

Catalogue of the papers and correspondence of

GEORGE WILLIAM SERIES FRS

(1920-1995)

Compiled by Jeannine Alton and Peter Harper

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1996

ADDENDUM

Copy of *Physica Scripta* (Vol T70 1997) devoted to G.W. Series as memorial essays deposited with the Archivist at Reading University Library.

Information from Mrs. Annette Series 23 May 1997.

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GENERAL INTRODUCTION

PROVENANCE

The papers were received in 1996 from Mrs Annette Series, widow.

OUTLINE OF THE CAREER OF GEORGE WILLIAM SERIES

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 then) 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.

DESCRIPTION OF THE COLLECTION

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 A.7.

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's 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's 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's 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's 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's 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.

There is also an index of correspondents.

ACKNOWLEDGEMENTS

We are grateful to Mrs Series for making the papers available for cataloguing and advice on unidentified correspondence.

Jeannine Alton
OXFORD 1996.

SECTION A BIOGRAPHICAL AND PERSONAL A.1-A.57

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

BIOGRAPHICAL AND AUTOBIOGRAPHICAL

- A.1-A.6 Notes and narratives on his life and career, prepared by Series at various dates.
- A.1 'For Heini' [Kuhn] 1963, 1965.
- A.2 'George William Series: Memoirs (1971)'.

Prepared for Royal Society on election. With extensive manuscript drafts used as a basis for the memoirs.
- A.3 'Development of research', 1983.
- A.4 Miscellaneous autobiographical notes, nd, latest reference 1988.
- A.5 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.
- A.6 Later correspondence and notes sent to the Royal Society 1994.
- A.7 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's notes.

/...

Biographical and personal

/... 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.* ...

CAREER AND HONOURS

A.8 Friends Ambulance Unit Members Record Book. Record of Series's service 1944-1945.

A.9-A.15 Reading University

A.9 Appointment 1967.

Application, testimonials, offer of post. Included here is Series's letter of resignation as Fellow, St Edmund Hall Oxford and arrangements for a dinner for him and his wife.

A.10 Miscellaneous correspondence on Reading affairs, 1974-1981.

Includes correspondence 1980 on supervision of Ph.D. candidates, and on Headship of Department, Series's letter 1981 on the organisation of physics teaching at Reading.

A.11 Series's reports on teaching, research, publications, Departmental and outside activities 1975-1982.

A.12 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's work, and mentioning his decision to take early retirement at the end of the current academic session.

A.13-A.15 Retirement 1982

A.13 Notice of redundancy; this 'brutally curt notice' hurt Series greatly.

Folder also includes letter of appreciation from Vice-Chancellor and conferment of title of Emeritus Professor.

Biographical and personal

- A.14 Retirement dinner. Signed cards
- A.15 Letters and messages.
- A.16-A.21 Royal Society
- A.16 Nomination, recommendations, election 1963-1971.
- A.17-A.20 Letters and messages of congratulation on election 1971
- A.17 A - D.
- A.18 E - K.
- A.19 L - S.
- A.20 T - Z and first-name signatures.
- A.21 Miscellaneous Royal Society material, thanks for service on committees etc.
- A.22 Election to the Fellowship of the American Physical Society, 1975.
- A.23 Election to the Fellowship of the Optical Society of America, 1975.
- A.24 Election to Board of Electors to Dr Lee's Professorship of Experimental Physics, Oxford University 1981, and resignation, 1990.
- A.25 Award of the William F. Meggers Award of the Optical Society of America, 1982.

/...

Biographical and personal

- /... Notification of award (1981), arrangements for presentation, letters of congratulation.
- A.26 Election as 'Clarendon Honorary Research Fellow', Clarendon Laboratory Oxford, 1983.
- A.27 Election to Honorary Fellowship, Indian Academy of Sciences, 1984.
- A.28 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.
- A.29 Miscellaneous shorter personal correspondence, 1963-1993, mainly letters of thanks or replies to letters of congratulation sent by Series to friends or colleagues to mark honours, prizes, elections, retirement etc. Some have manuscript explanations or identifications added by Series.
- A.30 Series's death.

