Rosseland's 70th birthday)'. Contents of folder so inscribed divided into three for ease of reference: correspondence, manuscript and typescript drafts. At D.235 is a letter from C.G. Darwin, 6 October 1961, enclosing a 1p typescript note 'Rays of light in a gravitational field'.
- D.237-D.240 'Extended main sequence of some stellar clusters'. *Mon.Not. R. Astr.Soc.* vol 128, 147-155. 1964 1963
- D.237-D.239 'Extended main sequence of some stellar clusters' 1963
Contents of folder so inscribed divided into three for ease of reference: typescript draft of paper with manuscript addition 'Received 1963 September 4', manuscript and

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- typescript notes and drafts including typescript by I.P. Williams 'Possible spread in the ages of stars in a stellar cluster', referee's report, and typescript draft with same title as published paper headed '1963 November 8 R.A.S.' for talk at a Royal Astronomical Society meeting.
- D.240 Typescript draft of paper found separately. 1963
- D.241, D.242 'Continual Creation', *Mon. Not. R. Ast. Soc.* vol 128, 335-344. 1964 1955-1964
- 'Creation 1964'. Contents of folder so inscribed divided into two for ease of reference: typescript draft, referee's report, manuscript notes, March-April 1964, off-prints, 1955-1964.
- D.243 'Why are all electrons alike?'. *Nature* vol 202, 537-538. 1964 1964
- 6pp typescript dated '1964 February 29.
- D.244 'Segregation of materials in cosmogony' (with I.P. Williams), *Proc. Roy. Soc. A* vol 287. 1965. 1964
- 'Segregation of materials in cosmology 1964 Oct'. Contents of folder so inscribed: manuscript drafts of tables.
- D.245-D.262 'Empirical properties of quasi-stellar radio sources', Publications of the Astronomical Society of the Pacific, vol. 78. 1965 and 'Interpretation of observations of quasi-stellar objects', *Astrophys. J.* vol 144, 516-533. 1966.
- D.245-D.261 Contents of McCrea's folder divided into seventeen for ease of reference: manuscript and typescript drafts, figures, manuscript notes headed 'Berkeley 1965 Sept 23', referee's report, correspondence, September, November 1965. 1965
- D.262 'Empirical properties of quasi-stellar radio sources' 1965
- Two typescript drafts with manuscript additions and

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comment, September 1965.

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|--------------|---|------------|
| D.263, D.264 | 'Age distribution of galaxies', <i>Proc. Fifth Berkeley symp. on math. statistics and probability</i> , vol. 3, 19-21. 1966

'1965 Nov Cosmology Age Distribution of Galaxies'. Contents of folder so inscribed divided into two for ease of reference: typescript draft, manuscript working. | 1965, 1966 |
| D.265, D.266 | 'Cosmical Physics', <i>Advancement of Science</i> , vol 23

Figures, captions, pre-print

This was the published version of McCrea's Presidential Address to British Association Section A. See also E.87-E.92.

2 folders. | 1966-1967 |
| D.267-D.270 | 'A suggested mechanism for Radio-Galaxies and Quasars', <i>Nature</i> , 21 January 1967

Manuscript and typescript drafts including typescript draft 'Sent to Nature 1966 Nov 21'.

4 folders. | 1966 |
| D.271 | 'Cosmological Speculation'

Typescript and duplicated typescript inscribed 'as sent to Science 1967 Jan 10'. Not listed in McCrea's Bibliography. | 1967 |
| D.271A | 'Inertial frames and Mach's principle'

Manuscript and typescript drafts, 24 February 1967. ? for publication.

Folder also includes manuscript draft headed 'The Mach problem'.

See also D.337-D.339. | 1967 |

Publications, D.1-D.733

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|-------------|---|-----------|
| D.272 | 'Surprises in Astronomy', <i>The Times</i> , 7 April 1967

'1966 "Times" New Objects'. Contents of folder so inscribed: correspondence with <i>The Times</i> , manuscript and typescript drafts. | 1966-1967 |
| D.273 | 'Quasars: rapid light fluctuations', <i>Science</i> vol 157, 400-402, July 1967

Typescript drafts, correspondence arising, off-print. | 1967 |
| D.274-D.278 | 'University class-lists'

Article submitted to <i>The Times</i> , July 1967, but not used: manuscript and typescript drafts, correspondence etc.

5 folders. | 1967 |
| D.279-D.284 | 'Why the special theory of relativity is correct', <i>Nature</i> vol 216, 122-124, 1967 and 'Definitions and Realities', letter to <i>The Listener</i> , 4 September 1969

'W.H. McCrea Clock Paradox 1967-68-69' and 'Special theory of relativity - paper by WHM'. Contents of folder so inscribed divided into six for ease of reference: correspondence, drafts, etc.

