

Catalogue of the papers and correspondence of GEORGE WILLIAM SERIES FRS (1920-1995)

MS 4623

Previous Catalogue Reference: NCUACS 61.4.96

Compiled by Jeannine Alton and Peter Harper, for the National Cataloguing Unit for the Archives of Contemporary Scientists. We are grateful to Mrs Series for making the papers available for cataloguing and advice on unidentified correspondence.

The material is presented as shown in the List of Contents. Additional explanatory notes, information and cross-references are appended where appropriate to the separate sections, subsections and individual entries in the body of the catalogue. The following paragraphs aim only to draw attention to items of particular interest.

On his retirement from Reading in 1982, Series appears to have discarded much material. Although he remained in touch with physics, continuing to lecture and to attend conferences, he and his wife spent much of their time at their Cornish home, where research and administrative facilities were of necessity limited. These factors have resulted in gaps in the record at all levels.

Bibliographical references in the catalogue (in the form Bibliog. ...) are to the bibliography prepared by Professor B. Bleaney for his Royal Society memoir of Series. A copy of this bibliography is presented at NCUACS 61.4.96/A.7.

Contents:

Section A, Biographical and personal, includes several autobiographical notes and narratives, some quite lengthy, on his career and scientific interests, written at various dates from 1963 to 1994. There is unfortunately virtually no documentation for Series' early life, Oxford university and college days at St John's and St Edmund Hall, or of his connection with Reading School as pupil and Governor. His appointment, career and retirement at Reading University are more fully recorded, as are his later honours.

Section B, Research, represents Series' own selection of topics of special interest to him: some, such as 'Spontaneous emission of light' cover a long time-span 1964-1977, while others such as 'Optogalvanic spectroscopy' was his last research at Reading 1981-1983. Series seems to have conducted a later revision of some of the material, perhaps in 1990, adding brief explanatory notes on its interest.

Section C, Lectures and papers, is a substantial record of Series' achievement as a popular and prolific lecturer to research groups or conferences, over an extended period, 1959-1988.

Section D, Publications and editorial, is only a partial record of Series' considerable editorial commitments, though it does include material on the founding of the European Journal of Physics with which he was closely involved, serving as its first editor.

Section E, Visits and conferences, is similarly scanty in view of the many conferences and lecture engagements undertaken by Series. It includes several of his visits under the Royal Society Exchange Programme, and also documents the major world tour 1982-1983 following his retirement from Reading.

Section F, Correspondence, dates in large part but not exclusively from Series' retirement years. Many of the letters are therefore incoming only, but Series frequently jotted down notes of his replies, or of calculations and ideas arising from the correspondence. He might also, at a later date, add a note on writers' names, careers and connections.

The Collection covers the year's 1944-1995.

The physical extent of the collection is 12 boxes.

Introduction

Series was born, in modest circumstances, in 1920 and spent his early years in rural surroundings on the estate of Stratfield Saye House, Berkshire. Helped by scholarships, he was educated at St Mary's School Basingstoke and, from 1934-1938, at Reading School. In 1938 he entered St. John's College Oxford as an Open Scholar, reading mathematics and physics for the Shortened Finals in Physics in the wartime arrangements then operating. As a pacifist, he worked in London on air raid relief work and later became a member of the Friends Ambulance Unit; with them he served in the Middle East, Italy and (the former) Yugoslavia.

On his return to Oxford he took his Full Finals and D.Phil., and began research in optical spectroscopy under H.G. Kuhn, becoming a University Lecturer in Physics 1951; from 1953 to 1968 he was Tutorial Fellow at St Edmund Hall (Emeritus Fellow 1969). In 1968 he accepted a Professorship of Physics at Reading University, remaining there until taking early retirement in 1982.

His principal research interests - all in the field of optical spectroscopy - were the structure of atomic hydrogen, double resonance, spontaneous emission and optogalvanic spectroscopy.

Series was elected Fellow of the Royal Society in 1971. He was a Fellow of the Royal Astronomical Society 1972, the American Physical Society 1975, the Optical

Society of America 1975 and an Honorary Fellow of the Indian Academy of Sciences 1984. He died in 1995.

MS 4623 A1-A57 SECTION A BIOGRAPHICAL AND PERSONAL

NCUACS 61.4.96/A.1-NCUACS 61.4.96/A.7
BIOGRAPHICAL AND AUTOBIOGRAPHICAL
NCUACS 61.4.96/A.8-NCUACS 61.4.96/A.30 CAREER
AND HONOURS
NCUACS 61.4.96/A.31-NCUACS 61.4.96/A.57
PHOTOGRAPHS

MS 4623 A1-A6 Notes and narratives on his life and career, prepared by Series at various dates.

MS 4623 A1 'For Heini' [Kuhn]
1963; 1965

MS 4623 A2 'George William Series: Memoirs
1971
Prepared for Royal Society on election. With extensive manuscript drafts used as a basis for the memoirs.'

