

Catalogue of the papers and correspondence of

**JOHN A. V. BATES**

(1918-1993)

Compiled by Timothy E. Powell and Peter Harper

Deposited in the Contemporary Medical Archives Centre,  
Wellcome Institute for the History of Medicine, London

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## GENERAL INTRODUCTION

### PROVENANCE

The papers were received for cataloguing in March 1995 from the Contemporary Medical Archives Centre of the Wellcome Institute for the History of Medicine, London.

### OUTLINE OF THE CAREER OF JOHN BATES

John A. V. Bates was born on 24 August 1918. He was educated at Pembroke College, Cambridge and went on to do clinical training at University College Hospital, London. During the Second World War Bates worked on visual tracking in gunnery and control design in tanks under the auspices of the Ministry of Supply. In 1946 he joined the External Scientific Staff of the Medical Research Council based at the Neurological Research Unit at the National Hospital for Nervous Diseases, Queen Square, London, where he worked until retirement in 1978. Bates also served as Honorary Consultant Physician to the Department of Applied Electrophysiology at the Hospital.

Bates was a leader in the field of neurophysiology. At the end of the Second World War, using home-made equipment from surplus electronic parts, Bates developed specialised equipment for brain stimulation and recording. He studied the human electroencephalogram (EEG) in research into voluntary movement, a term he may have coined. He went on to study the neurological effects of hemispherectomy and later collaborated with Irving Cooper and Purdon Martin on research into Parkinson's Disease, with work on human postural and balance mechanisms.

In August 1949 he founded the Ratio Club, a small informal dining club of young physiologists, mathematicians and engineers to discuss issues in cybernetics. The idea of the Club arose from a Society of Experimental Biology Symposium on Animal Behaviour held in Cambridge in July 1949. The initial membership was W.R. Ashby, H. Barlow, G.D. Dawson, T. Gold, W.E. Hick, D.M. MacKay, T. McLardy, P.A. Merton, J.W.S. Pringle, H.W. Shipton, D.A. Sholl, A.M. Uttley, W.G. Walter and J. Westcott. A.M. Turing joined after the first meeting and other members included I.J. Good, W.A.H. Rushton and P.A. Woodward. The Club continued in being until 1958. Bates acted as Secretary of the Club and retained many of its historical records.

Bates was a member of the Physiological Society from 1949, and a member of the Electroencephalography Society (now the British Society for Clinical Neurophysiology), serving as President 1976-1978, and the Association of British Neurologists. He died on 16 July 1993.

#### DESCRIPTION OF THE COLLECTION

The material is presented in the order given in the List of Contents. The collection, though small, includes significant records of Bates's scientific research and of the Ratio Club.

Section A, Research, comprises notebooks, and research notes and correspondence. The notebooks cover the period 1943-1971. There are four series, identified by the letters 'L', 'M', 'F' and 'B'. The 'L' series of notebooks dates from 1943 to 1949, 'F' 1944-1945 and 'M' ca.1947. The series 'B' is the largest, running from 1950 to 1971. The notebooks include documentation of wartime research, and later research topics including work on EEG, hemispherectomy and Parkinson's Disease, and may also have notes and drafts for lectures, notes on patients, and personal and domestic information. The research notes and correspondence include wartime material relating to gunnery, and post-war correspondence, most notably for the period 1945-1952.

Section B, Ratio Club, is principally the contents of Bates's box-file of Ratio Club material assembled for a possible history of the Club. It includes a chronological sequence of material relating to meetings of the Club (dates, topics, possible speakers), membership and the future direction of the Club. There is also a photograph of members of the Club and correspondence 1978 and 1984-1985 relating to its history and records. With this material is other correspondence with members of the Ratio Club - mostly dating from before its establishment or after it was discontinued. Very little of the correspondence directly concerns meetings of the Ratio Club but it does indicate the professional and personal relationships amongst members of the Club and many letters touch on areas of common scientific interest that may have been discussed at meetings of the Club.

There is also an index of correspondents.