Correspondents include P.M.S. Blackett, M. Born, H. Dingle, R.A. Fisher, H. Jeffreys, D.G. King-Hele and M.J. Lighthill. | 1956-1969 |
| D.285 | 'Cosmic Physics', <i>Physics Education</i> vol 3, 27-32, 1968

Typescript draft 'For Physics Education sent 1966 Nov 30'. | 1966 |
| D.286 | 'Quasar-stellar objects with absorption lines', <i>Nature</i> vol 218, 257-258. 1968

Typescript draft, figures, manuscript data. | 1968 |

Publications, D.1-D.733

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|-------------|--|-----------|
| D.287-D.290 | 'Cosmology after half a century, <i>Science</i> vol 160, 1295-1299. 1968

'1968 Cosmology Typescript'. Contents of folder so inscribed divided into four for ease of reference: manuscript and typescript drafts, correspondence arising etc. At D.289 are manuscript notes for talk at Sussex, 31 May 1968. | 1968 |
| D.291-D.302 | 'The microwave background radiation. Quasars-interpretative. Problem of helium abundance. Source counts'. <i>Cosmic Rays Studies</i> (ed R.R. Daniel et al) Bombay: Tata Institute of Fund. Res. 1969. Pp. 142-150, 218-230, 311-312, 354-358. | 1966-1970 |
| D.291-D.296 | 'W.H. McCrea 1968 Background radiation'

Contents of folder so inscribed divided into six for ease of reference: manuscript and typescript drafts, background material etc <i>re</i> paper on microwave background radiation. Includes typescript draft dated '1968 November 13' (D.291). | 1967-1969 |
| D.297-D.302 | 'Background Radiation 1969'

Contents of folder so inscribed divided into six for ease of reference: typescript draft, manuscript notes, off-prints etc. Folder also inscribed 'Background and He'. | 1966-1970 |
| D.303 | 'Generalized quotient theorem for tensors' (with R. Pavelle) (V.V. Narlikar felicitation volume), <i>Progress of Mathematics</i> vol 3, 1-6. 1969

Typescript draft, 22 August 1969, etc. | 1969 |
| D.304 | 'Apollo 8 comment' for <i>New Scientist</i>

2pp manuscript note and 1p typescript dated 30 December 1968. ?Published as 'Science and the Moon race', <i>New Scientist</i> vol 41, 15 (1969). | 1968 |
| D.305 | 'The moon and Mars', <i>Nature</i> vol 223, 253-254, 1969

Typescript draft, 6 June 1969, etc. | 1969 |

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|--------------|---|-----------|
| D.306 | 'Densities of the terrestrial planets', <i>Nature</i> vol 224, 28-29, 1969

Typescript draft, etc. | 1969 |
| D.307-D.310 | 'The New Cosmos'. Translation into English of A. Unsöld <i>Der neue Kosmos</i> 1967. Berlin-Heidelberg-New York: Springer Verlag 1969 | 1966-1970 |
| D.307, D.308 | 'Translation (Legal Side)'

Contents of folder so inscribed divided into two for ease of reference: correspondence with Unsöld and the publisher. | 1966-1970 |
| D.309 | 'The New Cosmos (Business & legal matters)'

Contents of folder so inscribed: correspondence and papers <i>re</i> royalties, tax, etc | 1969-1970 |
| D.310 | Reviews | 1969-1970 |
| D.311, D.312 | 'Cosmology'. Survey on Cosmology for Francis Hodgson Ltd Sigma Science Surveys, 1969.

Correspondence, publicity leaflet for Sigma series; typescript draft, photocopy of ?published text.

2 folders. | 1969 |
| D.313 | 'Louvain and Sussex'

4pp typescript with manuscript inscription at the head of the first page 'Sent to "Focus" but apparently not used', December 1969; brief correspondence, December 1969 - January 1970.

Focus was a University of Sussex publication. | 1969-1970 |
| D.314 | 'Planetary fission events - reply to J.M. Bailey', <i>Nature</i> vol 225, 49, January 1970 | 1969-1970 |

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/...	Typescript draft and off-print	
D.315, D.316	'A philosophy for big-bang cosmology', <i>Nature</i> vol 228, 21-24. 1970 Manuscript and typescript drafts etc. 2 folders	1970
D.317	'Non-Doppler Redshift and Clusters of Galaxies' (with J. Jackson). Submitted to <i>Nature</i> , August and withdrawn November 1970. Typescript draft, correspondence, etc.	1970
D.318-D.331	'W.H. McCrea 1970 Planets and satellites' Contents of folder also labelled 'Solar System 1970': manuscript and typescript drafts for major ? publication titled 'Planets and satellites', manuscript notes, calculations, correspondence, etc., divided into further labelled and unlabelled folders, loose papers at rear of principal folder. See also D.332-D.335.	1969-1971
D.318-D.322	'1971 Planets MANUSCRIPT and calculations' Contents of folder so inscribed divided into five for ease of reference: includes 114pp manuscript draft of 'Planets and satellites'	1971
D.323-D.325	'W.H. McCrea 1970 Planets and Satellites' Contents of folder so inscribed divided into three for ease of reference: manuscript notes, typescript draft 'Solar system: empirical', manuscript draft "Planets and Satellites", off-prints.	1970
D.326, D.327	Contents of untitled folder divided into two for ease of reference: manuscript notes including notes for talks on the moon and terrestrial planets	1969-1970

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| D.328 | Contents of untitled folder: manuscript notes, newspaper-cutting | 1970 |
| D.329-D.331 | Papers found loose at rear of principal folder: correspondence, manuscript notes, typescript 'first draft of a proposed letter to Nature' by A.A. Mills, etc

3 folders | 1969-1970 |
| D.332-D.335 | 'Planets and Satellites'

Typescript draft of ?publication.

