The Legacy of John C. Eccles

Selected Letters (1937-1963)
and Guide to the Archive in Düsseldorf

Edited by Hans-Joachim Freund,
Ulrich Koppitz and Alfons Labisch

Conference Edition, sponsored by
The Physiological Society, London

Shaker-Verlag
Aachen
2011

Shaker Verlag,
Aachen 2011

ISBN 978-3-8440-0367-3

Table of Contents

Preface …… 5
Alfons Labisch

Securing the Eccles collection …….. 7
Hans-Joachim Freund

Brain Pool: The C. and O. Vogt-Archives – an invitation to history-based neuroscientific research … 9
Ursula Grell

Curricula vitae, Application Forms and Bylaws …… 17

John Eccles' private Library …….. 25
U. Koppitz, M. Bruijns-Pötschke, A. Cevahir, P. Elsholz, A. Schürmann, D. Vienken

About the Revised List of Publications ……. 29 by John C. Eccles
U. Koppitz, K. Kuhlmann, C. Isberner, I. Pieper-Scholz

Catalogue raisonné of publications …… 33 by John C. Eccles
I. Pieper-Scholz, C. Isberner, U. Koppitz

Prospects: The Archives and Kalliope …… 85
Fabio De Sio, J. Kouzmenko, S. Sotke, U. Koppitz

Further readings …….. 89

Selected letters 1937-1963 …….. 93 from the John C. Eccles Archive

The Legacy of Sir John C. Eccles …… 191 Programme of the Symposium

Index …….. 194

Prof. Eccles and his team in Dunedin

Prof. Eccles and his team in Canberra

Preface

This booklet is dedicated to the delegates of a symposium organised to discuss *The Legacy of Sir John C. Eccles* in long term and interdisciplinary research perspectives. The *Contributions of John Carew Eccles to Contemporary Neuroscience* have been dealt with extensively in a Special Issue of *Progress in Neurobiology* (Vol. 78, Feb. 2006).

In the near future, research possibilities in Neurohistory and related topics will be enriched by the John Eccles Archives in Düsseldorf. According to his last will, the widow of late Sir John C. Eccles Lady Helena donated his manuscripts, correspondence and library to the *Institute for the History of Medicine* in Düsseldorf, Germany, to file this unique legacy and facilitate archival research.

The next five short articles portray the previous events and give an overview of the prospects. Firstly, Hans Joachim Freund tells how the Eccles Collection was secured. Secondly, Ursula Grell who has filed the Cécile and Oskar Vogt Archive, characterises this older treasure for neurohistorical research hosted in Düsseldorf. In addition useful material e.g. forms of application for use are provided. Then, Ulrich Koppitz and the Library Team of the Institute for the History of Medicine provide information about John Eccles‘ Private Library and the revised Catalogue raisonnée of John Eccles‘ works. Prospects of the archival project starting in 2012 are outlined by Fabio De Sio and colleagues: File descriptions will be made accessible via the internet portal „Kalliope“ as a standing invitation for international scholars.

To convey an impression of the richness and potential of the future archive, a selection of 88 early letters to and by John Eccles are published as main part of this book. This unsystematic selection of letters just serves as an example of the range of topics and communication styles of mid 20th century scientists, which can easily be traced by the index of this book. At the end of this guide, promising research perspectives are again presented displaying the programme of the symposium *The Legacy of Sir John C. Eccles,* 2011 September 10-11 in the Academy of Sciences and the Arts in Düsseldorf.

This unique symposium has been planned by the members of the Advisory Board of the Eccles Collection, especially by the indefatigable efforts of Thomas A. Sears and Hans-Joachim Freund. The meeting is organized jointly by the *North-Rhine-Westfalian Academy of Sciences and the Arts*, the *University Clinics* and the *Institute for the History of Medicine of Heinrich-Heine-University Düsseldorf*. It is co-sponsored by *the Cécile and Oskar Vogt Institute for Brain Research* and the *German Research Foundation* who are also funding the project to file the archive in the framework of *Kalliope* online portal. Last but not least, the Institute is grateful to the *Foundation Lindau Nobelprizewinners Meetings at Lake Constance* and the *Society of Friends and Supporters of the Heinrich-Heine-University Düsseldorf* who co-sponsored not only the symposium, but also the pioneering works on John Eccles‘ library and archives.