Obituaries, January 1995

Memorial Service and addresses, St Edmund Hall Oxford, March 1995.

PHOTOGRAPHS

- A.31 Group photograph, inscribed on verso 'Oxford University Society of Change Ringers, June 1947'.
- A.32-A.36 Clarendon Laboratory, Oxford
- A.32 Group photograph, inscribed on verso 'Clarendon Laboratory Early nineteen-fifties'.

Biographical and personal

- A.33-A.35 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).
- A.36 Group photographs 1965, in Series's folder inscribed on front cover 'Group of spectroscopists at Clarendon. Mid-sixties. Heyday?' Identifications given inside back cover.
- A.37-A.39 Reading University
- A.37 Group photograph, inscribed on verso 'J.J. Thomson Lab. Mid 1970s'.
- A.38 Group photograph, inscribed on verso 'J.J. Thomson Physical Laboratory. July 1978'.
- A.39 'Presentation of Hon. D.Sc. to George Temple May 1981' (Series standing on right). See also F.34.
- A.40-A.46 European Group for Atomic Spectroscopy Conferences.
Group photographs, some with key or list of participants.
- A.40 First conference, Paris-Orsay 1969.
- A.41 Hannover, July 1970. With list of participants.
- A.42 Reading, 1971.
- A.43 Lund, 1973. With key and list of participants
- A.44 Oxford, 1976.
- A.45 Cracow, 1977.

Biographical and personal

- A.46 Imperial College London, 1984. With list of participants.
- A.47-A.53 Conferences and colleagues
- A.47 Group photograph, Ampère Conference, Paris, 1958
- A.48 Series lecturing at Second Quantum Electronics Conference, 1961.
- A.49 Series and colleagues (identified on verso) at International Conference on Optical Pumping and Atomic Line Shape (OPALS), Poland, June 1968.
- A.50 Series lecturing at OPALS Conference, 1968.
- A.51 Group photograph, Scottish Summer School, 1969. With list of participants.
- A.52 Series with colleagues (identified in verso) at Vilnius, Lithuania, 1984.
- A.53 Series lecturing at Vilnius.
- A.54-A.56 India 1982-1983.
- A.54 Group photograph, members of Spectroscopy Laboratory, Banaras Hindu University, October 1982. With key.
- A.55 Series with colleagues, December 1982.
- A.56 Series preparing lecture, Bangalore, December 1982.
- A.57 Portrait photograph of Series, nd, probably taken for Royal Society.

SECTION B RESEARCH B.1-B.26

B.1-B.20 SPONTANEOUS EMISSION OF LIGHT

B.21-B.23 DOUBLE RESONANCE AND OPTICAL PUMPING

B.24-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.

SPONTANEOUS EMISSION OF LIGHT

Notes, calculations, drafts and papers 1964-1977.

Material kept as an entity by Series, who writes in a covering note (included at B.20):...'I have left them to indicate the great amount of time and effort I put in to try to get to grips with the "problem" - (as I see it!) of spontaneous emission of light from excited atoms.'

The material includes drafts for lectures, papers and publications, research notes and ideas, all in Series's hand, not all dated.

Series's principal publications on the topic, some in collaboration, were *Bibliog.* 41, 46, 47, 55, 56, 57, 58. He also lectured widely.

B.1-B.12 Lectures, papers, publications, 1964-1974

B.1 'A semi-classical theory of the spontaneous emission of light', January 1964.