MS 4623 A3 'Development of research'
1983

MS 4623 A4 Miscellaneous autobiographical notes, nd, latest reference
1988

MS 4623 A5 Soft-backed notebook on 'Conferences and scientific publications'
1990
Includes recollections of Institute of Physics, the history of European Journal of Physics (q.v.), conferences of European Group for Atomic Spectroscopy (EGAS) etc.

- MS 4623 A6** Later correspondence and notes sent to the Royal Society
1994
- MS 4623 A7** Lists of publications prepared by Series.
- These distinguish between papers published from Oxford, Reading, and after retirement and are included here for assistance in identifying some of Series' notes.
List of publications prepared by B. Bleaney for his Royal Society memoir of Series. This list is the authority for the bibliographical references in the Catalogue which are presented in the form Bibliog. ...
- MS 4623 A8** Friends Ambulance Unit Members Record Book. Record of
Series' service
1944-1945
- MS 4623 A9-A15** Reading University
- MS 4623 A9** Appointment: Application, testimonials, offer of post.
1967
Included here is Series' letter of resignation as Fellow, St Edmund Hall Oxford and arrangements for a dinner for him and his wife.
- MS 4623 A10** Miscellaneous correspondence on Reading affairs
1974-1981
Includes correspondence 1980 on supervision of Ph.D. candidates, and on Headship of Department, Series' letter 1981 on the organisation of physics teaching at Reading.
- MS 4623 A11** Series' reports on teaching, research, publications,
Departmental and outside activities
1975-1982
- MS 4623 A12** Report on a visit by the Physics Committee of Science
Board, Science and Engineering Research Council to
Reading University
14 January 1982
includes paragraph praising Series' work, and mentioning his decision to take early retirement at the end of the current academic session.

MS 4623 A13- A15	Retirement 1982
MS 4623 A13	Notice of redundancy Noted that this 'brutally curt notice' hurt Series greatly. Folder also includes letter of appreciation from Vice- Chancellor and conferment of title of Emeritus Professor.
MS 4623 A14	Retirement dinner: Signed cards
MS 4623 A15	Letters and messages.
MS 4623 A16- A21	Royal Society
MS 4623 A16	Nomination, recommendations, election 1963-1971
MS 4623 A17- A20	Letters and messages of congratulation on election 1971
MS 4623 A17	A - D
MS 4623 A18	E - K.
MS 4623 A19	L - S.
MS 4623 A20	T - Z and first-name signatures.

- MS 4623 A21** Miscellaneous Royal Society material, thanks for service on committees etc.
- MS 4623 A22** Election to the Fellowship of the American Physical Society
1975
- MS 4623 A23** Election to the Fellowship of the Optical Society of America
1975
- MS 4623 A24** Election to Board of Electors to Dr Lee's Professorship of
Experimental Physics, Oxford University 1981, and
resignation
1990
- MS 4623 A25** Award of the William F. Meggers Award of the Optical
Society of America
1982
Notification of award (1981), arrangements for presentation,
letters of congratulation.
- MS 4623 A26** Election as 'Clarendon Honorary Research Fellow',
Clarendon Laboratory Oxford
1983
- MS 4623 A27** Election to Honorary Fellowship, Indian Academy of
Sciences
1984
- MS 4623 A28** Miscellaneous items of biographical interest

Miscellaneous items of biographical interest:
Brief correspondence 1986, 1995 relating to Reading
School. Series attended the School 1934-1938 and was
later a Governor but this is not documented.
Invitation to serve on the Individual Merit Promotions Panel,
Management and Personnel Office; Series was 'surprised
and concerned' at being asked to sign the 'Official Secrets
Act and did not serve. Material included to show his high
moral scruples.
- MS 4623 A29** Miscellaneous shorter personal correspondence, mainly
letters of thanks or replies to letters of congratulation sent by
Series to friends or colleagues to mark honours, prizes,
elections, retirement etc.
1963-1993

Some have manuscript explanations or identifications added by Series.

- MS 4623 A30** Papers related to Series' death
- Series' death
Obituaries, January 1995
Memorial Service and addresses, St Edmund Hall Oxford, March 1995.
- MS 4623 A31** Group photograph, inscribed on verso 'Oxford University Society of Change Ringers'
June 1947
- MS 4623 A32-A36** Clarendon Laboratory, Oxford
- MS 4623 A32** Group photograph, inscribed on verso 'Clarendon Laboratory Early nineteen-fifties'.
- MS 4623 A33-A35** Three small colour photographs, inscribed on verso 'Clarendon Lab 1962' of H.G. Kuhn and his group (including Series, D.N. Stacey, W. King, A Corney, M. Vaughan).
- MS 4623 A36** Group photographs 1965, in Series' folder inscribed on front cover 'Group of spectroscopists at Clarendon. Mid-sixties. Heyday?'
- Identifications given inside back cover.
- MS 4623 A37-A39** Reading University
- MS 4623 A37** Group photograph, inscribed on verso 'J.J. Thomson Lab'.
Mid 1970s
- MS 4623 A38** Group photograph, inscribed on verso 'J.J. Thomson Physical Laboratory'.
July 1978