The organizers are very grateful that the dedication of this booklet to the delegates has been made possible by a donation from *The Physiological Society*, whose rôle has been highlighted by John Eccles in long-term perspective,[1] and by their *History and Archives Committee*.

Düsseldorf, in Summer 2011

Alfons Labisch
Univ.-Prof. Dr. med. Dr. phil. M.A. ML
Director of the Institute for the History of Medicine
Heinrich-Heine-University Düsseldorf

[1] Eccles, John C.: British physiology: some highlights 1870-1940. In William C. Gibson (ed.): *British contributions to medical science* (Wellcome Institute of the History of Medicine: London, 1971), 173-193.

Securing the Eccles Collection

Hans-Joachim Freund

Sir John Eccles, one of the most prominent neuroscientists of the last century originally donated his library to the University of Basel. Later, however, it turned out that only 20% of it could be preserved there in the long term by that University.

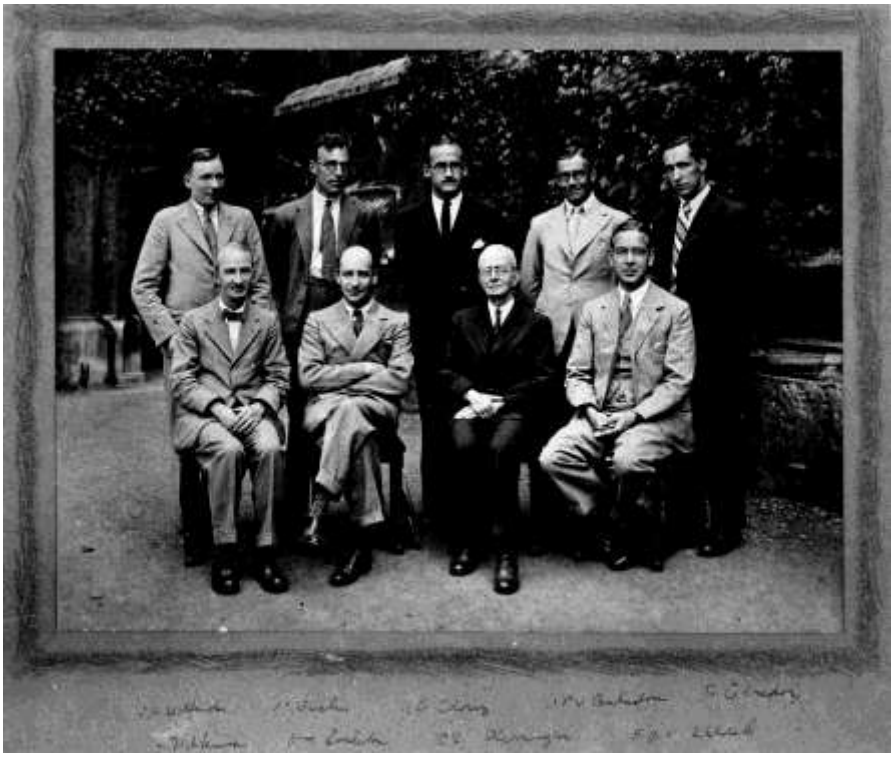
Lady Helena Eccles looked for an alternative location to follow her husband's will which had determined that the entire collection should be kept intact. During this search she contacted me in the hope that I might assist to find a solution. My immediate reaction was to try everything to place the collection somewhere in the English speaking world and therefore contacted Tom Sears one of Eccles' former scholars living in the UK. He explored the possibilities with the Royal Society, the Wellcome Trust and also contacts in the University of Oxford, but the common denominator from his enquiries was that no Institution could envisage taking over the whole collection, nor of its major parts.

I discussed this unfortunate situation with Alfons Labisch, Head of the Institute of the History of Medicine in Duesseldorf and to my delight, he proposed that the collection could be hosted in his Institution. Following this gracious offer we negotiated the logistics of the transfer of the collection from Basel and with this achieved Lady Helena agreed to donate the collection to the Institute. On the basis of this development Karl Zilles, Head of the Brain Research Institute in Düsseldorf, decided to donate the Library of Cecile and Oscar Vogt, which was part of his Institute's heritage from the former Director of the Kaiser Wilhelm Institute in Berlin-Buch, to the Institute of the History of Medicine to be placed alongside the Eccles collection. Thus the libraries of a founder of cytoarchitectonics and the second generation neurophysiologist now sit side by side.