Research

- B.2 'The role of the final state in radiation processes. J.I.L.A. [Joint Institute for Laboratory Astrophysics]', January 1964.
- B.3 Typed version of B.2, with deletions, corrections and pages of additional material, and a manuscript note 'This material was eventually incorporated into the talk given at Les Houches 1977.' (See C.79, *Bibliog.* 64).
- B.4 'A semi-classical theory of spontaneous emission', May 1966.
- B.5 'Radiation reaction, radiative damping and level shifts'. Extensive 23pp manuscript draft, February 1967.
- B.6 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.
- B.7 'Radiation reaction, spontaneous emission and the Lamb shift', with additional pages on 'Philosophy' marked 'Good', March 1970.
- B.8 'On the interaction of magnetic (electromagnetic) fields with strong atoms', Lausanne, September 1973.
- B.9 'Radiation reaction, spontaneous emission and level shifts', Yale, December 1973.
- B.10 Notice of talk with same title, given by Series January 1974. No indication of place.
- B.11 Notes for talk on 'Interaction of a dipole with an external, oscillating field', nd.

Research

- B.12 'Radiative damping and level shifts without field quantization'. Draft with corrections and additions, and a manuscript note 'Never published'. Nd, perhaps 1974.
- B.13-B.16 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'.
- B.13 Various dates, December 1972 - March 1974.
- B.14 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.
- B.15 Various dates, October - November 1975.
- Notes of 10 October have a later explanatory note appended by Series.
- B.16 Various dates, June - August 1977. Further thoughts and developments on radiative damping and level shifts. See B.12.
- B.17-B.19 Undated notes
- Similar material to B.13-B.16 but undated.
- B.17 'Sundry attempts. Suggestive, but not quite right'.
'Spontaneous decay from 2-level system'.
'Magnetic dipole radiation reaction'.
'Reaction force'.

Research

- B.18 Variously paginated notes and drafts.
- B.19 Miscellaneous notes
- B.20 Correspondence, 1973
- Exchange of letters on reaction fields. Included here is Series's note of February 1990 about his work on spontaneous emission.

DOUBLE RESONANCE AND OPTICAL PUMPING

Notes, calculations and ideas, 1979-1985.

A later note added by Series, included at B.21, explains: 'These notes are calculations carried out over several years, in an attempt to interpret the experimental results obtained at Reading by E. Arimondo. I never solved this problem to my own satisfaction'. See also the correspondence with Arimondo at F.1. *Bibliog.* 97, 98 also relate.

- B.21 Series's explanatory note.
- Notes and calculations, September 1979, July 1982.
- B.22 Tagged folder of notes, various dates 1980-1982, includes some paginated sequences. Kept in Series's order.
- B.23 10pp paginated sequence, January 1985.

OPTOGALVANIC SPECTROSCOPY

- B.24-B.26 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.'

Research

- B.24 Notes and calculations, 1981, with a later note by Series 'Incomplete attempts to interpret Hannaford's experiments in Reading'.
- B.25 Correspondence and notes, 1982-1983
- B.26 Folder of notes, data and drafts, with a later note added by Series: 'drafts relating to publications 78, 79, 80. Biographer may be interested.'

SECTION C LECTURES AND PAPERS C.1-C.109

C.1-C.72 LIGHT BEATS AND RELATED TOPICS

C.73-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's 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's range of interests in the field of spectroscopy.

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

LIGHT BEATS AND RELATED TOPICS

This material was kept separately by Series under this title, and has been retained as such.

C.1 'Light beats. Oxford 1959.' Draft for *Bibliog.*14.

C.2 'Light beats. Magnetic resonance conference. Oxford Sept. 1959'.

C.3 'Light beats Queen Mary College London December 1959'.

C.4-C.11 'Light beats. Sundry MS and talks'. Contents of a folder so inscribed. Talks and papers given in America during Series's period at Bell Laboratories 1960. Summary indications of date and place are given.

C.4 Bell Labs, January.

Lectures and papers

- C.5 Holmdel, February.
- C.6 Chicago, March.
- C.7 Columbia, March
- C.8 Rochester [NY], May
- C.9 Murray Hill, May.
- C.10 Berkeley, July
- C.11 Unidentified.
- C.12 'Light beats. Cambridge January 1961'.
- C.13 'Properties of modulated light in double resonance experiments. Berkeley March 1961'. Related to *Bibliog.* 21.