Timothy E. Powell  
Peter Harper

BATH 1995



### Research

- A.2 'L9'. Inscribed on front cover 'Series 70- 1st Feb 1944'. Paginated 1-111. Used for notes on experiments 70-88 on gunnery accuracy etc.
- A.3 'L30'. Inscribed on front cover 'Integrated Ac Pot[ential]s'. Paginated 1-104. Used for notes on reaction times etc of patients, ca.October 1946 - May 1947.
- A.4 'L31'. Inscribed on front cover '1) Integrated Ac Pots 2) Misc test data C+D'. Paginated 1-104. Used for notes on experiments, ca.October 1947 - August 1948.
- A.5 'L32'. Inscribed on front cover '1) Muscular Phys Refs 2) C.U. Psych Soc Lect Preps'. Paginated 50-108 (beginning towards middle of notebook). Used from the front for data, notes on the ear, bibliographical references and notes on the literature. From page 50 are further notes on the literature etc used in preparation for lecture to Cambridge University Psychological Society on 23 February 1948 (see A.6).
- A.6 'L33'. Inscribed on front cover 'Cambridge Psychological Soc Lecture 23 February 1948' and on first page 'Man's Design + Performance. Speculations before and after Sherrington'. Paginated [1]-74. Used for notes and references for lecture.
- A.7 'L34'. Inscribed on front cover 'Visual Cortex Potentials (unfinished)'. Paginated [1]-110 but most pages not used. Used for notes May - 21 November 1948.
- A.8 'L35'. Inscribed on front cover '1) Flash response refs 2) Photometric data 3) Blink refs 4) D.C. Amp refs 5) Blink patient notes'. Used for notes to 21 April 1949.
- A.9 'L36'. Inscribed on front cover 'Conditioned Reflex Lecture 12 November 1948'. Used from the front for notes, references etc for Post Graduate Lecture at National Hospital for Nervous Diseases, Queen Square, London, and from the back for ?additional lecture notes on conditioned reflex.

### Research

A.10 'L37'. Inscribed on front cover 'Med. Res. Soc. Soc. Neuro. Surg. Internat EEG Congress - Lecture 1949' and 'Montreal Neurological Institute 28th Nov 1949 E.E.G. Society 7 Jan 1950'. Used from the front for data from experiments May 1949, and notes and illustrations for lectures to Medical Research Society 20 May 1949, and Neurosurgeons 23 July 1949, and at back for text of lecture 'Electrical activity of the Cerebral Cortex accompanying voluntary movements'.

A.11 'L38'. Inscribed on front cover 'ASDRE (Haslemere) Lecture 21st Oct 1949 "Cybernetics in Perspective" ' and 'Neurological Club 29th Oct 1949 "The problem of memory" '. Used for notes and illustrations for lectures to Admiralty Signals and Radar Establishment, Haslemere, Surrey, and Neurological Club at National Hospital, London.

#### 'F' series

The sequence is incomplete.

A.12 'F21'. Inscribed on front cover '20.10.44'. Paginated 1-103. Used for notes and data on reaction time and observation October 1944 - 19 July 1945.

A.13 'F23'. Inscribed on front cover '12.2.45'. Paginated 1-107. Used for notes and data on experiments on reaction times of soldiers February 1945 - August 1945.

A.14 'F24'. Used for notes and data on reaction times and accuracy of gunnery. Nd.

#### 'M' series

A.15 'M1'. Inscribed on front cover 'Misc refs on work [on] physiology anthropometry'. Used for notes, references and data chiefly relating to physiological factors in the design of controls, ca.1947.

A.16 'M2'. Inscribed on front cover 'Anthropometric data notes'. Incomplete Paginated 1-55 (most pages not used). Nd but includes data on physiology of armed forces personnel from 1942-1944.

### Research

- A.17 M3'. Inscribed on front cover '[...] Miscellaneous Math Notes'. Incomplete pagination 1-20. Nd.
- A.18 'M4'. Inscribed on front cover 'Electrics' and 'Mechanical Analogy Notes Loran data'. Used from the front and from the back for notes on electrics. Nd.
- A.19 'M5'. Inscribed on front cover '1) Light distribution calc 2) (Back) Lecture on Blinks to Neurological Club Jan 1949'. Used from the front for data and from the back for notes for lecture to Neurological Club [?at National Hospital London].