The Eccles' Archive has now been part of the Institute since 2010 and occupies ca. 150 meters of bookshelf comprising books, journals, hand writings and a large correspondence . It will be of great value for the history of medicine, because Eccles spanned a wide range of neurophysiological investigations from motor neuron to muscle, spinal cord cir-

cuitries, hippocampus, thalamus and cerebellum. And he had a deep interest in mind brain interactions, which started in the forties long before the emerging field of neurophilosophy became fashionable and when Karl Popper was in Christchurch and Eccles in Dunedin. Later they took up and intensified their discussions as well documented by their books. Their personal correspondence is a valuable part of the collection. Popper's views on the need to find evidence refuting, rather than only supporting, a hypothesis, greatly influenced Eccles allowing him later through his own research to move from being an extremely strong advocate of electrical transmission across synapses to the chemical transmission favoured by Sir Henry Dale.

The Institute of the History of Medicine is indeed fortunate in that the German Research Council has funded personnel fully to work up this treasure, to establish an Internet platform and by making the collection freely accessible to the neuroscientific community. This is particularly attractive, since in those earlier times neuroscientists were few in number and all the major players were in contact, which makes the correspondence so unique.



Standing: Wolfreder (?), Eccles, Odoritz, Baldsden, Obrador
Sitting: Wilnison (?), Carleton, Sherrington, Lidell

Brain Pool: The C. and O. Vogt-Archives – an invitation to history-based neuroscientific research

Ursula Grell

The initials C. and O. stand for the husband and wife team Cécile Mugnier (1875-1962) and Oskar Vogt (1870-1959), whose biographies are inseparably linked with the design of their respective institutes. Their work coined the expression “Hirnforschung” (Brain Research) which reflects a network of international scientific endeavours and contemporary history of remarkable complexity. The growth of the Institute took place during a period of social and political upheaval, beginning with the Wilhelminian Empire and spanning the Republic of Weimar, National-socialism and Allied Occupation to, finally, the two German States in the era of the Cold War. A glossary of the 20th century’s central problems could be compiled:

socialism and industrial expansion, population politics dominated by eugenics and racial research, neodarwinism and genetics, psychotherapy and psychoanalysis, experiments as the basis of research and ethics in science, international transfer of scientific findings and interdisciplinary concepts, women's presence as scientists in universities - directly or indirectly, the Brain Research Institute was involved.

Limited in space, I can only throw a spotlight on the diversity of the Vogts‘ scientific heritage, that the Archives since their opening in 1996 present in 1177 volumes.* Whereas the Archives and the Vogt Collection of Brain Sections are attached to the C. and O. Vogt-Institute for Brain Research, their spacious Library was affiliated with the University Library.

Looking back upon the development of the Vogts' Institutes, one discovers a fascinating example for the establishment of a new, rapidly expanding branch of research that excited scientists and politicians

* The construction of the archives started in 1991, initiated by Prof. A.Hopf and financed by the Society of Friends and Supporters of the Düsseldorf University. The project work was carried out by U. Grell with special support in the fields of archival organisation and computerized data management. Today, director of the C. and O. Vogt-Institute as well as of the Archives is Prof. Karl Zilles.

throughout the World with its immanent option of "progress". Thus a vivid illustration of an innovative organisation of science is given: Independent of traditional research centers within universities and academies, private and state funds were raised to finance research institutions that promised to support relevant social claims with their findings.

Expanding our knowledge of anatomy and physiology of the brain was seen as one of the most important tasks of the dawning 20th century. In 1898, when O. Vogt founded his first Institute with private funds, the **Neurological Center** in Berlin, he designed an epochal program for the new field of Brain Research influenced by the theory of evolution and the question of the mind-brain relationship. Vogt regarded anatomy, apart from its descriptive approach, as a basis for understanding the brain's functions. He and his wife, Cécile Vogt-Mugnier, dedicated their lives to the pursuit of knowledge on structure-function interrelationships. The future of man depends on the development of his brain, they stated.

The Vogts' approach to the brain followed an organologic principle: The brain is an organ. It is the organ that makes man a human being. And it is not simply an enlarged monkey's brain. Only skilled specialists of different proveniences would be able to analyse such a complex system and they needed institutes newly created and separate from the universities belonging to an international network of brain research. A central collection of standardized research "material" - complete serial sections of human and animal brains, both normal and pathological of various ages - combined with the availability of the most modern methods was considered as essential.