4 folders.

See also D.318-D.331, D.344. | c.1970 |
| D.336-D.339 | 'Doubts about Mach's principle', <i>Nature</i> vol 230, 95-97 1971 | 1961-1972 |
| D.336 | Typescript draft of <i>Nature</i> article; off-prints. | 1961-1972 |
| D.337-D.339 | 'Mach's Principle 1971 W.H. McCrea'

Contents of folder so inscribed divided into three for ease of reference: typescript drafts of <i>Nature</i> article; off-prints. At D.339 is a typescript by McCrea 'Inertial frames and Mach's principle', 24 February 1967, found with papers for the 1971 publication.

See also D.271A. | 1967-1971 |
| D.340 | 'The cosmical constant', <i>Quart.J. R. Astr. Soc.</i> , vol 12, 140-153. 1971

Typescript draft, 20 February 1971. | 1971 |
| D.341, D.342 | 'Rotating relativistic ring'. <i>Nature</i> vol 234, 399-401. 1971 | 1952-1972 |

Publications, D.1-D.733

D.341	'RRR' Contents of folder so inscribed: typescript draft dated 31 August 1971, proof, manuscript notes, etc.	1970-1971
D.342	Correspondence, off-prints etc <i>re</i> McCrea's paper. Found separately	1952-1972
D.343	'Quasi-stellar objects: some recent theories'. ?Not published Typescript draft, 1 March 1971.	1971
D.344	'Solar system: origin of planets and satellites'. ?Unpublished Typescript draft, 10 March 1971.	1971
D.345	'Quasi-stellar objects: what are they?' ?Not published Typescript dated 16 April 1971.	1971
D.346-D.348	'Relativistic Beaming', <i>Mon. Not. R. Astr. Soc.</i> 1972 Contents of folder divided into three for ease of reference: typescript and manuscript drafts, letter accepting article for publication, referee's report, etc.	1970-1972
D.349-D.358	'Energy Sources in Galaxies and Quasars', <i>McGraw-Hill Year Book of Science and Technology.</i> 1972	1971
D.349-D.353	'1971 QSO Energy problems' Contents of folder so inscribed divided into five for ease of reference: photocopy of 1971 M.Sc dissertation 'Quasi-stellar objects: some notes', typescript and manuscript drafts of paper on energy sources in galaxies and quasars', etc.	1971

Publications, D.1-D.733

D.354-D.356	'W.H. McCrea 1971 Energy Sources in Galaxies and Quasars (McGraw Hill with longer version)' Contents of folder so inscribed divided into three for ease of reference: typescript drafts.	1971
D.357, D.358	Typescript drafts found separately Two folders.	1971
D.359	'Origin of the Solar System Review of Concepts and Theories', 1972. Photocopied typescript.	1972
D.359A	'Refereeing and editing at an end' 3pp typescript in the form of a letter ?to the editor of a scientific journal, 23 August 1972. 'Moon-making'	1972 1972
D.360-D.369	'Sirius - a conjecture and an appeal' <i>J. Brit. Astron. Assoc.</i> , vol 84, 63-64. 1973 Contents of folder inscribed '1973 Sirius' divided into ten for ease of reference: correspondence and papers <i>re</i> McCrea's article and arising.	1971-1976
D.370-D.372	'Relativistic motion and visual forms', ? <i>Nature</i> . 1973 'Attention 1972 Dec.' Contents of folder so inscribed divided into three for ease of reference: Includes letter from <i>Nature</i> , 1 December 1972 and manuscript drafts of article, including '2nd draft' date stamped Jan 7 1973'	1972-1973
D.373-D.376	'The problem of the galaxies'. McCrea's chapter for <i>Cosmology now</i> , edited by Laurie John. 1973 Typescript drafts, photocopy of published text,	1972-1974