Untitled. 'Ann Arbor Michigan March 1961'.
- C.14 'Coherence in resonance fluorescence. Birmingham November 1961'.
- C.15 'Light beats. Clarendon Lab. [Oxford] March 1961' and 'Malvern January 1962'.
- C.16 'Light beats. Schoolmasters Conference Oxford January 1962'.
- C.17 'Light beats. N.P.L. [National Physical Laboratory] March 1962'.

Lectures and papers

- C.18 'Questions of coherence in resonance fluorescence. Heidelberg April 1962'.
- C.19 'Modulation of light in a double resonance experiment. Royal Society November 1962'.
- C.20 Untitled. 'University College London. November 1962'.
- C.21 'Optical pumping in helium. Ecole normale [Paris] April 1963'.
- C.22 'Studies of modulated light... Ecole normale April 1963'.
- C.23 'Studies of modulated light. Warsaw October 1963'.
- C.24 Untitled (on excitation). Manchester and Tübingen, November 1963.
- C.25 'Harlequin photons and cognate topics January 1964'.
- C.26 'Light beats'. Given at Boulder February, also Stanford, Maryland, Rochester March 1964.
- C.27 'Experiments in resonance fluorescence. Berkeley March 1964'.
- C.28 'Modulation of exciting light. Columbia March 1964'.
- C.29 'Coherence effects in resonance fluorescence. IBM March 1964'.
- C.30 Untitled conference talk, May 1964.

Lectures and papers

- C.31 'Forward-scattering of resonance radiation. Oxford April 1965'.
- C.32 'Forward-scattering of resonance radiation Berlin', nd.
- C.33 'Modulation phenomena in resonance fluorescence Amsterdam September 1965' and 'Reading and Nottingham March 1966'.
- C.34 'Fluorescence spectroscopy...January 1966'.
- C.35 'On the calculation of polarizability... April 1966'.
- C.36 'Interference effects in resonance fluorescence. April 1966'.
This lecture, and C.35, were given at a meeting of the Physical Society Optics Group at York.
- C.37 'Interference effects in resonance fluorescence', Clarendon Laboratory [Oxford], June 1966, and other locations, July 1966 - May 1967.
- C.38 'The forward scattering of resonance radiation. Rochester June 1966' and 'Boulder June 1966'.
- C.39 'Optical pumping in helium: modulation effects. Columbia June 1966'.
- C.40 'On the semi-classical approach to radiation interactions...' Newcastle, and NPL October 1966'.
- C.41 'Exploitation of the phase of light. Durham April 1967. British Radio-Spectroscopy Group Conference'.
- C.42 'Magnetic resonance stimulated by frequency-modulated light. Columbia Sept 1967'.

Lectures and papers

- C.43 'Some unexploited possibilities in atomic fluorescence spectroscopy'. Various locations, September - November 1967.
- C.44 'Atoms as resonators', nd. Kept with 1967 lectures.
- C.45 'Modulation phenomena in resonance fluorescence. Culham April 1968'.
- C.46 'Exploitation of the anisotropy of atomic radiation. Culham April 1968'.
This lecture, and C.45, were given at a meeting of the Physical Society Optics Group.
- C.47 'Studies of the Hanle effect in neon', nd. Kept with above.
- C.48 '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).
- C.49 'Coherence effects in the interaction of radiation with atoms. Munich September 1968'.
- C.50 'Coherence effects in the interaction of radiation with atoms'. Various locations, November 1968 - April 1969.
- C.51 'Personalities and places in physics. Reading January 1969'.
- C.52 Notes for miscellaneous lectures, Paris, Hannover, Heidelberg, February - March 1969.
- C.53 'Pisa April 1969'. Untitled, on pumping.
- C.54 'Spectroscopy at large. Reading October 1969'.