- MS 4623 A39** 'Presentation of Hon. D.Sc. to George Temple May 1981'
(Series standing on right).
May 1981
- MS 4623 A40-
A46** European Group for Atomic Spectroscopy Conferences.;
Group photographs, some with key or list of participants.
- MS 4623 A40** First conference, Paris-Orsay
1969
- MS 4623 A41** Hannover, With list of participants.
July 1970
- MS 4623 A42** Reading
1971
- MS 4623 A43** Lund, With key and list of participants
1973
- MS 4623 A44** Oxford
1976
- MS 4623 A45** Cracow
1977
- MS 4623 A46** Imperial College London, With list of participants.
1984
- MS 4623 A47-
A53** Conferences and colleagues
- MS 4623 A47** Group photograph, Ampère Conference, Paris
1958

MS 4623 A48	Series lecturing at Second Quantum Electronics Conference 1961
MS 4623 A49	Series and colleagues (identified on verso) at International Conference on Optical Pumping and Atomic Line Shape (OPALS), Poland June 1968
MS 4623 A50	Series lecturing at OPALS Conference 1968
MS 4623 A51	Group photograph, Scottish Summer School, With list of participants. 1969
MS 4623 A52	Series with colleagues (identified in verso) at Vilnius, Lithuania 1984
MS 4623 A53	Series lecturing at Vilnius
MS 4623 A54- A56	India 1982-1983
MS 4623 A54	Group photograph, members of Spectroscopy Laboratory, Banaras Hindu University, With key. October 1982
MS 4623 A55	Series with colleagues December 1982
MS 4623 A56	Series preparing lecture, Bangalore December 1982
MS 4623 A57	Portrait photograph of Series, probably taken for Royal Society. undated

MS 4623 B1-B26 SECTION B RESEARCH

NCUACS 61.4.96/B.1-NCUACS 61.4.96/B.20
SPONTANEOUS EMISSION OF LIGHT
NCUACS 61.4.96/B.21-NCUACS 61.4.96/B.23 DOUBLE
RESONANCE AND OPTICAL PUMPING
NCUACS 61.4.96/B.24-NCUACS 61.4.96/B.26
OPTOGALVANIC SPECTROSCOPY

Series conducted a very thorough clearing-out of most of his notes and data when he retired from Reading in 1982. The material here, though far from providing complete documentation of his research career, represents topics for which he felt special commitment or with which he wished to remain involved. His reasons for retaining the material, and the historical interest he thought it might have, are often indicated in short notes which he added at a later date. These are quoted in the relevant entries.

Much the most substantial surviving material is on spontaneous emission of light, which has an extensive time-span 1964-1977 and includes lectures and papers as well as notes and ideas.

MS 4623 B1-B12 Lectures, papers, publications, 1964-1974

MS 4623 B1 'A semi-classical theory of the spontaneous emission of light'
January 1964

MS 4623 B2 'The role of the final state in radiation processes. J.I.L.A. [Joint Institute for Laboratory Astrophysics]
January 1964

MS 4623 B3 'The role of the final state in radiation processes. J.I.L.A. [Joint Institute for Laboratory Astrophysics], typed version 1977
With deletions, corrections and pages of additional material, and a manuscript note 'This material was eventually incorporated into the talk given at Les Houches.'

MS 4623 B4 'A semi-classical theory of spontaneous emission'
May 1966

- MS 4623 B5** 'Radiation reaction, radiative damping and level shifts'.
Extensive 23pp manuscript draft
February 1967
- MS 4623 B6** Drafts for three lectures on 'Theory of double resonance,
level-crossing and optical pumping experiments'
February - March 1969
1. Interaction with radio-frequency fields
2. Interaction with light
3. Theory of optical pumping cycle.
- MS 4623 B7** 'Radiation reaction, spontaneous emission and the Lamb
shift', with additional pages on 'Philosophy' marked 'Good'
March 1970
- MS 4623 B8** 'On the interaction of magnetic (electromagnetic) fields with
strong atoms', Lausanne
September 1973
- MS 4623 B9** 'Radiation reaction, spontaneous emission and level shifts',
Yale
December 1973
- MS 4623 B10** Notice of talk with same title, given by Series No indication
of place.
January 1974
- MS 4623 B11** Notes for talk on 'Interaction of a dipole with an external,
oscillating field'.
nd
- MS 4623 B12** 'Radiative damping and level shifts without field
quantization'. Draft with corrections and additions, and a
manuscript note 'Never published'.
Nd, perhaps 1974
- MS 4623 B13-
B16** Dated notes, calculations, ideas
1972-1977
These vary from a single sheet to a substantial assembly
clipped or tagged together by Series to record his thinking,
perhaps over several months but not necessarily following
chronological order and therefore not strictly a 'sequence'.