Publications, D.1-D.733

D.398, D.399	'1975 Ice ages'	1975
	Contents of folder so inscribed divided into two for ease of reference: manuscript notes and drafts, letter arising, etc.. At D.399 are manuscript notes for talk on 'Origin of Comets', York, 26 March 1975.	
D.400	Letter from editor of <i>Science News</i> with photocopy of McCrea's <i>Nature</i> article.	1975
D.401, D.402	'Classical relativity in an up-to-date context', <i>Nature</i> vol 253, 236-237. 1975	1974-1975
	Letter from <i>Nature</i> , manuscript drafts of article etc. 2 folders.	
D.403	'On the vacuum-matter symmetry of gravitation', <i>Observatory</i> , vol 95, 13-15. 1975	1974
	Manuscript drafts, etc	
D.404	'Mach in detail', <i>Nature</i> , 1975	1975
	Photocopied manuscript draft, 14 August 1975; off-print.	
D.405, D.406	'Satellite Species and their Origins'	1975
	Typescript draft with abstract dated 'Tucson, June 5, 1975'; manuscript notes and drafts. 2 folders.	
D.407, D.408	'Why is the universe like what it is?', <i>Irish Astr. J.</i> , vol 12, 95-102. ?1975	1975
	Manuscript and typescript drafts, 26 August 1975.	
D.409-D.413	'Die Entstehung des Planetensystems', <i>Nova Acta Akademie Leopoldina</i> vol 42, 135-144. 1975	1975 /...

Publications, D.1-D.733

- /... Manuscript draft in English, manuscript and typescript drafts in German, etc.

5 folders.

McCrea lectured on the 'Origin of the Planetary Systems' at Halle in October 1973. The paper was subsequently published by the Leopoldina. See also F.67.
- D.414 'Satellites to the fore' 1975

Manuscript notes and draft, photocopied manuscript draft, 30 August 1975.
- D.415-D.420 'Solar neutrinos and galactic contamination' (with J.R. Auman), *Nature*, 1976 1976

'1976 Accretion'. Contents of folder so inscribed divided into six for ease of reference: manuscript and typescript drafts, correspondence, background material.
- D.421-D.423 'Glaciation and dense interstellar clouds', *Nature* vol 263, September 1976 1976

Manuscript and typescript drafts including typescript dated '1976 May 17, abbreviated June 15', typescript paper sent to McCrea by M.R. Rees for comment, etc.

3 folders.
- D.424 'Models, laws and the universe'. Chapter VI, *Cosmology, History and Theology*, edited by Wolfgang Yourgrau and Allen D. Breck c. 1976 1976

Correspondence with publisher and ?proof copy with McCrea's corrections signed and dated by McCrea, '1976 Sept 30'.
- D.425, D.426 'W.H. McCrea 1976 NATO Book' 1976

Contents of folder so inscribed divided into two for ease of reference: manuscript drafts for ?McCrea's chapter 'The formation of the Solar System: a protoplanet theory'.

See also D.427, D.445, D.450, D.451-D.465.

Publications, D.1-D.733

- D.427 'Foreword by the Scientific Director' 1976
- ?proof copy dated '1976, September 17'.
- McCrea was Scientific Director of the [NATO Advanced Studies] Institute and as such was invited 'to contribute an introduction to the book'. See also D.425, D.426.
- D.428, D.429 'Seyfert Nuclei: A Tentative Theory', 1977 1975, 1977
- Manuscript draft and typescript drafts dated '1975 July 7 Tucson'; letter from Royal Greenwich Observatory, 28 January 1977, *re* publication of paper.
- McCrea was based at the Kitt National Observatory, Arizona while writing the paper.
- 2 folders.
- D.430-D.441 'The Frequency of Nearby Supernovae, and Climate and Biological Catastrophe' (with D.H. Clark and F.R. Stephenson). *Nature* vol 265, 318-319, 1977 1975-1977
- See also D.475-D.477.
- D.430-D.440 'W.H. McCrea 1976 S-S and Galaxy The frequency of nearby supernova, climactic and biological catastrophes with D.H. Clark and F.R. Stephenson *Nature*' 1975-1977
- Contents of folder so inscribed divided into eleven for ease of reference: off-prints and typescripts of papers by others, 1975-1976, correspondence *re* publication, 1976-1977, etc.
- D.441 Photocopy of manuscript draft by Clark for proposed publication; correspondence. 1976
- D.442-D.444 '77 Supernovae' 1975-1978
- Contents of filing cabinet divider so inscribed divided into three for ease of reference: correspondence, off-prints, etc.
- Includes correspondence *re* McCrea's 1977 *Nature* paper with Clark and Stephenson (D.444).

Publications, D.1-D.733

- D.445, D.446 'Origin of Earth, Moon and Planets' in *The encyclopaedia of ignorance* edited by Ronald Duncan and Miranda Weston-Smith, Oxford: Pergamon, 1977 1972-1977
- Contents of McCrea's untitled folder divided into two for ease of reference: correspondence with editors and publisher, etc.
- See also E.406.
- D.447-D.449 '1977 Asteroids' 1977
- Contents of folder so inscribed divided into three for ease of reference: includes manuscript draft of paper on 'Asteroids: a possible origin' and photocopied manuscript 'First draft' titled 'Asteroids: the problem of their origin'.
- D.450 'W.H. McCrea 1977 Asteroids: a possible origin / The formation of the solar system / Origin of the earth moon and planets' 1976
- Contents of folder so inscribed: photocopied typescript titled 'The formation of the solar system: a protoplanet theory', dated '1976 August 1'; manuscript notes.
- See also D.425, D.426.
- D.451-D.465 'T S-S 1977' c.1972-1977
- Contents of filing cabinet divider so labelled divided into fifteen for ease of reference: manuscript notes, manuscript and typescript drafts, correspondence, off-print, transparencies, etc.
- This assemblage brings together material for publications and lectures on the formation of the solar system.
- Includes typescript drafts titled 'Origin of the Solar System: Ignorance thereof', 16 January 1976, 'Planets and satellites', n.d., latest bibliographical reference 1972 (manuscript addition at the end of the typescript list of references), 'Origin of the Earth, Moon and Planets', 29 January 1976 and 'The formation of the Solar System: a protoplanet theory', 1 August 1976.
- Manuscript notes for lectures include those given at University of British Columbia, University College London and 'Tata', 1976.
- /...