Lectures and papers

- C.55 'Spectroscopy without a spectroscope. Reading November 1969' (lecture first given February 1967).
- C.56 'Optical pumping. Sheffield November 1969'.
- C.57 Untitled. 'Edinburgh 1969'.
- C.58 'Semi-classical theory of 'dressed' atoms. Hannover EGAS Conference July 1970'.
- C.59 'Interaction of fields with paramagnetic atoms'. Various locations August 1970.
- C.60 'Determination of the Rydberg Constant. Conference on Precision Measurement and Fundamental Constants August 1970'.
Notes for two lectures, related to *Bibliog.* 51.
- C.61 'Magnetic resonance, frequency diagrams and dressed atoms. Malvern March 1971'.
- C.62 'Diffraction. Reading Schoolmasters April 1971'.
- C.63 'Interference effects in the interaction of radiation with free atoms.' Various locations January, February 1972.
- C.64 'Modulation effect in resonance fluorescence. Bangalore July 1972'.
- C.65 'Frequency diagrams and dressed atoms. Dunedin (New Zealand) July 1972.' Lecture first given in November 1971.

Lectures and papers

- C.66 'Optical Pumping. Reading undergrads. October 1972.'
Presidential address.
- C.67 'Semi-classical theory of atoms in strong fields. ENS [Ecole Normale Supérieure] Paris March 1973'.
- C.68 'Level crossing experiments. Time resolved detection. ENS Paris March 1973'.
- C.69 'Level-crossing. Time-resolved detection'. Stirling, October 1973.
- C.70 'Parts per billion: how and why. Reading Undergraduate Physical Society. October 1973'.
- C.71 'Modulated fluorescence of atomic vapours. Stanford Harvard Columbia. February-March 1975'.
- C.72 'Quantum beats and related topics. Culham February 1976'.

OTHER LECTURES AND PAPERS

- C.73, C.74 Two lectures at Pisa, March 1972.
- C.73 'Polarization and alignment in magnetic resonance'.
- C.74 'The ellipsoid of alignment'.
- C.75 Lecture at Bangalore, June 1972.

Lectures and papers

- C.76 '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 γ_p , 10 Avogadro's numbers.
- C.77 'Bloch-Siegert shifts', given at Boston and Yale, December 1973. Related to *Bibliog.* 56.
- C.78 'Radiation reaction etc. Jersey Conference April 1974'.
- C.79 'Resonance interactions between radiation and atoms: perturbation of the "final" state. Les Houches [Switzerland] Summer School 1975'. Related to *Bibliog.* 64. See also B.3.
- C.80-C.82 Lectures on 'Tunable lasers in atomic spectroscopy', various dates and locations 1976.
- C.83, C.84 Two lectures on light and colour 1976, one for 'Reading Open Day'.
- C.85 Lecture on spectroscopy, nd. Kept with 1976 material.
- C.86 Notes for talks on high-resolution spectroscopy, York, September 1976.
- C.87 'Excited caesium atoms: collisions and negative damping.' EGAS conference Cracow, July 1977.
- C.88, C.89 Lectures at SRC Summer School, Royal Holloway College, London, September 1978.
- C.88 'Pre-laser studies of radiation interactions'.

Lectures and papers

- C.89 'Quantum beats'.
- C.90 'Laser Spectroscopy', Eleventh National Conference on Atomic and Molecular Physics, Liverpool, April 1979.
- C.91 'Forward scattering and polarization spectroscopy', various dates and locations July, September 1979. Related to *Bibliog.* 72.
- C.92 'Advances in laser spectroscopy', various dates and locations, November 1979 - November 1980.
- C.93 'Hyperfine structures, lifetimes and collisional cross sections in ^{133}Cs ', various dates and locations, February 1980-1982. Related to *Bibliog.* 81.
- C.94 'Thirty years of optical pumping', EGAS Conference, Pisa, September 1980.
Notes, heavily corrected draft. Related to *Bibliog.* 77.
- C.95 'Hydrogen', various dates and locations in Poland, November 1980, India, October 1982. Related to *Bibliog.* 74.
- C.96 '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.
- C.97 Notes for two lectures on basic quantum mechanics of atomic structure for NATO conference, Erice, Italy, 16-28 November 1981.
- C.98, C.99 Two lectures on 'Light and atoms'.
- C.98 Reading University Public Lecture, February 1982.
- C.99 Charters School, March 1982.