- MS 4623 B13** Dated notes, calculations, ideas
December 1972 - March 1974
Various date
- MS 4623 B14** Tagged folder of extensive notes and drafts
August 1974 - January 1975
the main sequence paginated 1-57, with two added
sequences each paginated 1-3, and some unpaginated
loose pages of notes. There is a 'frontispiece' headed
'George's masterpiece. Keep cool' and the folder also
includes a copy of a paper by R.E. Peierls 'The development
of quantum field theory' 1973.
The folder is of interest as an example of Series 'thinking
aloud' as he develops ideas and comments on them.
- MS 4623 B15** Notes of 10 October have a later explanatory note
appended by Series.
October - November 1975
Various dates
- MS 4623 B16** Further thoughts and developments on radiative damping
and level shifts.
June - August 1977
Various dates.,
- MS 4623 B17-
B19** Undated notes

Similar material to NCUACS 61.4.96/B.13-NCUACS
61.4.96/B.16 but undated.
- MS 4623 B17** 'Sundry attempts. Suggestive, but not quite right';
'Spontaneous decay from 2-level system'; 'Magnetic dipole
radiation reaction'; 'Reaction force'.
- MS 4623 B18** Various paginated notes and drafts.
- MS 4623 B19** Miscellaneous notes
- MS 4623 B20** Correspondence: Exchange of letters on reaction fields.
1973
Included here is Series' note of February 1990 about his
work on spontaneous emission.

- MS 4623 B21** Series' explanatory note.
September 1979, July 1982
Notes and calculations
- MS 4623 B22** Tagged folder of notes, various dates, includes some
paginated sequences. Kept in Series' order.
1980-1982
- MS 4623 B23** 10pp paginated sequence of research notes
January 1985
- MS 4623 B24-
B26** Notes, calculations, correspondence, 1981-1983

Contents of a folder inscribed 'Last research at Reading
(collaboration with P. Hannaford). Essentials published
[Bibliog. 79]. Theory incompletely worked out'.
- MS 4623 B24** Notes and calculations, with a later note by Series
'Incomplete attempts to interpret Hannaford's experiments in
Reading'.
1981
- MS 4623 B25** Correspondence and notes
1982-1983
- MS 4623 B26** Folder of notes, data and drafts

with a later note added by Series: 'drafts relating to
publications 78, 79, 80. Biographer may be interested'.
- MS 4623 C1-
C109** SECTION C LECTURES AND PAPERS

NCUACS 61.4.96/C.1-NCUACS 61.4.96/C.72 LIGHT
BEATS AND RELATED TOPICS
NCUACS 61.4.96/C.73-NCUACS 61.4.96/C.109 OTHER
LECTURES AND PAPERS
Series was a popular and prolific lecturer. The material in
this section relates entirely to invitation or outside lectures
and not to routine university teaching. It is all in Series'
hand, usually in semi-note form, with diagrams, calculations
and indications of slides to be used. Series was almost
always careful to provide dates and locations for his talks
and these are given in the entries.
The topics deal exclusively with scientific research and show
Series' range of interests in the field of spectroscopy.

See Section B for additional lectures and papers dealing
with spontaneous emission of light.

- MS 4623 C1** 'Light beats. Oxford 1959.' Draft for Bibliog. 14.
- MS 4623 C2** 'Light beats. Magnetic resonance conference. Oxford'.
Sept 1959
- MS 4623 C3** 'Light beats Queen Mary College London'.
December 1959
- MS 4623 C4-C11** 'Light beats. Sundry MS and talks'. Contents of a folder so
inscribed. Talks and papers given in America during Series'
period at Bell Laboratories 1960. Summary indications of
date and place are given.
- MS 4623 C4** Bell Labs.
January
- MS 4623 C5** Holmdel
February
- MS 4623 C6** Chicago
March
- MS 4623 C7** Columbia
March
- MS 4623 C8** Rochester [NY]
May
- MS 4623 C9** Murray Hill
May

MS 4623 C10	Berkeley July
MS 4623 C11	Unidentified.
MS 4623 C12	'Light beats. Cambridge' January 1961
MS 4623 C13	'Properties of modulated light in double resonance experiments. Berkeley'. Related to Bibliog. 21. March 1961 Untitled. 'Ann Arbor Michigan'.
MS 4623 C14	'Coherence in resonance fluorescence. Birmingham' November 1961
MS 4623 C15	'Light beats. Clarendon Lab. [Oxford] March 1961' and 'Malvern' January 1962
MS 4623 C16	'Light beats. Schoolmasters Conference Oxford' January 1962
MS 4623 C17	'Light beats. N.P.L. [National Physical Laboratory]' March 1962
MS 4623 C18	'Questions of coherence in resonance fluorescence. Heidelberg' April 1962
MS 4623 C19	'Modulation of light in a double resonance experiment. Royal Society' November 1962
MS 4623 C20	Untitled. 'University College London.' November 1962

- MS 4623 C21** 'Optical pumping in helium. Ecole normale [Paris]'
April 1963
- MS 4623 C22** 'Studies of modulated light... Ecole normale'
April 1963
- MS 4623 C23** 'Studies of modulated light. Warsaw'
October 1963
- MS 4623 C24** Untitled (on excitation). Manchester and Tübingen
November 1963
- MS 4623 C25** 'Harlequin photons and cognate topics'
January 1964
- MS 4623 C26** 'Light beats'. Given at Boulder February, also Stanford,
Maryland, Rochester
March 1964
- MS 4623 C27** 'Experiments in resonance fluorescence. Berkeley'
March 1964
- MS 4623 C28** 'Modulation of exciting light. Columbia'
March 1964
- MS 4623 C29** 'Coherence effects in resonance fluorescence. IBM'
March 1964
- MS 4623 C30** Untitled conference talk
May 1964
- MS 4623 C31** 'Forward-scattering of resonance radiation. Oxford'
April 1965

