

THE ROYAL COMMISSION ON HISTORICAL MANUSCRIPTS

Report on correspondence and papers of

COLIN WILLIAM FRASER McCLARE (1937-77)

biophysicist

deposited in

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CONTEMPORARY SCIENTIFIC ARCHIVES CENTRE

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British National Committee for the History of Science, Medicine and Technology

Catalogue of the papers and correspondence of

COLIN WILLIAM FRASER McCLARE

(1937 - 1977)

Compiled by Jeannine Alton

Julia Latham-Jackson

Deposited in the Library of King's College, London. 1981

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INTRODUCTION

The papers were received from Mrs. G.A. McClare and from the Biophysics Department, King's College, London, by courtesy of Professor M.H.F. Wilkins, Head of Department.

Colin McClare was a Lecturer in Biophysics at King's College, London, from 1963 until he took his own life in 1977 at the age of 39. He was educated at Felsted School, Essex, and Emmanuel College, Cambridge, where he took a B.A. in Natural Sciences (Chemistry) in 1958. The next five years were spent in Cambridge doing research - on the chemistry of free radicals in biology (Medical Research Council Studentship 1958 - 61) and on energy transfer in nucleic acids (Beit Fellowship 1961-63). He was awarded a Ph.D. in 1962 (see A.8).

McClare's appointment to a Lectureship in Biophysics at King's College in 1963 led to a growing interest in bioenergetics and the problems of muscle contraction. He concluded that classical thermodynamics was inadequate for the description of biological processes, and that the application of the Second Law of Thermodynamics to biological machines requires the introduction of time scales. His ideas were not generally accepted, and although he wrote extensively on the subject (see Sections C and D) his manuscripts were not accepted for publication until 1971. His earlier published work relates mainly to the structure and function of biological membranes, in particular the purple membrane of the halophilic bacterium Halobacterium halobium.

The publication of four controversial papers by McClare in the Journal of Theoretical Biology and Nature (see p.5) generated a vigorous correspondence with scientists all over the world, much of which has survived and is now in Section F of the collection. McClare continued to pursue his research although his unorthodox approach failed to gain the approval of established scientific opinion, but after 1974 he applied himself to writing a book on thermodynamics in which he hoped to solve some of the fundamental problems of bioenergetics and gain some general measure of acceptance for his ideas. The book was nearing completion by the time of his death and the draft is currently in the hands of H. Morowicz with a view to editing the book for posthumous publication (see A.13). Eventually it is hoped to include it with the rest of McClare's papers and an item number has been left vacant for it at C.41.

McClare's death occurred during one of the bouts of depression to which he was increasingly subject from about 1967. His deep personal involvement with the scientific problems he chose to tackle and the continuing battle with the opponents of his ideas increasingly took its toll of his confidence and zest for living, and he took his own life on the night of 4 January 1977.

ACKNOWLEDGEMENTS

We are very grateful to Mrs. G.A. McClare, Dr. I. Gonda and Dr. W.R. Lieb for their preliminary sorting and identifying of the material, and for advice and information on various aspects of McClare's life and work.

Bibliography of major papers by McClare on bioenergetics, 1971 - 1975

A collection of reprints of McClare's publications is filed at C.42.

1971

Chemical machines, Maxwell's demon and living organisms.
J. Theor. Biol. 30, 1-34.

1972

In defence of the high energy phosphate bond.
J. Theor. Biol. 35, 233-246.

A 'molecular energy' muscle model.
J. Theor. Biol. 35, 569-595.

A quantum mechanical muscle model.
Nature. Lond. 240, 88-90.

1974

Resonance in bioenergetics.
Ann. N.Y. Acad. Sci. 227, 74-97.

1975

How does ATP act as an energy source?
Ciba Foundation Symposium, 31,
Energy transformation in biological systems.

SECTION A BIOGRAPHICAL AND PERSONAL A.1 - A.13

A.1 Obituaries and tributes.

Typescript draft of obituary by I. Gonda and W.R. Lieb for submission to Nature.

Copy of Nature (4 August 1977) containing the obituary as published.

Copy of obituary by T. Weil published in King's College London Student Magazine, 1 February 1977.