### 'B' series

This is the longest series. It runs from 1950-1971 but the numbering of the sequence of notebooks does not always correspond to their exact chronological order.

In addition to notes, data, and drafts of lectures or talks, the notebooks may include draft letters (sometimes in connection with the Ratio Club, or individual patients), circuit diagrams, calculations, lists of 'Facienda' (things to be done), shopping lists etc.

- A.20 'B1'. Inscribed on front cover 'Association of British Neurologists, Queen Square, [London], 27 April 51 Stimulation of the medial surface of the remaining hemisphere following hemispherectomy in six cases [..]' and 'Physiological Society Oxford 7 July 51 Anomalous result of excision of excitable motor cortex in Man [...]'. Used for notes for lectures with W. McKissock.
- A.21 'B2'. Inscribed on front cover 'Jan 1950'. Used principally for drafts of 'Electrical activity of the Cortex accompanying voluntary movements', 'Potential differences around the Eye accompanying movement of the [?] and lids' and 'Information Theory Lecture'.
- A.22 'B3'. Used principally for drafts on information theory and popular talks on diseases and health, and drafts of letters. Also includes notes of Ratio Club meeting. On first page is manuscript bus timetable 1950-1951.

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- A.23 'B4'. Inscribed on front cover 'Oct 51' (date 'Jan 50' has been deleted). Used principally for drafts of popular talks on the Eye, Pregnancy and Cybernetics, notes on lectures of F.M.R. Walshe to Post Graduate [?Med] Federation, 30 January 1951, and Lewin and Whitty to 'Anti-Sp. League 2.11.51', and ?Letter to the Society of Experimental Biology on psychical research.
- A.24 'B5'. Inscribed on front cover 'Symposium on Information Theory. Royal Society. Sept 26-29. 1950. 1) Significance of Information Theory to Neurophysiology', '2) The Nervous System as a communications network. I.E.E. Informal Lecture 20th November 1950' and '3) Theories of the origin of the EEG. School Lecture 13th Dec 1950'. Used for notes and illustrations for lectures.
- A.25 'B6'. Inscribed on front cover 'Sept 51'. Used principally for notes and data on 'Pica', from information provided by patients recording their physiological (chiefly dietary) and psychological traits during pregnancy, diagrams of the operation of the brain, draft on 'Volitional Movements', and notes *re* Ratio Club meeting 1 November 1951.
- A.26 'B7'. Inscribed on front cover 'Nov 51'. Used for notes on the literature, drafts, and notes *re* Ratio Club meeting 21 December 1951.
- A.27 'B8'. Inscribed on front cover 'Hemispherectomy Analysis February 52'. Used principally from the back for notes on patients.
- A.28 'B9'. Inscribed on front cover 'Results of Hemispherectomy on the Motor System. Ass. Brit. Neu. [National Hospital] Queen Sqr 22 Feb 52'. Used for notes and illustrations for lecture. Most pages not used.
- A.29 'B10'. Inscribed on front cover '1) What is the Alpha Rhythm? Experimental Psychology Group. U[niversity] C[ollege] London 5 Jan '52' and '2) The Nervous System as a communications network' I.E.E. Informal Lecture Norwich 31.3.52'. Used for notes for lectures. ?Figures for lecture loose at back.