- MS 4623 C32** 'Forward-scattering of resonance radiation Berlin'
nd
- MS 4623 C33** 'Modulation phenomena in resonance fluorescence
Amsterdam September 1965' and 'Reading and Nottingham'
March 1966
- MS 4623 C34** 'Fluorescence spectroscopy...'
January 1966
- MS 4623 C35** 'On the calculation of polarizability...'
April 1966
- MS 4623 C36** 'Interference effects in resonance fluorescence.'
April 1966
This lecture, and MS 4623 C35, were given at a meeting of
the Physical Society Optics Group at York.
- MS 4623 C37** 'Interference effects in resonance fluorescence', Clarendon
Laboratory [Oxford], June 1966, and other locations
July 1966 - May 1967
- MS 4623 C38** 'The forward scattering of resonance radiation. Rochester
June 1966' and 'Boulder'
June 1966
- MS 4623 C39** 'Optical pumping in helium: modulation effects. Columbia'
June 1966
- MS 4623 C40** 'On the semi-classical approach to radiation interactions...'
Newcastle, and NPL'
October 1966
- MS 4623 C41** 'Exploitation of the phase of light. Durham April 1967. British
Radio-Spectroscopy Group Conference'
April 1967
- MS 4623 C42** 'Magnetic resonance stimulated by frequency-modulated
light. Columbia'
Sept 1967

- MS 4623 C43** 'Some unexploited possibilities in atomic fluorescence spectroscopy'. Various locations
September - November 1967
- MS 4623 C44** 'Atoms as resonators'. Kept with 1967 lectures.
nd
- MS 4623 C45** 'Modulation phenomena in resonance fluorescence. Culham'
April 1968
- MS 4623 C46** 'Exploitation of the anisotropy of atomic radiation. Culham'
April 1968
This lecture, and MS 4623 C45, were given at a meeting of the Physical Society Optics Group.
- MS 4623 C47** 'Studies of the Hanle effect in neon', Kept with above
nd
- MS 4623 C48** 'Remarks on spontaneous emission'. Paper presented at International Conference on Optical Pumping and Atomic Line Shape, Warsaw June 1968. Related to major paper of same title (Bibliog. 41).
June 1968
- MS 4623 C49** 'Coherence effects in the interaction of radiation with atoms. Munich'
September 1968
- MS 4623 C50** 'Coherence effects in the interaction of radiation with atoms'.
Various locations
November 1968 - April 1969
- MS 4623 C51** 'Personalities and places in physics. Reading'
January 1969
- MS 4623 C52** Notes for miscellaneous lectures, Paris, Hannover, Heidelberg
February - March 1969
- MS 4623 C53** 'Pisa'. Untitled, on pumping.
April 1969

- MS 4623 C54** 'Spectroscopy at large. Reading'
October 1969
- MS 4623 C55** 'Spectroscopy without a spectroscope. Reading' (lecture first
given February 1967).
November 1969
- MS 4623 C56** 'Optical pumping. Sheffield'
November 1969
- MS 4623 C57** Untitled. 'Edinburgh'
1969
- MS 4623 C58** 'Semi-classical theory of 'dressed' atoms. Hannover EGAS
Conference'
July 1970
- MS 4623 C59** 'Interaction of fields with paramagnetic atoms'. Various
locations
August 1970
- MS 4623 C60** 'Determination of the Rydberg Constant. Conference on
Precision Measurement and Fundamental Constants'
August 1970
Notes for two lectures, related to Bibliog. 51.
- MS 4623 C61** 'Magnetic resonance, frequency diagrams and dressed
atoms. Malvern'
March 1971
- MS 4623 C62** 'Diffraction. Reading Schoolmasters'
April 1971
- MS 4623 C63** 'Interference effects in the interaction of radiation with free
atoms.' Various locations
January, February 1972
- MS 4623 C64** 'Modulation effect in resonance fluorescence. Bangalore'
July 1972

- MS 4623 C65** 'Frequency diagrams and dressed atoms. Dunedin (New Zealand) July 1972.' Lecture first given in November 1971
- MS 4623 C66** 'Optical Pumping. Reading undergrads.'
October 1972
Presidential address.
- MS 4623 C67** 'Semi-classical theory of atoms in strong fields. ENS [Ecole Normale Supérieure] Paris'
March 1973
- MS 4623 C68** 'Level crossing experiments. Time resolved detection. ENS Paris'
March 1973
- MS 4623 C69** 'Level-crossing. Time-resolved detection'. Stirling
October 1973
- MS 4623 C70** 'Parts per billion: how and why. Reading Undergraduate Physical Society.'
October 1973
- MS 4623 C71** 'Modulated fluorescence of atomic vapours. Stanford Harvard Columbia.'
February-March 1975
- MS 4623 C72** 'Quantum beats and related topics. Culham'
February 1976
- MS 4623 C73-C74** Two lectures at Pisa, March 1972
- MS 4623 C73** 'Polarization and alignment in magnetic resonance'.
- MS 4623 C74** 'The ellipsoid of alignment'.