Lectures and papers

- C.100 'Optogalvanic spectroscopy - level-crossing effects'. Various dates and locations, January 1982 - June 1983. Related to research and publications with P. Hannaford *et al* (*Bibliog.* 82, 91, 92).
- C.101, C.102 Two lectures on 'Advances in laser spectroscopy'.
- C.101 Bristol, April 1982.
- C.102 Delhi, October 1982.
- C.103 'The fundamental atomic constants - the ubiquity of alpha', Bangalore, February 1983.
- C.104 'Optical pumping', Bangalore, February, Melbourne, March 1983.
- C.105, C.106 Lectures in Australia and New Zealand, March - April 1983.
- C.105 'Laser Spectroscopy'.
- C.106 'Forward-scattering'.
- C.107 'The fundamental atomic constants: the ubiquity of alpha'. Various dates and locations, May 1983 - March 1985. Related to *Bibliog.* 95.
- C.108 'Double resonance and optical pumping: the early days'. Seattle, August, Riga, September 1984. Related to *Bibliog.* 94.
- C.109 'The hydrogen atom (an historical account of studies of the hydrogen atom)', Pisa, 1988. Published in conference proceedings of same title, 1989.

SECTION D

PUBLICATIONS AND EDITORIAL

D.1-D.14

D.1-D.10A

European Journal of Physics (EJP)

This was a journal of the European Physical Society published on behalf of the Society by the Institute of Physics. Series played a major part in the establishment of the journal and became its first Editor-in-Chief, serving until 1985. His successors were J. Pišút (Bratislava) till 1990, then A.B. Pippard.

Series's 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 A.5. See also D.10 below for his concern to set the historical record straight.

D.1

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.

D.2

Miscellaneous membership lists of the Editorial Board, 1982-1984.

D.3

Minutes of Executive Board of *EJP*, October 1979 - June 1984, and Series's follow-up letters to Editorial Board members, July 1980 - July 1984.

D.4

Series's Editor's reports on *EJP* presented for meetings of Advisory Committee on Physics Education and Advisory Committee on Publications, 1981-1985.

D.5-D.8

General correspondence on *EJP* affairs: launching, publicity, articles, suggestions, board meetings, revised agreement, journal format, relations with European Physical Society, board membership.

D.5

1980-1982.

D.6

1983-February 1984.

D.7

1984.

Publications and editorial

- D.8 1985.
- D.9 Correspondence, 1983-1985, 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.
- D.10 Series's 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.
- D.10A 'Keeping a laboratory notebook: an exemplar.'
- Correspondence and draft for Series's 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.
- D.11-D.14 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's earlier *The spectrum of atomic hydrogen* (OUP 1957).
- D.11 Contract with OUP for 1957 text.
- D.12 Correspondence 1984-1992, 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.
- 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.
- D.13 Requests for information, permission to quote etc sent by Series in preparation for book.
- D.14 Correspondence with colleagues and contributors, 1985-1987.

SECTION E VISITS AND CONFERENCES

E.1-E.13

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.

- E.1 Visit to California, including Mount Wilson and Palomar Observatories, July 1960, during Series's period at Bell Telephone Laboratories, Murray Hill, New Jersey.
- Correspondence, arrangements 1960.
- E.2 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's 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.
- E.3-E.5 Round the world trip, October 1982 - June 1983.
- The main aim of this extended journey marking Series's 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.
- E.3 Itineraries.
- E.4 Correspondence, invitations, arrangements, a few follow-up letters 1980-1983. These are for India; there is one letter only for New Zealand April 1983 and no material for the USA visits.
- E.5 Series's letter to the Royal Society on his visit 1983 and other miscellaneous items.