### Research

- A.30 'B11'. Inscribed on front cover 'March 52 - June 52'. Paginated 1-101 with list of contents for pages 34-101 at front. Used for notes, drafts of letters (including letter to J.W.S. Pringle *re* Ratio Club meeting, May) and, from page 34, notes on patients.
- A.31 'B12'. Paginated 1-107 with list of contents at front. Used from the front for data on patients, June - October 1952. At back is draft lecture 'For EAC 24 Sept 52' on the physiology of the central nervous system.
- A.32 'B13'. Paginated 1-105, with list of contents for pages 79-93 at front. Used for draft of 'Stimulation of the supplementary motor area in Man after hemispherectomy', and notes on patients, *ca.* November - December 1952.
- A.33 'B14'. Paginated [1]-110. Used for notes on patients and sections of drafts, *ca.* December 1952.
- A.34 'B15'. Inscribed on front cover '1 Anatomy + Physiology of Cerebral Palsy. Lecture to Chartered Society of Physiotherapists. Q.S. 2.10.52', '2 Medical Committee Invitation Dinner 11th May 1953', '3 Motor responses from the medial surface of the cerebral hemisphere in Man. *Physiol. Soc. Cambridge* 24.7.53' and '4 Lisbon - *Internat. Neurological Congress* Sept 7-12 1953'. Used for notes for lectures.
- A.35 'B16'. Paginated [1]-110, with list of contents at front. Used principally for notes on patients February - June 1953.
- A.36 'B17'. Paginated [1]-108, with list of contents at front. Used principally for notes on patients 6 July - October 1953.
- A.37 'B18'. Paginated [1]-50. Used for notes on patients treated in the period 1951-1954.
- A.38 'B19'. Paginated 1-110, with incomplete list of contents at front. Used for notes on patients, drafts of 'The repeatability of the cortical motor map in later re-exploration' and 'A critical note on Dr Walshe's appreciation of the observation of Liddell + Phillips (1950)', and miscellaneous notes November - December 1953.

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- A.39 'B20'. Inscribed on front cover '1. The long-term repeatability of the cortical motor map 2. A comparison between movements produced by stimulation of the motor cortex and the internal capsule in the same individual [lectures delivered to the] Phys[iological] Soc Queen Sqr 19 Dec 53' and '3. "Volitional movement" Roy. Soc. Med. 7th Jan 1954'. Incomplete pagination [1]-81. Used for notes for lectures.
- A.40 'B21'. Paginated [1]-109, with incomplete list of contents at front. Used for outline notes for lecture 'The concept of voluntary movement', drafts of letters, notes on patients, notes on lecture by D.E. Denny-Brown, etc January - March 1954.
- A.41 'B22'. Paginated 1-111, with incomplete list of contents at front. Used for draft of ?lecture or paper on voluntary movement March 1954, and notes on patients 15 April -23 June 1954.
- NB. Notebook B23 not found.
- A.42 'B24'. Inscribed on first page 'Paris Hotel de Arènes [...]'. Paginated 1-103, with incomplete list of contents on page 2. Used for notes on visit to Paris ca.8-12 November 1954, including draft of lecture on EEG (in part in French), drafts of letters, miscellaneous notes and notes on patients 29 November 1954 - 17 January 1955.
- A.43 'B25'. Inscribed on front cover '1) The human cortex U.C. Physiol. class 6.12.54 2) The Motor system. Hypothesis versus observation St Bart's Hospital 15.2.54 3) The unidirectional d.c. element in EEG abnormalities Phys Soc Cambs. 15.6.55 4) Case Report - Peter Hampton - EEG Soc Nat Hosp. 15.10.55'. Paginated [1]-84. Used for lecture notes.
- A.44 'B26'. Paginated 1-111, with list of contents at front. Used for notes on patients 25 January - 5 May 1955.
- A.45 'B27'. Inscribed on front cover 'May 55 - July 55'. Paginated 1-107, with list of contents at front. Used for notes on patients and notes and draft for lecture, probably delivered in Canada.

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- A.46 'B28'. Inscribed on front cover '1 Aug 55-'. Paginated 1-109. Used for ?incomplete draft 'The repeatability of the Human Cortical Motor map', case report, notes on patients, draft 'Report to EAC Nov 55' etc, August - December 1955.
- A.47 'B29'. Inscribed on front cover '1) The Human Cortex Cambridge Physiol Class 2.11.55. 2) Stimulation of the Motor Cortex in Man St Bart's Phys Soc 6.10.56'. Paginated [1]-20. Most pages not used. Used for lecture notes.
- A.48 'B30'. Incomplete pagination 1-49. Used for notes on patients, draft letters and sections of ?lectures, miscellaneous notes 2 December 1955 - 12 April 1956.
- A.49 'B31'. Paginated [1]-106. Used principally for notes on patients, calculations, drafts of letters May - November 1956.
- A.50 'B32'. Inscribed on front cover '1. Problems in the design of a 21 channel Transistor EEG [machine] London EEG Congress May 1956 2. Stimulation of the Motor Cortex in Man Pt 1. Nat Hosp Lecture Nov 56 3. Stimulation of the Motor Cortex in Man Pt 2. Nat Hosp Lecture Dec 56 4. The Human Cortex U.C. class lecture Dec 56'. Used for notes for lectures.
- A.51 'B33'. Paginated [1]-106. Used for drafts of letters, calculations, notes on patients etc November 1956 - February 1957.
- A.52 'B34'. Paginated 1-113. Used principally for notes on patients December 1956 - ca.May 1957.
- A.53 'B35'. Inscribed on front cover 'The contribution of electrophysiology to the surgical treatment of Epilepsy - Oxford 11 June 57' and 'The individuality of the excitable Motor Cortex - Queen Sqr 15 Nov 57'. Used for notes for lectures.