See also A.10.

A.2 Typescript curriculum vitae.

'Summary of scientific work by Dr. Colin W.F. McClare.'

1 p. typescript by W.R. Lieb and I. Gonda, 27 November 1979.

2 pp. typescript by Mrs. G.A. McClare containing a personal review of McClare's life and work. The text is based on a private communication from Mrs. McClare to Mrs. J.B. Alton, December 1979, and was prepared by Mrs. McClare for inclusion with her husband's papers in January 1981.

A.3 1 p. ms. by McClare headed 'Growth. 12.10.64.', containing notes on the development of his scientific thought from 1958. The notes continue to 1974.

A.4 Correspondence with A. Rothen, 1960-61.

McClare planned to do post-doctoral research with Rothen at The Rockefeller Institute, New York, but he was prevented from doing so by his wife's poor state of health at the time.

A.5 Ms. draft of application to Imperial Chemical Industries for a research grant, 1961.

A.6, A.7 Beit Memorial Fellowship, 1961-63.

A.6 Drafts of application. Administrative correspondence re conditions of the award, etc. Includes reply to McClare's letter of resignation on accepting a Lecturership at King's College, London (see A.9).

A.7 Reports on research done during McClare's tenure of the Fellowship.

Biographical and personal

- A.8 'Free radicals of radiotherapeutic interest. A dissertation submitted to the University of Cambridge for the degree of Doctor of Philosophy by C.W.F. McClare of Emmanuel College. 1962'. Bound copy.
- A.9 Correspondence re appointment as Lecturer in Biophysics, King's College, London, June-July 1963. Miscellaneous administrative correspondence, 1966-73, is also included in the folder.
- A.10-A.13 Photocopies of correspondence, etc. received by Mrs. McClare after her husband's death. The originals are retained by Mrs. McClare.
- A.10 Copies of tributes to McClare, spoken at his funeral by D. Baxter, T. Cavalier-Smith and M.H.F. Wilkins.
- A.11 Copies of letters of condolence received by Mrs. McClare.
- A.12 Copies of correspondence re the McClare Memorial Prize to be awarded annually to a student in the Department of Biophysics, King's College, London, on the basis of academic performance and originality of approach.
- A.13 Copy of letter from H. Morowicz re possibility of editing McClare's unfinished book on thermodynamics for posthumous publication (see Introduction).

SECTION B

NOTEBOOKS AND WORKING NOTES B.1 - B.32

- B.1 Folder containing McClare's notes on lectures on thermodynamics attended when he was an undergraduate at Cambridge (c.1957). Some of the lectures were given by E.A. Moelwyn-Hughes.
- B.2 Miscellaneous notes and drafts, 1959-65 (includes some undated). Includes material on infra-red radiation (c.1959-60) and thermodynamics (c.1963-64).
- B.3-B.11 Laboratory notebooks.
- B.3 Spiral-bound notebook containing accounts of experimental procedure and results, c.1964-65.
- B.4 'Membranes I'. Spiral-bound notebook containing records of experiments, Autumn 1965-July 1966, with some later annotations.
- B.5 'Membranes II'. Spiral-bound notebook, similar to above, July-December 1966.
- B.6 'Membranes III'. Spiral-bound notebook similar to B.4, B.5, January 1967-Summer 1968.
- B.7 Red hard-cover notebook containing notes on the literature and records of experiments re membrane structure and function, 1965-70.
- B.8 Blue hard-cover notebook, contents similar to B.7.
- B.9 'PPLO [pleuropneumonia-like organism], experiments'. Spiral-bound notebook containing records of experiments, c.1969.
- B.10 'Deuterated Lipid Project'. Spiral-bound laboratory notebook, undated, but containing a letter to McClare from J. Thomas, 21 October 1975.
- B.11 Spiral-bound notebook, similar to above. No title or date, c.1975-76.

B.12-B.23 Scientific 'Diaries'.