- MS 4623 C75** Lecture at Bangalore
June 1972
- MS 4623 C76** 'Precision measurement and atomic constants'
nd ca 1973
Contents list for 10 lectures.
Tagged folder of notes for lectures 1 Atomic constants, 3
Speed of light, 4 Rydberg constant and Lamb shift, 6 Fine
structure constant, 7 the ampere and 10 Avogadro's
numbers.
- MS 4623 C77** 'Bloch-Siegert shifts', given at Boston and Yale. Related to
Bibliog. 56.
December 1973
- MS 4623 C78** 'Radiation reaction etc. Jersey Conference'
April 1974
- MS 4623 C79** 'Resonance interactions between radiation and atoms:
perturbation of the "final" state. Les Houches [Switzerland]
Summer School'. Related to Bibliog. 64.
1975
- MS 4623 C80-
C82** Lectures on 'Tunable lasers in atomic spectroscopy', various
dates and locations
1976
- MS 4623 C83-
C84** Two lectures on light and colour, one for 'Reading Open
Day'.
1976
- MS 4623 C85** Lecture on spectroscopy, nd. Kept with 1976 material.
nd
- MS 4623 C86** Notes for talks on high-resolution spectroscopy, York
September 1976
- MS 4623 C87** 'Excited caesium atoms: collisions and negative damping.'
EGAS conference Cracow
July 1977

MS 4623 C88-C89	Lectures at SRC Summer School, Royal Holloway College, London, September 1978
MS 4623 C88	'Pre-laser studies of radiation interactions'.
MS 4623 C89	'Quantum beats'.
MS 4623 C90	'Laser Spectroscopy', Eleventh National Conference on Atomic and Molecular Physics, Liverpool April 1979
MS 4623 C91	'Forward scattering and polarization spectroscopy', various dates and locations, Related to Bibliog. 72. July, September 1979
MS 4623 C92	'Advances in laser spectroscopy', various dates and locations November 1979 - November 1980
MS 4623 C93	'Hyperfine structures, lifetimes and collisional cross sections in ^{133}Cs ', various dates and locations, Related to Bibliog. 81. February 1980-1982
MS 4623 C94	'Thirty years of optical pumping', EGAS Conference, Pisa September 1980 Notes, heavily corrected draft. Related to Bibliog. 77.
MS 4623 C95	'Hydrogen', various dates and locations in Poland, November 1980, India. Related to Bibliog. 74. October 1982
MS 4623 C96	'Spatial and temporal aspects of the interaction of radiation and matter', five lectures to be given at Queen's University Belfast June 1980 Invitation and list of lectures only.
MS 4623 C97	Notes for two lectures on basic quantum mechanics of atomic structure for NATO conference, Erice, Italy 16-28 November 1981

MS 4623 C98-C99	Two lectures on 'Light and atoms'.
MS 4623 C98	Reading University Public Lecture February 1982
MS 4623 C99	Charters School March 1982
MS 4623 C100	'Optogalvanic spectroscopy - level-crossing effects'. Various dates and locations. Related to research and publications with P. Hannaford et al (Bibliog. 82, 91, 92). January 1982 - June 1983
MS 4623 C101-C102	Two lectures on 'Advances in laser spectroscopy'.
MS 4623 C101	Bristol April 1982
MS 4623 C102	Delhi October 1982
MS 4623 C103	'The fundamental atomic constants - the ubiquity of alpha', Bangalore February 1983
MS 4623 C104	'Optical pumping', Bangalore, February, Melbourne March 1983
MS 4623 C105-C106	Lectures in Australia and New Zealand, March - April 1983
MS 4623 C105	'Laser Spectroscopy'

- MS 4623 C106** 'Forward-scattering'.
- MS 4623 C107** 'The fundamental atomic constants: the ubiquity of alpha'. Various dates and locations, Related to Bibliog. 95. May 1983 - March 1985
- MS 4623 C108** 'Double resonance and optical pumping: the early days'. Seattle, August, Riga, Related to Bibliog. 94. September 1984
- MS 4623 C109** 'The hydrogen atom (an historical account of studies of the hydrogen atom)', Pisa, 1988. Published in conference proceedings of same title 1989
- MS 4623 D1-D14** SECTION D PUBLICATIONS AND EDITORIAL
- MS 4623 D1-D10A** European Journal of Physics (EJP)
- Series' Involvement with the journal meant a great deal to him; he writes about it in several of the autobiographical items in Section A, and particularly in NCUACS 61.4.96/A.5. See also D.10 below for his concern to set the historical record straight.
- MS 4623 D1** Establishment of the journal: early correspondence, agreement between European Physical Society and Institute of Physics, setting-up of Editorial Board, early publicity etc. 1979-1980
- MS 4623 D2** Miscellaneous membership lists of the Editorial Board 1982-1984
- MS 4623 D3** Minutes of Executive Board of EJP, October 1979 - June 1984, and Series' follow-up letters to Editorial Board members July 1980 - July 1984