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- A.54 'B36'. Paginated 1-107, with incomplete list of contents at front. Used principally for notes on patients May - June 1957 and notes on proceedings of Wellcome Symposium 17 July and unidentified conference 20-24 July 1957. Loose at back is letter *re* possible article for *Spastics Quarterly* by Bates, 5 June 1957.
- A.55 'B37'. Paginated 1-109. Used for notes for lecture on C.S. Sherrington, notes on patients, drafts of letters, calculations etc October - December 1957.
- A.56 'B38'. Inscribed on front cover '1) Depth recordings in a case of subacute Encephalitis EEG Soc. Jan 4th 1958. 2) Significance of stimulation of cerebral white matter A.B.N. Bristol April 11 1958. 3) The new surgery of tremor + rigidity Q.S. Res Soc. Nov 3 [1958] 4) Discussion of "Human midbrain preparation" Gamper 1926 - with film A.B.N. 7 [November 1958]'. Used for notes for lectures listed and also lecture 'The evolution and dissolution of the classical hypothesis of the Motor System' at King's College London, 17 November 1958.
- A.57 'B39'. Paginated 1-73. Used principally for calculations and data February - April 1958.
- A.58 'B40'. Inscribed on front cover '12 May 1958'. Paginated 1-39, with list of contents at pp.32-33. Used for notes during visit to New York May 1958, and miscellaneous notes June - September 1958.
- A.59 'B41'. Used for notes on patients, drafts of letters and sections of lecture on work of Eduard Gamper, notes on last meeting of Ratio Club at National Physical Laboratory, Teddington, 2 November 1958, etc November 1958 - March 1959.
- A.60 'B42'. Inscribed on front cover '30 March 1959 - Sept 59'. Used for diary of visit to the Americas 30 March - 4 June 1959, lists of contacts in America, notes for lecture on 'Plasticity changes in the Nervous System', 10 September 1959 etc.

Bates visited many Latin American countries including Brazil, Argentina, Chile, Peru, Ecuador and Mexico before going on to the US on 5 May.

### Research

- A.61 'B43'. Inscribed on front cover '10.11.59'. Used for notes and drafts of lectures, notes on patients, data, etc November 1959 - November 1960.
- A.62 'B44'. Inscribed on front cover 'Aug 61'. Used for drafts of lectures, letters, referee's report, miscellaneous notes for Italian holiday etc December 1960 - August 1961.
- A.63 'B45'. Inscribed on front cover 'Inst of Neurol Lectures 1961 "Central Motor Mechanisms" [...]' and 'Physiological Problems in the surgery of Parkinsonism Brooke Hospital 6 Nov 63'. Used only for notes on lecture at Brooke Hospital. Most pages not used.
- A.64 'B46'. Lacks cover. Inscribed on right-hand corner of first page '1962'. Used for notes on patients, draft on surgery on patients with Parkinson's Disease, outline notes for lectures etc.
- A.65 'B47'. Inscribed on front cover 'N.B. [...] Notes [...] 13.6.62'. Paginated 7-91 (pages at front of notebook are missing). Used for notes on experiments on monkeys and rabbit, notes on patients and data July 1961 - June 1962.
- A.66 'B48'. Inscribed on front cover '1963'. Used for outline notes for lectures, drafts of letters, notes on experiments on monkeys 1963 - January 1964.
- A.67 'B49'. Inscribed on front cover 'Aug 64 - Jan 65'. Used principally for drafts and notes for lectures and drafts of letters. At back are loose notes.
- A.68 'B50'. Inscribed on front cover 'April - Nov 65'. Used for outline notes for lectures, draft letters, data, notes on proceedings of meeting in Vienna, 6-10 September, etc.
- A.69 'B51'. Inscribed on front cover '66-67'. Used principally for notes for lectures, including 'What is a computer'.
- A.70 'B52'. Inscribed on front cover '67'. Used for draft letters and miscellaneous notes July - December 1967.