The following notebooks have been called 'diaries' in order to distinguish them from the formal laboratory notebooks at B.3-B.11. The 'diaries' contain a mixture of scientific observations, speculations, notes on the literature, mathematical calculations, lecture notes, drafts and personal notes and jottings of the type more usually found in a private diary. They form an important source for the progress of McClare's scientific thought which was inextricably bound up with the personal problems which finally overwhelmed him.

- B.12 Hard-cover notebook inscribed inside front cover 'C.W.F. McClare. Notebook. A collection of ideas sketchily attempted and not thoroughly worked out ... Begun in 1959'. Entries continue to 1965 with a few dated 1969.
- B.13 Spiral-bound notebook, no title or date. Includes notes on lectures by J. Lowy and J. Hanson. n.d.
- B.14 Exercise book inscribed inside front cover 'Muscle Nonsense Book. Started October 1968'.
- B.15 'Muscle II. Transport'. The date '13.11.69' appears on the first page of the book. The rest of the entries are undated.
- B.16 'Muscle III'. c.1971.
- B.17 'IV'. c.1971-73.
- B.18 'V. Mostly Transport'. c.1973.
- B.19 'VI'. c.1974.
- B.20 'VII'. c.1974-75.
- B.21 'VIII'. c.1976.
- B.22 'IX'. c.1976.
- B.23 'Ød [thermodynamics] Book'. n.d., but with a note on front cover by G. McClare 'Probably started early 1970's.'
- B.24 Miscellaneous undated notes and drafts, mainly re thermodynamics.
- B.25 Hard-cover notebook containing notes on the literature with some drafts and calculations. n.d.

Notebooks and working notes

- B.26 Exercise book labelled 'Literature', containing notes on the literature with a few other notes and drafts.
- B.27 Exercise book labelled 'Seminars', containing notes on lectures and papers by others.
- B.28 Unlabelled exercise book containing similar material, including notes taken at 'B[ritish] B[iophysical] S[ociety] Meeting on Cell Membranes', 15 April 1969. A loose page of notes taken at a King's College Biophysics Department Staff Seminar (n.d.) is tucked into the back of the book.
- B.29 Miscellaneous loose notes on lectures and papers by others.
- B.30 Set of punched cards containing ms. notes on the literature.
- B.31 'First page photocopies and references of reprints found in Personal File(s)'. These were assembled by W.R. Lieb, November-December 1979 and are grouped together under McClare's original subject headings. Topics include:
- 'Forces'
 - 'Membranes'
 - 'Reaggregation'
 - 'Halobact (I) (HM)'
 - 'Halobact (II) (A)'
 - 'Lipids'
 - 'Social Impact [of science]'
 - 'Muscle Chemistry'
 - 'Muscle heat'
 - 'Muscle Structure'
 - 'Phosphorylation'
 - 'Bilayers'
 - 'Chemistry'
 - 'Lipid-salt'
 - 'Lipid-lipid'
 - 'Chelates'
 - 'Membrane Structure'
 - 'Mitochondria MX'
 - 'Transport'
 - 'Thermodynamics'
- B.32 Copies of a number of reprints selected from the collection listed in B.30, all with extensive annotations by McClare. These were also assembled by W.R. Lieb.

SECTION C SCIENTIFIC DRAFTS AND PUBLICATIONS C.1 - C.42

The majority of the material in this Section is undated, and it has not usually been possible to do more than group together documents which have obvious similarities (such as drafts of the same article) and arrange them in a very rough chronological sequence.

See also F.57.

There is a set of offprints of McClare's published papers at C.42. A list of McClare's major papers on bioenergetics is included in the Introduction to the collection (p.5).

- C.1 'The Role of Infra-Red Radiation in Biological Processes'.
 Ms. draft with a later note by McClare 'ca 1959'.
- C.2 'Activation Energy'.
 7 pp. typescript with later note by McClare '2nd Year
 Post-Grad. about 1959'.
- C.3 Envelope containing miscellaneous drafts and calculations
 for papers on thermodynamics, entropy, reversibility, etc.
 Various annotations by McClare on the front of the envelope
 do not relate to the present contents. None of the material
 is dated, but a note by W.R. Lieb (3 December 1979) assigns
 it tentatively to 1963.
- C.4 'Radiation and Entropy'.
 15 pp. typescript with ms. corrections and annotations.
 Pp. 3 and 4 were sent to A.R.J.P. Ubbelohde for
 comment in 1964.
- C.5 2 typescript drafts, 1 p. and 7 pp., originally kept with C.4
 above. The shorter draft is headed 'Steps in the logic of
 thermodynamics'.
- C.6 2 untitled ms. drafts re muscle theory, 7 pp. and 9 pp.
 The latter is annotated 'Last 2 weeks Sept. '64'.
- C.7 'Muscle Theory: Outline of Argument'.
 24 pp. typescript with ms. annotations and note by McClare
 'Finished 4/11/64'.