- MS 4623 D4** Series' Editor's reports on EJP presented for meetings of Advisory Committee on Physics Education and Advisory Committee on Publications
1981-1985
- MS 4623 D5-D8** General correspondence on EJP affairs: launching, publicity, articles, suggestions, board meetings, revised agreement, journal format, relations with European Physical Society, board membership.
- MS 4623 D5** General EJP correspondence
1980-1982
- MS 4623 D6** General EJP correspondence
1983-February 1984
- MS 4623 D7** General EJP correspondence
1984
- MS 4623 D8** General EJP correspondence
1985
- MS 4623 D9** Correspondence, and one letter 1986 on appointments of new Editorial Board members and in particular of a new Editor to replace Series. Includes letters of thanks for his work on the journal.
1983-1985
- MS 4623 D10** Series' letter to the editor, Europhysics News, commenting on and correcting the account of the launching and history of the journal given in the 25th EPS Anniversary issue of Europhysics News
September 1993
- MS 4623 D10A** 'Keeping a laboratory notebook: an exemplar.'
- Correspondence and draft for Series' article in European Journal of Physics 1991 (Bibliog. 105). Series attached great importance to methodical work and the folder includes material on a notebook of Rutherford which he used in his department (1972, 1974), and which formed the basis of his later article.

- MS 4623 D11-D14** World Scientific Publishing Co.
Correspondence and papers 1984-1992 relating to The spectrum of atomic hydrogen: advances (1988), edited by Series. This was an update and expansion of Series' earlier The spectrum of atomic hydrogen (OUP 1957).
- MS 4623 D11** Contract with OUP for text.
1957
- MS 4623 D12** Correspondence, mainly with publisher (Editor-in-Chief K.K. Phua) but also with colleagues and co-authors on plans and publication of book, introduction, publicity etc.
1984-1992
Series was Editorial Adviser for the firm in atomic and molecular physics and there are a few exchanges on general publication matters. He resigned as adviser in September 1992
- MS 4623 D13** Requests for information, permission to quote etc sent by Series in preparation for book.
- MS 4623 D14** Correspondence with colleagues and contributors
1985-1987
- MS 4623 E1-E13** SECTION E VISITS AND CONFERENCES

The surviving material represents only a few of the many meetings and conferences attended by Series. Others are attested by the lectures and papers in Section C.
- MS 4623 E1** Visit to California, including Mount Wilson and Palomar Observatories, July 1960, during Series' period at Bell Telephone Laboratories, Murray Hill, New Jersey.
1960
Correspondence, arrangements
- MS 4623 E2** Visit to Poland
18-29 November 1980
Series visited scientific institutions in Cracow, Warsaw, Torun and Gdansk, under the Royal Society exchange programme.
Includes Series' reports to the Royal Society, his notes on institutions and personnel, letters of thanks, article 'Spring in

Poland' submitted under a pen-name to The Times but not published.

MS 4623 E3-E5 Round the world trip, October 1982 - June 1983

The main aim of this extended journey marking Series' retirement from Reading was to visit laboratories and universities in India where he was Raman Visiting Professor of the Indian Academy of Sciences October 1982-February 1983.

He subsequently visited Australia, February - March, and New Zealand where he was Visiting Professor in the Department of Physics Dunedin March-May. From mid-May to mid-June he visited universities and attended conferences in the USA.

MS 4623 E3 Itineraries.

MS 4623 E4 Correspondence, invitations, arrangements, a few follow-up letters. These are for India; there is one letter only for New Zealand April 1983 and no material for the USA visits. 1980-1983

MS 4623 E5 Series' letter to the Royal Society on his visit 1983 and other miscellaneous items. 1983

MS 4623 E6 16th EGAS Conference, London: Programme only (annotated by Series). 10-13 July 1984

MS 4623 E7-E9 Visit of Lithuania and Latvia via Moscow, 31 August - 13 September 1984, under Royal Society exchange programme.

MS 4623 E7 Small notebook 'USSR' on journey, institutions, personnel etc. Sept 1984

MS 4623 E8 Correspondence, invitations, arrangements, a few follow-up letters 1981-1985