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- A.71 'B53'. Inscribed on front cover '22 Jan 68'. Used for draft letters and miscellaneous notes, including notes on lectures by Pevsner on Inigo Jones, church architecture, etc January - June 1968.
- A.72 'B54'. Inscribed '12 June 68'. Used for draft letters, notes on holiday in Italy, notes on lectures by Pevsner on Italian artists etc.
- A.73 'B55'. Inscribed on front cover 'Nov 1968'. Used principally for notes on lectures by Pevsner.
- NB Notebooks B56-B65 not found.
- A.74 'B66'. Inscribed on front cover 'Feb 69-July 69'. Used principally for notes on lectures by Pevsner.
- A.75 'B67'. Inscribed on front cover 'Aug 69-'. Used for miscellaneous notes and drafts August 1969 - March 1970. Loose at front is carbon copy of letter to R.G. Bickford, 21 May 1970.
- A.76 'B68'. Inscribed on front cover '25th March 1970 -'. Used for miscellaneous notes and drafts, some on the nature of 'Function'.
- A.77 'B69'. Inscribed on front cover '1st Nov 70 -'. Used for miscellaneous notes November 1969 - May 1971.
- A.78 'B70'. Used for miscellaneous notes. Most pages missing.

## Research

### RESEARCH NOTES AND CORRESPONDENCE

- A.79-A.83 '1942-45 Statistics'. Contents of Bates's folder so labelled divided into five for ease of reference. Retained in original order.
- Typescript reports, manuscript notes and calculations and graphs *re* night vision and other experiments on gun-aiming.
- A.79 Manuscript notes on 'Day to day repeatability of [Night Vision] Tests. Soldier's variability percentage'; report of US National Research Council Division of Medical Sciences Committee on Aviation Medicine on 'Frequency of seeing at low illuminations' by H.K. Hartline and R. McDonald, January 1943, 8pp typescript + figures; miscellaneous graphs, notes and calculations.
- A.80 Copy of letter from (?J.A.) Whitney to E.E. Pochin *re* 'Significance of the correlation coefficient between Telescope Adjusting and Bore-Sighting', 5 November 1943, with enclosure; photographs of graphs; manuscript notes.
- A.81 'The measurement of thresholds of perception and discrimination' by A.P. Webster, April 1943, 10pp typescript, with Bates's manuscript comments thereon.
- A.82 Report of Ministry of Supply Advisory Service on Statistical Method and Quality Control on 'The basis of the C.S.M. Test - charts and methods of calculation' by V.A. Allinson and C.D. Bates, 10 March 1944, 9pp duplicated typescript + appendix and chart; brief correspondence with A.B. Hill on test for 'normality' in frequency distribution, August, September 1945; report of Medical Research Council on 'Measurement Scales: the prerequisites of biological statistics' by E.G. Chambers, 1951, 5pp duplicated typescript.
- A.83 US National Defense Research Committee Applied Mathematics Panel calculator for 'Small Target Bombing Probabilities'. Nd.
- A.84 Miscellaneous correspondence 1945-1947. Includes correspondence with Major H. Murrell *re* tank gunnery.