Scientific drafts and publications

- C.8 Undated and fragmentary notes and drafts on muscle, c.1963-65 (and perhaps a few later).
- C.9 2 pp. ms. headed 'Projected paper (No evidence at all as yet)', 27 January 1965.
- C.10 'Order and Thermodynamics'.
3 copies of 19 pp. typescript, each with (different) annotations and corrections by McClare. 2 of them are dated 'about Jan. 1965'.
- C.11 'The Fundamentals of Thermodynamics'.
30 pp. typescript presenting arguments in the form of a 'Triologue' between a Thermodynamicist a Student and a Doubter.
- C.12 'The Fundamentals of Thermodynamics'.
33 pp. typescript.
- C.13 'Paradox and Thermodynamics'.
32 pp. typescript.
- C.14 'The Operational Approach to Thermodynamics'.
14 pp. typescript with extensive ms. corrections.
- C.15 'Life and Light'.
3 pp. typescript.
- C.16 'Thoughts about Thermodynamics and Photochemistry'.
1 p. typescript.
- C.17 'Time and Thermodynamics, a summary'.
2 pp. typescript.
- C.18 Miscellaneous ms. drafts re various aspects of thermodynamics, all undated.
- C.19 'Reversibility in Biological Processes'.
Typescript of paper submitted for publication in the Journal of Theoretical Biology, February 1965 (not accepted).
Folder also includes brief correspondence with the Editor of the journal and referees' comments on the paper.

Scientific drafts and publications

- C.20 'The Attainment of Reversibility'.
Typescript with later annotation by McClare 'This is the first version. Prof. Domb [C. Domb] read'.
See F.14 for correspondence with Domb re this and subsequent drafts (e.g. C.19).
An earlier ms. draft of this paper is also included in the folder.
- C.21 'A Possible Characterisation of Reversibility'.
3 typescript drafts, all undated and with extensive ms. corrections. One of the drafts is annotated 'Version, (perhaps) for Nature'.
- C.22 Miscellaneous drafts on reversibility, some with titles as follows:
 'The attainment of reversibility'. 2 pp. typescript.
 'Reversibility and time'. 4 pp. typescript.
 'Appendix. The argument expressed operationally'. 2 pp. typescript, 6 November 1964. 2 copies, both annotated by McClare.
- C.23 'An Electromagnetic Coupling Mechanism for the Muscular Force'.
5 pp. typescript by McClare and D.E. Hookes, 22 July 1965.
- C.24 'Muscle Theory'.
12 pp. ms. with later annotation by McClare 'With David Hookes', n.d. c.1965-66.
- C.25 'Brownian Motion, Gibbs' Paradox and Continuous Creation'.
4 pp. typescript, n.d.
- C.26 Untitled typescript with extensive alterations and corrections re the problem of obtaining work from a chemical reaction in a biological system.
This may be the first of several drafts for a series of 3 papers submitted to Nature by McClare, 1969 (see C.27-C.30, F.48). A note by McClare on the front page reads 'Begun 8 June '68'.