- MS 4623 E9** Series' reports to the Royal Society.
- MS 4623 E10** Correspondence on a proposed NATO Summer School on Lasers and Laser Spectroscopy to be held in Portugal. Series accepted an invitation to lecture but later withdrew. 1984-1986
- MS 4623 E11-E13** Correspondence on proposed visit to India under Royal Society exchange programme to visit Varanasi, Bangalore and Kerala, January 1988. The visit was cancelled because of ill-health.
- MS 4623 E11** Correspondence with the Royal Society, application etc.
- MS 4623 E12** Correspondence with colleagues in India, invitations, arrangements.
1987-1988
Correspondence with S.N. Thakur January 1988 includes Series' notes on the lecture and contribution he had intended for the Workshop on Laser Spectroscopy at Baharas Hindu University Varanasi.
- MS 4623 E13** 'Optical pumping, resonance fluorescence, and Raman scattering', manuscript article with a manuscript headnote 'Written for Varanasi Raman celebrations', sent June 1987 in answer to request for contribution to university centenary publication for C.V. Raman. (Not listed in Bibliog.).
June 1987
- MS 4623 F1-F37** SECTION F CORRESPONDENCE
- MS 4623 F1-F2** Arimondo, E.
1971-1987
- MS 4623 F1** Example of correspondence with collaborator Ennio Arimondo
1971-1972
Included here is an undated note by Series: 'Example of correspondence with collaborator Ennio Arimondo. Work ultimately published in Kastler Symposium. [See MS 4623 B1]. (I suggested that Ennio publish this experimental work

under his own name, but he wanted GWS to be joint author)'.

- MS 4623 F2** On festschrift for A. Gozzini.
1986-1987
Series contributed a paper on 'Long shots that missed the mark' (Bibliog. 101).
- MS 4623 F3** Bachor, H.-A.
1986-1991
- MS 4623 F4** Berry, M.V.
1990
Adiabatic quantum transitions. Includes manuscript notes and calculations by Series.
- MS 4623 F5** Bleaney, B.
1962-1964, 1992
Includes letters from Series while on leave in USA 1964
- MS 4623 F6** Bradley, L.C.
1958
Electron bombardment studies.
- MS 4623 F7** Brandenberger, J.
1987
Broken symmetry
- MS 4623 F8** Brossel, J.
1988
- MS 4623 F9** Burnett, K.
1993
(Series' letter only).
- MS 4623 F10** Cohen-Tannoudji, C.
nd, 1994
Series' long letter of 1994 sets out his latest views on quantum electrodynamics and 'Absorber Theory'.
- MS 4623 F11** Connerade, J.-P.
1985
Daresbury Synchrotron

- MS 4623 F12** Ditchburn, R.W.
1988-1989
Correspondence, letters of thanks etc. about Series' Biographical Memoir of Ditchburn for the Royal Society.
- MS 4623 F13** Durrant, A.V.
1989
Work on echo mechanisms
- MS 4623 F14** Gough, W.
1984-1992
Research and publications by Gough, with comments or notes by Series, on angular momentum, vectors, phases changes and other topics. Includes some personal news, and news of University of Wales Cardiff.
- MS 4623 F15** Hannaford, P.
1987-1995
Hannaford was a long-term colleague and friend of Series, collaborating in research and publications on optogalvanic spectroscopy.
Correspondence on research, career and appointments. Includes brief comments by Hannaford on B. Bleaney's Biographical Memoir of Series for the Royal Society.
- MS 4623 F16** Kastler, A.
1963-1985
Includes miscellaneous brief correspondence from Kastler 1963-1981. Correspondence 1984-1985, following Kastler's death, relates to Series' letter to The Time supplementing the obituary which he felt to be misleading.
- MS 4623 F17** Kohler, R.H.
1960
- MS 4623 F18** Ladera, C.L.
1985
Lorentzian/dispersion mixtures
- MS 4623 F19** Loudon, R.
1994
- MS 4623 F20** Mahajan, C. G.
1984
Correspondence with colleagues about Mahajan's request to work in UK

- MS 4623 F21** Nakayama, S.
1984-1986
- MS 4623 F22** Pancharatnam, S.
1960, 1972-1976
One letter only from Pancharatnam 1960. Remaining material relates to Series' editing of Pancharatnam's collected work's after his death.
- MS 4623 F23** Partridge, R. B.
1985
- MS 4623 F24** Pegg, D. T. and others
1986-1994
Pegg was post-doctoral scholar of Series at Oxford and Reading, later returning to work in Australia at Griffith University.
Research, career and appointments.
- MS 4623 F25** Pendrill, L.R.
1988
- MS 4623 F26** Petley, B. W. and others
1986-1993
Research on metrology, appointments.
- MS 4623 F27** Pippard, A. B.
1990
Spontaneous radiation.
- MS 4623 F28** Ramaseshan, S.
1986-1987, 1994
Includes information about the life and work of Pancharatham.
- MS 4623 F29** Schawlow, A. L.
1980, 1987-1991
Recollections of research, some personal news.
- MS 4623 F30** Serapinas, P.
1984-1985, 1993
Scientific and personal news from Lithuania.

MS 4623 F31-F33	Stacey, D.N. 1987-1994 Career, appointments, recommendations.
MS 4623 F31	Stacey, D.N. 1987-1994
MS 4623 F32	Stacey, D.N. 1992-1993
MS 4623 F33	Stacey, D.N. 1993
MS 4623 F34	Temple, G. 1977-1980 Mainly material relating to Honorary Degree conferred on Temple by the University of Reading, and Series' presentation address. Includes a little correspondence from Temple.
MS 4623 F35	Warrington, D. 1987, 1989
MS 4623 F36-F37	Shorter correspondence
MS 4623 F36	B -I.
MS 4623 F37	L-W.