Publications, D.1-D.733

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Papers at D.452-D.455 were found in a folder inscribed 'Solar Syst / Gen' and papers at D.456-D.459 in a folder inscribed 'T 1977 SS Formn'.

D.466-D.470

'77 Fundamental Magnetism'

1948-1979

Contents of filing cabinet divider so labelled divided into five for ease of reference: manuscript notes, typescript drafts, correspondence, etc.

With the exception of 1979 material at D.466 all the papers were found in a folder inscribed 'Fundamental Magnetism 1948 Dielectrics'

Papers appear to relate to 1948 typescript 'Fundamental Magnetisation' (see D.40) and 1978 publication 'Magnetism and rotation: Blackett's speculation of 1947' (D.473, D.474).

D.471

'Variable G', *Observatory*, April 1978

1977-1978

'Variable G'. Contents of folder so inscribed: letter *re* publication, manuscript and typescript drafts including typescript draft dated '1977 Sept. 19' with manuscript annotation 'Proof corr. 1978 Feb. 6'.

D.472

Comment by McCrea on 'Earth's Gaseous Core', *Catastrophist Geology*, December 1978

1978

Typescript draft and copy of December 1978 issue of *Catastrophist Geology* in which McCrea's comment appears.

D.473, D.474

'Magnetism and rotation: Blackett's speculation of 1947'.
c.1978

1978

Contents of filing cabinet divider so inscribed divided into two for ease of reference: manuscript and typescript drafts, referee's report, brief correspondence with editor, Speculations in *Science and Technology*, July-August 1978.

Publications, D.1-D.733

- D.475-D.477 '1978 Climatic History' and 'Mostly out of date 1980' 1977-1978
- Contents of folder so inscribed: manuscript notes and drafts, correspondence, off-print etc. ?relates in part to McCrea's 1977 *Nature* paper with Clark and Stephenson. See D.430-D.441.
- At D.476 is manuscript draft for seminar at Sussex, 6 October 1978.
- D.478 'The origin and early evolution of the galaxies', *Vistas in Astronomy*, vol. 23, 173-183. 1979 1979
- 13pp typescript dated 'May 21 1979 Dunedin'.
- This paper is a report of the proceedings of a Royal Society discussion meeting under this title, 14-15 February 1979.
- Folder also includes 3pp photocopied typescript 'Introduction' to the discussion dated '1979 Feb.13'. A revised version of McCrea's introductory remarks was published in *Phil. Trans. R. Soc. Lond. A.*, 1979.
- D.479 'Commonwealth Communication'. Letter to the press ?*The Times* 1979
- 1p typescript dated '1979 August 8'.
- D.480-D.490 'Tunguska Comet Rendezvous' 1968-1980
- A paper of this title was submitted to *Nature* in 1979 but not published by them.
- D.480-D.489 'W.H. McCrea Tunguska 1979 →' 1968-1980
- Contents of folder so inscribed divided into ten for ease of reference: manuscript and typescript drafts, correspondence, referee's report *re* paper 'Tunguska Comet-Rendezvous'; also typescript draft 'Tunguska event of 1908 June 30 : the cometary hypothesis', 23 October 1976; and background material.
- D.490 Photocopied typescript of McCrea's paper with referees' reports 1979

Publications, D.1-D.733

- | | | |
|-------------|--|-----------|
| D.491-D.495 | <p>Review of: <i>The Star of Bethlehem Mystery</i> by David Hughes, Dent: London, 1979. <i>Nature</i> vol. 282, 6 December 1979</p> <p>Manuscript and typescript drafts, photocopy of review as published, correspondence.</p> <p>5 folders.</p> | 1979 |
| D.496-D.517 | <p>'Atomic and gravitational metrics in cosmology' (with W. Davidson), <i>Proc. R. Soc. Lond. A</i> vol 374, 447-459. 1981</p> <p>The work was done while McCrea was William Evans Visiting Professor in the University of Otago, New Zealand.</p> | 1979-1981 |
| D.496 | <p>Manuscript draft dated '1981 March 17'; typescript 'Revision of May 1980'.</p> | 1980-1981 |
| D.497-D.507 | <p>'Atomic and gravitational metrics in cosmology'</p> <p>Contents of folder so inscribed divided into eleven for ease of reference: correspondence between McCrea and W. Davidson, his co-author on the atomic and gravitational metrics paper and others, manuscript and typescript drafts, manuscript notes, etc.</p> | 1979-1980 |
| D.508-D.517 | <p>'Constants of Physics 1979'</p> <p>Contents of folder so inscribed divided into ten for ease of reference: correspondence with W. Davidson, co-author of the atomic and gravitational metrics paper and others, typescript draft and proofs of paper, off-prints etc.</p> <p>Includes (D.511) correspondence with Davidson about his draft paper 'Cosmological Implications of Dirac's Large Numbers Hypothesis'.</p> | 1976-1982 |
| D.518-D.520 | <p>'Quasar statistics'</p> <p>'Quasar Probabilities'. Contents of folder so inscribed divided into three for ease of reference: includes five manuscript drafts of 'note' titled 'Quasar statistics', January 1981.</p> | 1981 |