Scientific drafts and publications

- C.27 'Molecular Mechanisms in Biology. I. Work and Chemical Energy'.
Duplicated typescript with extensive corrections and additions. This may be one of the 3 papers submitted to Nature by McClare in 1969 (see F.48).
- C.28 3 (different) typescript drafts, all related to C.27. 2 of these are headed 'Chemical Energy and Work', and 'Work and Chemical Energy'; the other has no title.
- C.29 'Molecular Mechanisms in Biology. II. Muscle Models'.
Typescript with ms. annotations and corrections. This is probably the second of the 3 papers submitted to Nature in 1969.
- C.30 'Molecular Mechanisms in Biology. III. A Quantum-mechanical Muscle Model'.
Typescript with ms. annotations and corrections. This is probably the third of the 3 papers submitted to Nature in 1969; it was produced in collaboration with D.E. Hookes.
- C.31 'Chemical machines, Maxwell's demon and living organisms'.
Typescript with extensive ms. corrections of paper published in J. Theor. Biol. 30, 1-34 (1971).
- C.32 Earlier drafts and notes (some fragmentary) of C.31.
- C.33 'Molecular Mechanisms in Biology' by C.W.F. McClare and D.E. Hookes.
17 pp. typescript draft, with a note by McClare on the front page 'Never sent'. This appears to be the first of a series of drafts for a paper which was eventually published in J. Theor. Biol. 35, 569-595 (1972) under the title 'A "molecular energy" muscle model'.
See also C.34-C.36.
- C.34 'The Application of Thermodynamics in Molecular Biology'.
2 typescript drafts, both with ms. corrections. The first is a revision of C.33; the second contains further revisions and corrections.
- C.35 'Molecular Energy Machines in Biology'.
Typescript draft with ms. corrections. This is a further revision of the material in C.33, C.34.

Scientific drafts and publications

- C.36 Envelope containing 'Deleted parts from J θ B
[Journal of Theoretical Biology] Muscle-model'.
- C.37 Typescript of article on thermodynamics written for the
New Scientist, 1971-72, but not published. Correspondence
with the Assistant Life Science Editor is also included in the
folder.
- C.38 'A Classical Proof that Cyclic Conformational Changes cannot
be coupled Thermally to ATP Hydrolysis'.
8 pp. typescript, n.d.
- C.39 6 pp. typescript draft headed 'PNAS ?????', n.d.
- C.40 'Sketch of a New Argument for Molecular Energy Machines'.
7 pp. typescript with annotation by G. McClare
'circa Nov. '76'.
- C.41 Drafts for book on thermodynamics.
(NOT YET INCLUDED. See Introduction and A.13.)
- C.42 Folder containing offprints of papers published by McClare,
1965-75.
See Introduction for a list of McClare's main publications in
the field of bioenergetics.

SECTION D

TALKS, LECTURES, CONFERENCES D.1 - D.17

See also F.57.

- D.1 Printed abstract of paper by McClare and others on 'Structural studies of ribonucleic acids with base-specific reagents', presented at the 2nd meeting of the Federation of European Biochemical Societies, Vienna, 1965.
- D.2 Offprint of article by J.H. Quastel in Science, 168, 146-161. summarising papers presented at a conference on membrane structure and function, Ste. Marguerite, P.Q. Canada, 1967, including contribution by McClare on the properties of membrane preparations from halophilic organisms.
- An untitled typescript re experiments with membrane preparations from Halobacterium halobium, which may be the text of McClare's conference paper, is also included in the folder.
- D.3 Ms. and typescript drafts for lecture entitled 'Maxwell's demon, chemical machines and muscle'. The ms. bears a later annotation by McClare 'about 1967'.
- See C.31, C.32 for drafts of published paper by McClare with same title.
- D.4 Typescript draft for lecture at Sussex University, March 1971.
- D.5 Typescript synopsis of paper presented at the 1st European Biophysics Congress, Vienna, 14-17 September 1971.
- See F.73 for related correspondence.
- See also C.42.
- D.6-D.8 Conference on 'Mechanism of Energy Transduction in Biological Systems', New York Academy of Sciences, 7-9 February 1973.
- D.6 Correspondence with D.E. Green and S. Ji, 1972-73, mainly re administrative arrangements for the conference but including some exchanges of a more scientific nature.
- D.7 Abstract and final typescript of McClare's paper on 'Resonance in Bioenergetics'. An offprint of the published version is at C.42.
- D.8 Earlier draft of paper annotated by McClare 'This version not used', and offprint of report on the conference by D.E. Green (Science, 181, 583-584).