Visits and conferences

- E.6 16th EGAS Conference, London, 10-13 July 1984.
Programme only (annotated by Series).
- E.7-E.9 Visit to Lithuania and Latvia via Moscow, 31 August - 13 September 1984, under Royal Society exchange programme.
- E.7 Small notebook 'USSR Sept. 1984' on journey, institutions, personnel etc.
- E.8 Correspondence, invitations, arrangements, a few follow-up letters 1981-1985.
- E.9 Series's reports to the Royal Society.
- E.10 Correspondence 1984-1986 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.
- E.11-E.13 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.
- E.11 Correspondence with the Royal Society, application etc.
- E.12 Correspondence 1987-1988 with colleagues in India, invitations, arrangements.
Correspondence with S.N. Thakur January 1988 includes Series's notes on the lecture and contribution he had intended for the Workshop on Laser Spectroscopy at Baharas Hindu University Varanasi.
- E.13 '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.*).

SECTION F CORRESPONDENCE F.1-F.37

- | | | |
|----------|---|--------------------------|
| F.1, F.2 | Arimondo, E. | 1971-1987 |
| F.1 | 1971-1972. Included here is an undated note by Series: 'Example of correspondence with collaborator Ennio Arimondo. Work ultimately published in Kastler Symposium. [See B.1]. (I suggested that Ennio publish this experimental work under his own name, but he wanted GWS to be joint author)'. | |
| F.2 | 1986-1987. On festschrift for A. Gozzini. Series contributed a paper on 'Long shots that missed the mark' (<i>Bibliog.</i> 101). | |
| F.3 | Bachor, H.-A. | Various dates 1986-1991. |
| F.4 | Berry, M. V. | 1990 |
| | Adiabatic quantum transitions. Includes manuscript notes and calculations by Series. | |
| F.5 | Bleaney, B. | 1962-1964, 1992 |
| | Includes letters from Series while on leave in USA 1964 | |
| F.6 | Bradley, L. C. | 1958 |
| | Electron bombardment studies. | |
| F.7 | Brandenberger, J. | 1987 |
| | Broken symmetry | |
| F.8 | Brossel, J. | 1988 |
| F.9 | Burnett, K. | 1993 |
| | (Series's letter only). | |

Correspondence

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| F.18 | Ladera, C. L.
Lorentzian/dispersion mixtures | 1985 |
| F.19 | Loudon, R. | 1994 |
| F.20 | Mahajan, C. G.
Correspondence with colleagues about Mahajan's request to work in UK. | 1984 |
| F.21 | Nakayama, S. | 1984-1986 |
| F.22 | Pancharatnam, S.
One letter only from Pancharatnam 1960. Remaining material relates to Series's editing of Pancharatnam's collected work's after his death. | 1960, 1972-1976 |
| F.23 | Partridge, R. B. | 1985 |
| F.24 | Pegg, D. T. and others
Pegg was a post-doctoral scholar of Series at Oxford and Reading, later returning to work in Australia at Griffith University.
Research, career and appointments. | 1986-1994 |
| F.25 | Pendril, L. R. | 1988 |
| F.26 | Petley, B. W. and others
Research on metrology, appointments. | 1986-1993 |
| F.27 | Pippard, A. B.
Spontaneous radiation. | 1990 |

Correspondence

- | | | |
|------------|--|------------------------|
| F.28 | Ramaseshan, S. | 1986-1987, 1994 |
| | Includes information about the life and work of Pancharatnam. | |
| F.29 | Schawlow, A. L. | 1980, 1987-1991 |
| | Recollections of research, some personal news. | |
| F.30 | Serapinas, P. | 1984-1985, 1993 |
| | Scientific and personal news from Lithuania. | |
| F.31-F.33 | Stacey, D.N. | 1987-1994 |
| | Career, appointments, recommendations. | |
| F.31 | | 1987-1994. |
| F.32 | | 1992-1993. |
| F.33 | | 1993. |
| F.34 | Temple, G. | 1977-1980. |
| | Mainly material relating to Honorary Degree conferred on Temple by the University of Reading, and Series's presentation address. Includes a little correspondence from Temple. | |
| F.35 | Warrington, D. | 1987, 1989 |
| F.36, F.37 | | Shorter correspondence |
| F.36 | | B -I. |
| F.37 | | L-W. |

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