Publications, D.1-D.733

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|--------------|---|------|
| D.521 | 'Expansion of the universe' | 1981 |
| | ?Proof copy with manuscript inscriptions in red ink '1981' and in pencil 'Unpublished?' | |
| D.522 | 'Relativity' | 1983 |
| | 3pp typescript, 19 February 1983, with manuscript note at the head of the first page 'Not used.' | |
| D.523, D.524 | 'Asteroids: the problem of their origin' | 1983 |
| | '83 Aster'ds'. Contents of folder so inscribed divided into two for ease of reference: manuscript 'First draft' so titled with related letter from colleague and pre-print, 1983. | |
| D.525 | Article on 1983 Physics Nobel Prizewinners, <i>Physics Bulletin</i> , January 1984 | 1983 |
| | Correspondence, manuscript drafts, 1983. | |
| D.526 | 'The Early Universe' | 1984 |
| | Manuscript draft dated '1984 January 10' | |
| D.527, D.528 | 'Physics and cosmology' | 1984 |
| | '1984 W.H. McCrea'. Contents of folder so inscribed divided into two for ease of reference: manuscript and typescript drafts dated '1984 January 20'. | |
| D.529 | 'Earth origin - tentative model' | 1984 |
| | Typescript draft dated '1984 August 4'. | |
| D.530 | 'Quantum Jumps and the Cosmos' | 1984 |
| | Photocopied typescript, 8 November 1984. | |

Publications, D.1-D.733

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|-------------|---|-----------|
| D.531 | 'Non-island Universes' | 1986 |
| | Typescript draft, with manuscript inscription at the head of the first page '1986'. | |
| D.532-D.535 | 'Energy and mass in physics' (with G. Dombey and J. Rousseau), <i>Physics Bulletin</i> , July 1987 | 1987 |
| | 'Energy/Mass 1987'. Contents of folder so inscribed divided into four for ease of reference: correspondence, drafts, proof, related papers, etc. | |
| D.536 | 'Man's Future: Facing the Challenge', <i>Interdisciplinary Science Reviews</i> | 1989 |
| | Typescript draft dated '1989 February 27', proof, correspondence etc, October-November 1989. | |
| D.537-D.544 | Article in proposed volume on General Relativity, Astrophysics and Quantum Theory in honour of Nathan Rose. 1990 | 1989-1990 |
| | '1989 Mathematical Physics Nathan Rose vol'. Contents of folder so inscribed divided into eight for ease of reference: includes correspondence with editors and variously titled manuscript drafts. | |
| | Developments in general relativity, astrophysics and quantum theory : a jubilee volume in honour of Nathan Rosen was edited on behalf of the Israel Physical Society by F.I. Cooperstock, L.P. Horwitz, J. Rosen and published in 1990. | |
| | When he replied to the invitation to contribute, May 1989, (D.542) McCrea indicated that he was thinking about aspects of the foundations of mathematical physics: 'I have not a firm title to propose, but it might be 'Mathematical physics - why is it?' | |
| D.545 | 'W.H. McCrea / Recent thoughts and idea' | 1989-1992 |
| | Manuscript notes ?for publication, including manuscript draft titled 'A new Parliament and beyond' with manuscript inscription 'Final draft before copying and posting to Times 21.4.92'. | |

Publications, D.1-D.733

- D.546 'The Royal Astronomical Society' 1990
Manuscript and typescript drafts, August 1990.
See also F.199.
- D.547-D.553 'Cosmology' 1992
Bundle of papers so labelled divided into seven for ease of reference: manuscript drafts on topics in cosmology, June-November 1992. ?Prepared with possible publication in mind.
- D.554 'Telepathy?' 1993
Manuscript draft of letter to *New Scientist* re cover story on telepathy in the *New Scientist* of 15 May 1993, with formal acknowledgement of receipt
- D.555-D.564 'SPA and the Universities', *Science & Public Affairs*, 1993 1993
'SPA and the Universities' was McCrea's title. The article may have been published under the title 'Research Pyramid'.
- D.555-D.557 'SPA Universities 1993 July' 1993
Contents of folder so inscribed divided into three for ease of reference: manuscript and typescript drafts, May-August 1993, letter, 18 August 1993.
- D.558-D.560 'Universities for SPA' 1993
Contents of folder so inscribed divided into three for ease of reference: manuscript and typescript drafts, background material, January - March 1993.
- D.561-D.564 '21st May '93 S.P.A.' and 'Early 1993' 1991, 1993
Contents of folder so inscribed divided into four for ease of reference: includes correspondence 1991 with A.W. Wolfendale re his article for *Nature* on 'The support of science in small universities'; manuscript drafts of article

Publications, D.1-D.733

or articles for SPA including 'Universities and SPA',
February 1993.