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- A.85 Correspondence with W.W. Campbell arising from paper by Bates on the design and performance of the human servo, May - August 1947.
- Some of the material in the paper was used in the joint monograph with W.E. Hick (see B.31-B.33).
- A.86 Correspondence with J.D. North, of Bolton Paul Aircraft Ltd *re* 'sensory threshold phenomena', July 1947 - June 1948.
- A.87 Duplicated typescript papers circulated among members of Ministry of Supply Sub-Committee on Manual Control, July - August 1947.
- A.88 'Conscious Matter', 9pp typescript by Bates with manuscript corrections, annotated 'for next "Science & Religion" '. ca.1947/1948.
- A.89 Miscellaneous correspondence 1948-1949. Includes correspondence *re* talk by Bates on 'Cybernetics in Perspective' to Admiralty Signal and Radar Establishment, Haslemere, Surrey, 21 October 1949.
- A.90 'Cybernetics', 5pp typescript 'annotation' by Bates for *British Medical Journal*, with correspondence February, April 1951.
- A.91 Correspondence with J.O. Wisdom *re* questions in cybernetics, December 1951 - January 1952.
- A.92 Miscellaneous correspondence 1957-1961. Includes invitation (accepted) to serve on Institution of Electrical Engineers Medical Electronics Discussion Group, 15 September, and correspondence with K. Agnew *re* career.
- A.93 Fifth International EEG Congress, Rome, September 1961.
- Correspondence with M.A.B. Brazier *re* possible participants for session on electrical recording from deep structures of the human brain, March - July 1960.

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- A.94                   Untitled 17pp typescript draft, beginning 'This paper concerns a single case which is unusual in the amount of clinical study and pathological investigation'. Latest reference 1970.
- Probably not by Bates.
- A.95                   Miscellaneous material: untitled 3pp typescript draft beginning 'There is apparently no question that Electric Automatic Computing machines can be made to play a legally correct game of chess', nd; typed extract from journal; colour photograph of unidentified laboratory.

SECTION B

RATIO CLUB

B.1-B.35

The idea of an informal dining club to discuss issues in cybernetics arose from a Society of Experimental Biology Symposium on Animal Behaviour held in Cambridge in July 1949. The Ratio Club was formed by Bates in August 1949 and the initial membership was W.R. Ashby, H. Barlow, G.D. Dawson, T. Gold, W.E. Hick, D.M. MacKay, T. McLardy, P.A. Merton, J.W.S. Pringle, H.W. Shipton, D.A. Sholl, A.M. Uttley, W.G. Walter and J. Westcott. A.M. Turing joined after the first meeting, followed by P.A. Woodward, W.A.H. Rushton and I.J. Good.

At its meetings the Club dined and then listened to an informal presentation on an area of mutual interest by one or more members or invited guests. The meeting then discussed the issues raised in the presentation. Membership was kept to a maximum of fifteen and it was agreed that no one of professorial rank was eligible for membership. The Club met fairly regularly between September 1949 and January 1956 but there then followed an interval of nearly three years until the next meeting and it was decided to wind the Ratio Club up.

Bates acted as Secretary of the Club and retained many of the historical records of its meetings.

B.1-B.28

'Ratio Club'. Contents of Bates's box-file so labelled.

This material was assembled by Bates to record the history of the Ratio Club over the period July 1949 - 1958. It comprises a chronological sequence of correspondence and papers, with later manuscript notes by Bates on the history of the Club interleaved with the original material, together with correspondence and papers later assembled by Bates as a record of the Ratio Club.

B.1-B.19

Chronological sequence 1949-1958

B.1

1949 August. Correspondence re membership and first meeting.

B.2

1949 September. First meeting 14 September, addressed by W.S. McCulloch.

B.3

1949 October, November. Meetings of 18 October and 17 November. Bates addressed the November meeting, which considered answers to a logical problem set by E.T.O. Slater.

### Ratio Club

- B.4                    1949 December.
- B.5                    1950 January - March. Meetings 19 January, 16 February, 16 March and 21 April *re* future of the Club.
- B.6                    1950 May. Meeting of 18 May on 'Pattern recognition'.
- B.7                    1950 June - December. Meetings of 22 June, 18 July, 21 September and 7 December.
- B.8                    1951 January - March. Meeting of 22 February.
- B.9                    1951 April - May. Meetings of 5 April and 31 May.
- B.10                   1951 June - July. Meeting of 26 July on 'Telepathy' addressed by Bates.
- B.11                   1951 October - December. Meetings of 1 November, and 21 December *re* future of the Club.
- B.12                   1952 January - February. Meeting of 8 February. Includes membership list 1 January 1952.
- B.13                   1952 March - April. Meeting of 20 March, arrangements for meeting on 2 May.
- B.14                   1952 May - June. Meetings of 2 May and 19 June. Bates spoke at the meeting on 19 June on 'The problem of memory'. The meeting also considered whether membership should be opened to people of professorial status.
- B.15                   1952 July - December. Meetings of 31 July, 6 November and 11 December.