Talks, lectures, conferences

- D.9 'Talk at Physical Chemistry Leeds'.
 Undated typescript, perhaps January 1974 (see F.12).
- D.10, D.11 Ciba Foundation Symposium on 'Energy Transformation
 in Biological Systems', London, 1-4 July 1974.
- D.10 Programme of meeting. Typescript of McClare's paper
 'How does ATP act as a source of energy?'
- D.11 Draft transcripts of discussions in which McClare took
 part, some with ms. corrections by McClare.
- D.12 British Biophysical Society. Review Meeting on Muscular
 Contraction, December 1974.
 Typescript draft and abstract of paper by McClare on
 'Molecular machines: the quantum mechanical approach'.
- D.13 Typescript of lecture delivered at Chelsea College, February
 1975, with brief accompanying correspondence.
- D.14 Summary and typescript of talk at Exeter University on 'The
 problem of molecular machines', May 1975, with related
 correspondence.
- D.15 Transcript of interview with B. Wignall re McClare's muscle
 model, produced by BBC Overseas Regional Services, n.d.
- D.16 Ms. and typescript drafts for various talks and lectures, all
 undated.
- D.17 Box containing various lecture slides prepared by McClare.

SECTION E

TEACHING MATERIAL E.1 - E.13

- E.1 Hard-cover notebook containing details of experimental methods and results used in practical classes, with comments on difficulties experienced by students in performing the experiments. n.d.
- E.2 Ms. notes for a set of lectures or teaching handouts on membranes. n.d.
- E.3 Miscellaneous undated ms. and typescript material for lectures and class handouts, mainly on membranes and transport.
- E.4-E.13 Material for course on the 'Social Impact of the Biosciences'.
This undergraduate course was run by the School of Biological Sciences at King's College, London, from 1973, and aimed at providing perspectives on the social context of science. McClare was a member of the team involved in setting up and teaching the course.
Some of the lectures delivered during the course, including two by McClare, were edited by R.E. Munro with a view to publication under the title Biosciences, Culture and Society.
- E.4 Copies of correspondence re planning of the course; handouts for students outlining topics to be covered; specimens of examination papers.
- E.5 McClare's notes on lectures and contributions to discussions by other members of staff and students involved in the course.
- E.6 Typescript 'Outline of talk on human evolution' by McClare.
- E.7 19 pp. typescript headed 'Colin McClare. Biosciences Course: Human Evolution ...? 1973', with a ms. note 'First Draft'. This appears to be a transcript of a tape of McClare's lecture.
- E.8 5 pp. typescript essay by McClare on 'Several theories of human evolution', presumably used as background material for his lecture.
- E.9 Typescript draft of chapter on 'Human Evolution' prepared for inclusion in Biosciences, Culture and Society (see introductory note to E.4-E.13 above).
- E.10 19 pp. typescript headed 'Social Impact of the Biosciences. K.R. Popper'.

Teaching material

- E.11 2 typescript drafts of chapter on 'Karl Popper and the escape from dogma', prepared for inclusion in Biosciences, Culture and Society (see introductory note to E.4-E.13 above).
1 p. letter of comment from R.E. Munro is attached to the earlier draft.
- E.12 2 typescript drafts of chapter on 'The Subjective Basis of Religion' (not used).
- E.13 Draft chapters by other contributors with comments and criticisms in McClare's hand. Folder also includes a prospectus of the book with an outline of proposed chapters, 1976.

SECTION F SCIENTIFIC CORRESPONDENCE F.1 - F.78

The majority of the correspondence arises from the publication of 4 papers by McClare in the Journal of Theoretical Biology and Nature (1971-72; see Introduction), which stimulated considerable discussion and criticism in the U.K. and abroad. Some of the folders include reprints by the authors of the correspondence, often with annotations by McClare.