- | | | |
|-------------|---|-----------------|
| D.565-D.570 | 'SPA [Science & Public Affairs] Aug '95'.

Contents of folder so inscribed divided into six for ease of reference: letter from SPA, 27 January 1995 <i>re</i> possible article; variously titled manuscript drafts in the area of the computer age and public affairs, background material. | 1994-1995 |
| D.571-D.575 | 'Technology // June '96→'

Contents of folder so inscribed divided into five for ease of reference: manuscript drafts of ?articles for periodical of that name, possibly for a 'Topic of our time' feature.

Titles include 'The human and his mathematics', 'Energy and power' and 'Whither technology' and are dated between June and October 1996. | 1996 |
| D.576 | 'Q 1997'

Contents of folder so inscribed: manuscript and typescript drafts ?prepared for publication including 'William McCrea: Time, Vacuum and Cosmos (Note added 1995 December)' and 'Questions'. | 1995-1997 |
| D.577-D.582 | Miscellaneous notes and drafts ? <i>re</i> publications

6 folders. | 1960-1992, n.d. |
| D.582A | Publication by H.W. Kroto

Typescript draft of article by Kroto 'Interstellar Molecules and Primordial Chemistry' with manuscript draft by McCrea beginning 'Three aspects of ISM in the present galaxy', 15 July 1978. | |

Publications, D.1-D.733

D.583-D.628	Reviews	1949-1994
	A chronological sequence of drafts and related material for McCrea's reviewing.	
	See also D.394-D.396, D.491-D.495, D.687-D.689, D.696, D.699, D.701, D.711-D.713, D.715, D.716, F.179, G.191, H.16, H.122, J.307, J.308, J.316, J.317.	
D.583	1949	
	Includes undated material found with 1949 reviews.	
D.584	1950	
D.585-D.588	1951	
	Four folders.	
D.589, D.590	1952	
	Two folders.	
	At D.490 is undated material found with 1952 reviews.	
D.591	1953	
D.592	1966	
D.593	1967	
D.594, D.595	1968	
	Two folders.	

Publications, D.1-D.733

D.596, D.597	1969
	Two folders.
D.598	1971-1972
D.599	1973
D.600-D.602	1974
	Three folders.
D.603	1975
D.604, D.605	1976
	Two folders.
D.606	1977
D.607	1978
D.608-D.610	1979
	Three folders.
D.611	1980
D.612	1981
D.613, D.614	1983
	Two folders.

Publications, D.1-D.733

D.615 1986

D.616, D.617 c.1987
Two folders.

D.618-D.621 1988
Four folders.

D.622, D.623 1989
Two folders.

D.624 1990

D.625 1991

D.626 1992

D.627 1994

D.628 N.d.

D.629-D.733 CORRESPONDENCE *RE* PUBLICATIONS 1935-1996

Alphabetical sequence by publisher or journal title.

At D.729-D.733 are sequences of shorter scientific correspondence.

Much of McCrea's publications correspondence is to be found in the series of scientific correspondence in Section J.

Publications, D.1-D.733

- | | | |
|--------------|---|------------|
| D.629 | Academic Press Inc (London) Ltd | 1970-1976 |
| D.630 | Adam Hilger Ltd

Correspondence 1977-1979 relates to Adam Hilger Ltd's interest in a book on the history of cosmology from McCrea.

Folder also includes McCrea's comments on sample chapter of a philosophy of science text, 1985. | 1977-1985 |
| D.631, D.632 | <i>Astronomy and Astrophysics</i>

Includes referee's reports.

Two folders. | 1969, 1972 |
| D.633 | <i>Astrophysical Journal</i> | 1965, 1981 |
| D.634-D.636 | Athlone Press

Principally <i>re</i> proposed book 'Astrophysical Quantities' by C.W. Allen and proposed new mathematical journal.

Three folders.

See also D.729. | 1952-1955 |
| D.637 | Cambridge Philosophical Society

<i>Re</i> paper submitted by McCrea to Mathematical Proceedings of the Society on behalf of the authors. | 1981 |
| D.638-D.686 | Cambridge University Press

McCrea was an editor of the Press's General Relativity series and of the Cambridge Monographs on Mathematical Physics from its conception in 1972.