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- B.16                    1953. Meetings of 19 February, 2 July.
- B.17                    1954. Meetings of 11 February, 17 June and 25 November.  
  
Also includes draft letter of condolence on the death of A.M. Turing, 17 June 1954 and reply from Mrs Turing (mother).
- B.18                    1955. Meeting of 6 May at Great Malvern with demonstrations of equipment at the Radar Research Establishment.
- B.19                    1958. Meeting of 27 November at the National Physical Laboratory, Teddington.  
  
This was the first meeting called since 1956. It was decided to end the Ratio Club in its existing form. It was suggested it be replaced by a larger informal interdisciplinary symposium.
- B.20-B.23            'Old records of Ratio Club belonging to Professor D.M. MacKay'. Contents of envelope so inscribed divided into four for ease of reference.
- B.20                    1949.
- B.21                    1950
- B.22                    1951-1952. Includes correspondence between MacKay and other members of the group on his presentations.
- B.23                    1953-1956. Includes material *re* meetings 6-7 May 1955, 15 September 1955 and 19 January 1956.

### Ratio Club

- B.24 'Dining Club'. Envelope so inscribed, with accounts of the Ratio Club September 1949 - July 1950 written on verso. Miscellaneous correspondence and papers found inside envelope include notices for meetings; printed letter from Mrs Turing *re* the death of her son A.M. Turing, June 1954; letter from Mrs Turing *re* material for biography, 12 November 1956; and exchange with P. Uttley *re* photograph of members of the Ratio Club, January 1978 (see B.25).
- B.25 Mounted photograph of Ratio Club members and guests; larger unmounted print of the same photograph; negative.
- B.26 Correspondence from J.W.S. Pringle to Bates and D.M. MacKay *re* papers of the Ratio Club, January, March 1981.
- Pringle wrote to members of the Club still alive suggesting he write an historical account of the Club for *Notes and Records of the Royal Society* and asking whether they had any records.
- B.27 Later correspondence *re* Ratio Club papers 1984-1985. Includes typescript list of meetings of the Ratio Club
- B.28 Index cards used for notes on the history of the Ratio Club.
- B.29-B.35 Correspondence with Ratio Club members.
- This material was found in Bates's box-file labelled 'Refs to Ratio Club'. Very little of it directly concerns meetings of the Ratio Club but does indicate the professional and personal relationships amongst members of the Club and many letters touch on areas of common scientific interest that may have been discussed at meetings of the Club.
- It is presented in alphabetical order by correspondent.
- B.29 Ashby, W.R. 1952, 1953
- Includes 'Cybernetics and Insanity' by Ashby, 3pp duplicated typescript, possibly prepared for Ratio Club meeting 1952, and exchange *re* article by Ashby 'Can a mechanical Chess-player outplay its designer?', May 1953.

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- B.30                      Good, I.J.    1961, 1963, 1972-1973
- Includes correspondence 1961 *re* planned book edited by Good 'The Scientist Speculates. An anthology of partly-baked ideas', and exchange 1963 *re* correlations between the EEG and electrocardiograph.
- B.31-B.33                Hick, W.E.    1944-1949, 1953
- During the war Hick was a member of staff of the Medical Research Council's Applied Psychology Research Unit working on bomb and gun-aiming. Hick and Bates both served on the Ministry of Supply's Interdepartmental Technical Committee on Servo Mechanisms and its Subcommittee on Servo Mechanisms.
- B.31                      1944-1945. Includes correspondence *re* work towards joint monograph on manual tracking.
- B.32                      1946-1947. Includes correspondence *re* joint monograph. See A.85.
- B.33                      1948-1949, 1953. Includes correspondence *re* joint monograph and 1949 correspondence *re* Choice Reactions.
- B.34                      MacKay, D.M.    1951, 1961
- McLardy, T.    1958
- B.35                      Walter, W.G.    1948, 1949, 1961, ?1977
- Includes outline of Walter's career and contributions to research, possibly prepared after his death in 1977.

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