F.1	Allison, N.	1964, 1971
F.2	Banks, B. <u>re</u> application of thermodynamics to biological systems. Includes correspondence with C.A. Vernon, 1971.	1970-73
F.3	Baron, M. D. <u>re</u> ATP.	1973
	Barrington Leigh, J.	1971
	<u>Biophysical Journal</u> <u>re</u> refereeing of papers.	1974-75
F.4	Black, S. <u>re</u> Maxwell's demon.	1972-73
F.5	Blaurock, A. (McClare's letter only)	1970
	Blumenfeld, L. A.	1975
F.6	Bohm, D. J. (McClare's letters only)	1965, 1969-72
F.7	Bondi, H.	1964
F.8	Brillouin, L. (McClare's letter only)	1971
	Brookes, J. R.	n.d.
F.9	Cardwell, - (McClare's letter only)	1973
	Cesarman, E.	1976

Scientific Correspondence

F.10	Clark, M. E.	1974
	Crout, D. H. G.	1974-75
F.11	Cruikshank, A. J. B. Includes correspondence re arrangements for McClare to give a talk at Bristol University.	1972-73
F.12	Davies, P. Includes correspondence re arrangements for McClare to give 2 talks at Leeds University.	1972
	Davies, R. E.	1969, 1971-72
F.13	Davydov, A. S.	1973
	Dilley, R. A.	1973
	Dirac, P. A. M. (McClare's letter only)	1975
F.14	Domb, C.	1964-65, 1969-72
F.15	Ehrenberg, W.	1971-72, 1974
F.16	Eisenman, G.	1968-72
F.17	Engelman, D. (McClare's letter only)	1976
	Esmond, W. G.	1972
F.18	Fong, P. (McClare's letter only)	1972
F.19	Gabor, D. (McClare's letter only)	1971
	Gal-Or, - (McClare's letter only)	1971
F.20	Gilbert, S.	1976

Scientific Correspondence

F.21, F.22	Gonda, I. Personal and scientific correspondence. Includes exchanges with B. Gray (see F.26). See also F.29.	1973-76
F.21	1973-74	
F.22	1975-76	
F.23	Goodall, D.	1972
F.24	Goodwin, B.	1970, 1972, 1976
F.25	Gordon, L. Mainly <u>re</u> draft paper by Gordon on the second law of thermodynamics (also included in the folder).	n.d., 1974
F.26	Gray, B. See also F.21, F.22.	1976, n.d.
F.27	Gregory, R. L.	1974
F.28	Heller, J.	1971-72
F.29	Hill, T. L. Includes copy of a letter from I. Gonda <u>re</u> models of muscle contraction.	1971, 1975-76
F.30	Holland, B. W.	1976
	Holme, C.	1969
	Hoyle, F. (McClare's letter only - not sent?)	n.d.
F.31	Huxley, A. F.	1969-72
	Huxley, H. E. (McClare's letter only)	1971
F.32	Ji, S.	1973, 1976
F.33	Johnson, R.	1976
	Joyce, G. (McClare's letters only)	n.d., 1970
F.34	<u>Journal of Theoretical Biology</u> Correspondence <u>re</u> refereeing of papers.	1972-76

Scientific Correspondence

F.35	Kemeny, G.	1974
	Klein, - (McClare's letter only)	n.d.
F.36	Koestler, A.	1966, 1971-72
F.37	Kominz, D. R.	1971-72
F.38	Kornacker, K. Includes McClare's review of a paper by Kornacker, 1976.	1971-73
F.39	Lakatos, I. (McClare's letter only)	1971
	Lenaz, G.	1971
	Light, D. Correspondence arising from broadcast talk by McClare on 'Muscle Contraction and Molecular Vibration'.	1973
F.40	Lipmann, F. A.	1972
	Lumry, R.	1975
F.41	McGlashan, M. (McClare's letter only)	1971
	McLaren, D.	1971-72
	Markowitz, D.	1972-73
F.42	Millard, P. H. <u>re</u> arrangements for Millard to give a talk at King's College.	1975
	Mitchell, J. S.	1971
F.43	Mitchell, P.	1976