Correspondents include fellow editors, J.C. Polkinghorne and Dennis Sciama and authors. | 1964-1991 |

Publications, D.1-D.733

- D.638 1964-1970
- Includes copy of editorial agreement for *Singularities, Causality and Cosmology* by G.F.R. Ellis and S.W. Hawking, 1967.
- The book was published as *The large scale structure of space time* in 1973. See also D.649.
- D.639, D.640 1971
- Two folders.
- D.641-D.645 1972
- Includes McCrea's comments on proposed book by W.G. Dixon (D.642).
- Five folders.
- D.646-D.648 1973
- Includes papers re book by F.G. Friedlander *The wave equation on a curved space-time* (D.647, D.648).
- Three folders.
- D.649 1974
- Includes copy of agreement for paper back edition of *The large scale structure of space time* by G.F.R. Ellis and S.W. Hawking
- D.650 1975
- D.651 1976
- Includes royalty statement.
- D.652 1977

Publications, D.1-D.733

- | | | |
|--------------|------|---|
| D.653 | 1978 | |
| D.654 | 1979 | |
| D.655, D.656 | 1980 | <p>Includes synopsis of proposed book by T.W.B. Kibble and royalty statements (D.655) and <i>Monographs on Mathematical Physics</i> situation report (D.656).</p> <p>Two folders.</p> |
| D.657 | 1981 | <p>Includes situation report and book proposal.</p> |
| D.658, D.659 | 1982 | <p>Includes situation reports and book proposals.</p> <p>Two folders.</p> |
| D.660-D.669A | 1983 | <p>Includes copies of series correspondence sent to McCrea by the Press, book proposals and status reports.</p> <p>Eleven folders.</p> |
| D.670-D.682 | 1984 | <p>Includes copies of series correspondence, book proposals and status report.</p> <p>Thirteen folders.</p> |
| D.683, D.684 | 1985 | <p>Includes book proposals.</p> <p>Two folders.</p> |

Publications, D.1-D.733

- D.685 1986
- D.686 1987-1991
Includes book proposal.
- D.687-D.689 *Contemporary Physics* 1973-1975
Includes reviews by McCrea.
Three folders.
See also J.316, J.317.
- D.690-D.693 D. Reidel Publishing Company 1971, 1984
- D.690 1971
- D.691-D.693 1984
Papers relate to McCrea's advice on book proposal.
Three folders.
- D.694 *European Spectroscopy News* 1981
Invitation to McCrea to write report on Royal Society
'Molecules in Interstellar Space' meeting, with manuscript
draft of McCrea's report.
- D.695-D.703 *Interdisciplinary Science Reviews* 1975-1996
In 1975 McCrea joined the editorial board of this new
journal (first published 1976). His principal correspondent
is the editor A. R. Michaelis.
The sequence includes drafts of articles and reviews
written by McCrea for the journal and his reports on
articles offered by others.

Publications, D.1-D.733

D.695	1975	
D.696	1976	
D.697	1977-1979	
D.698	1980	
D.699	1981	
	Manuscript drafts of reviews by McCrea.	
D.700	1982-1983	
D.701	1984-1989	
	Includes manuscript drafts by McCrea.	
D.702	1990-1991	
D.703	1992-1996	
D.704	<i>Journal of Physics, Section A</i>	1972
	<i>Re refereeing etc.</i>	
D.705-D.716	<i>Nature</i>	1962-1981
	Includes reviews by McCrea for <i>Nature</i> and his referee's reports on papers by others.	
D.705	1962-1964	

Publications, D.1-D.733

D.706	1963-1964	
D.707, D.708	1965 Two folders.	
D.709	1966	
D.710	1968-1969 Includes correspondence <i>re</i> supply of Nature to Russian astronomers.	
D.711	1971	
D.712	1972	
D.713	1973	
D.714	1975	
D.715	1976	
D.716	1977-1981	
D.717-D.724	<i>The Observatory</i> McCrea became an editor in 1935. The letter accepting McCrea's resignation is undated but he is addressed as a former editor in 1939. Includes McCrea's correspondence with fellow editors including R.v.d.R. Woolley, and contributors including S. Chandrasekhar, T.G. Cowling and E.A. Milne, and 'as an	1935-1978

Publications, D.1-D.733

	outsider' J.B.S. Haldane.	
D.717, D.718	1935 Two folders.	
D.719-D.721A	1936 At D.721A are press-cuttings reporting on a course of ten lectures 'Through Science to Philosophy' given by Herbert Dingle at the Lowell Institute, Boston, Massachusetts. Four folders.	
D.722	1937-1939	
D.723	Proofs	1935-1936
D.724	1974-1978	
D.725	<i>Physics Today</i> <i>Re</i> article on the clock paradox by Mendel Sachs.	1971-1972
D.726, D.727	Royal Astronomical Society Two folders.	1962, 1990
D.728	University of Massachusetts Press Includes McCrea's assessment of book.	1982
D.729-D.733	Shorter publications correspondence	1964-1991
D.729, D.730	Shorter correspondence with publishers, editors etc. Two folders.	1964-1991

Publications, D.1-D.733

D.729

A - L

D.730

M - Z

D.731-D.733

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