Scientific Correspondence

F.44	Moore, T. Correspondence arising from draft report of the Nomenclature Committee of the International Union of Nutrition Sciences on the desirability of using the joule instead of the calorie as the unit of energy in nutrition.	1974-75
	Morales, M. F. (McClare's letters only)	1971-72
F.45	Morowicz, H. Includes various draft papers by Morowicz sent to McClare for comment.	1972-76
F.46	Naqui, K. R. Includes drafts of letter to <u>Nature</u> by Naqui arising from McClare's paper on 'A Quantum Mechanical Muscle Model' (see Introduction). See also F.48.	1972-73
F.47	National Research Development Corporation. <u>re</u> possibility of constructing a chemical machine based on theories proposed by McClare.	1975
F.48	<u>Nature</u> Correspondence with the Editor and others <u>re</u> publication of mss. submitted by McClare.	1969-73
F.49	Nicholis, G. Correspondence arising from a letter from McClare to I. Prigogine (included in the folder).	1971, 1972
	Nisbet, R. M.	1972
F.50	Pauling, L.	1972
	Peters, R. A.	1971-72
	Petersen, A. F. (McClare's letter only)	1976
F.51	Pippard, A. B.	1971, 1972, 1974
	Polanyi, M. (McClare's letter only)	1964

Scientific Correspondence

F.52-F.57	Popper, K. R.	1965-76
	Popper started to correspond with McClare in 1965 at the suggestion of D. Bohm, and the exchange of letters, punctuated by the occasional meeting, continued sporadically until McClare's death in 1977. Popper offered considerable encouragement to McClare's early attempts to formulate and publish his scientific ideas, and McClare often pronounced himself to have been profoundly influenced by Popper's philosophy.	
F.52	1965	
F.53	n.d. Unfinished drafts of a letter from McClare to Popper, with a note by G. McClare 'probably August 1967'. Folder also includes 4 pp. ms. diagrams not in McClare's hand.	
F.54	1969-73	
F.55	1974-76	
F.56	Folder containing offprints sent to McClare by Popper, many with extensive annotations in McClare's hand.	
F.57	Ms. and typescript drafts of lectures and papers by McClare, mostly unfinished or fragmentary. These were originally kept with the offprints at F.56.	
F.58	Porter, G.	1971-73
	Prigogine, I. <u>see</u> F.49	
	Pringle, J. W. S.	1971-72
F.59	Randall, J. T.	1964-65, 1970 1973
F.60	Redlich, - (McClare's letter only)	1971
	Rüegg, J. C.	1971-72
F.61	<u>Scientific American</u> re possible article by McClare on thermodynamics in biology.	1974
F.62	Silver, R. S.	1976

Scientific Correspondence

F.63	Simmonds, R. (McClare's letter only)	1972
	Spanner, D. C.	1971
F.64	Sparkes, B. G.	1968-72
F.65	Spencer, M.	n.d.
F.66	Stein, W. D. (McClare's letter only)	1976
	Straub, K. D. (McClare's letter only)	n.d.
	Szent-Gyorgyi, A.	1971-72
F.67	Tawada, K.	1973-76
F.68	Taylor, G. R.	1966-68
F.69	Teitel, A.	1974
	<u>Times Literary Supplement</u> Correspondence with the Science Editor.	1972
	Townes, C. H. <u>re</u> masers.	1973
	Tregear, R. (McClare's letter only)	1972
F.70	Ubbelohde, A. R. J. P.	1964
	Vasilescu, V. <u>re</u> invitation to 2nd National Conference of Biophysics, Bucharest, September 1976 (McClare was unable to attend).	1976
F.71	Wakabayashi, - (McClare's letter only)	1972
	West, I. C.	1976
F.72	Whyte, L. L. Includes a letter from Mrs. E. Whyte, 1974.	1966-72

Scientific Correspondence

F.73	Wilkie, D. R. Includes correspondence re 1st European Biophysics Congress, Vienna, 1971 (see also D.5).	1965, 1969-73
F.74	Wilkins, M. H. F. (McClare's letter only)	1965
	Winfield, M. E.	1976
F.75	John Wiley & Sons Limited Correspondence with the Molecular Sciences Editor arising from his suggestion that McClare should write a book on 'Bioenergetics and Biochemical Thermo- dynamics'.	1972, 1975
F.76	Yount, R. G.	1972
F.77	Miscellaneous requests for reprints (not indexed).	1971-74
F.78	Unidentified correspondents.	

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