As **Neurobiological Laboratory** the Vogt-Institute was integrated into the Physiological Department of the University of Berlin in 1902. But still the Vogts financed their Institute mainly with their own income from their flourishing psycho-neurological practice which was based on the application of hypnotherapy. Their success in psychotherapeutical treatment made their home a sought-after adress and attracted a financially potent clientele of aristocracy and members of the upper class, of scientists, diplomats and artists including the steel magnate Friedrich Alfred Krupp and his wife. For two generations the House of Krupp was a reli-

able sponsor and political supporter with far-reaching influence that helped secure the status and development of the Institute.

A donation from the Krupps and the awaking interest of the Emperor Wilhelm Society for the Advancement of the Sciences (Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften) led to the founding of the **Emperor Wilhelm Institute for Brain Research** (Kaiser-Wilhelm-Institut für Hirnforschung - KWI) in March 1914. Expansion plans had to be postponed due to World War I and the following period of financial chaos.

A heated discussion started with the Vogts' findings on myelogenesis, opposing the "fibres doctrine" presented by the psychiatrist Paul Flechsig of Leipzig. This work led to the dissertation of Cécile Vogt on the fibre systems in the cat cerebral cortex and to the beginning of architectonics, their central topic in research from then on. In teamwork with Korbinian Brodmann they discriminated a vast number of areas in the cerebral cortex and the thalamus, each with its own characteristic pattern of neurons and fibres. The terms "myeloarchitectonics" and "cytoarchitectonics" were defined. Respective publications followed in 1909 by Brodmann with his famous cytoachitectonical brain maps, and by Cécile (1909) and Oskar Vogt (1910/11) on myeloarchitectonics. The Vogts were attempting to precisely locate those regions in the cerebral cortex that are activated in connection with specific brain functions. The idea of analysing a psychophysical entity by splitting it into subunits also motivated their experimental work on electrostimulation of the cortices in 150 monkeys. Then they correlated the motor effects by architectonic analyses. In 1919 they compiled their findings in a physiological-architectonic map of the brain, whith the morphological areas referring to Brodmann's cytoarchitectonic areal organisation and numbering. From now on comparable cortical maps, even of different species, could be created by using the same numbering system. The modular approach to localization, already incorporating a notion of molecular-biological concepts, was well rooted in its time considering that other scientific disciplines, e.g. the physics of the atoms, postulated similar research principles.

Another important field of research was the examination of motor disturbances brought about by lesions in the extrapyramidal system. While studying the cause of infantile pseudo-bulbar paralysis, Cécile Vogt rediscovered the so-called ‘status marmoratus’ already described by Gabriel Anton in 1896. Whereas Anton’s paper had not attracted the attention of his fellow scientists Cécile’s report (1911) on this syndrome, which affects the corpus striatum, aroused a lively discussion on the pathology of basal ganglia, the functions of which were largely unknown at the time. The Vogts' classical monograph about the diseases of the striatal system appeared in 1920. Among other topics the book contained morphological descriptions of severe disorders such as Huntington’s Chorea or Paralysis agitans. The term “striatal system” was chosen because of the architectonic similarities of the highest subcortical centers, the putamen and the caudate nucleus, and the striatum.

The twenties marked a decade of expansion for the Vogts and their research projects. In 1922 they defined their theory of pathoclisis. Diseases of the nervous system, like other biological processes, are based on structural entities which they called topistic units. If an organism is exposed to an injurious factor, only certain parts of it respond pathologically. They called this tendency to express pathological effects pathoclisis. Brain mapping could offer a chance to classify psychiatric and neurological diseases as topistic cerebral events. In the future chemoarchitectonic mapping would open the door for pharmacological manipulations and causal treatment of diseases located in the brain, they proposed.

Vogt saw an analogy to the principle of specific chemical structures within the topistic units of the brain in the genetically determined variations in the arrangement of body parts in insects. In an attempt to create a synthesis of medical and biological knowledge, Oskar Vogt thought of diseases as special forms of variation.

In 1925 an exceptional chapter of Russian-German history of science began with Oskar Vogt's appointment to Moscow. There he supervised the examination of Lenin's brain during several visits. Supported by soviet ministries as well as the Communist party and with the consent of the German Government, Vogt founded the Moscow **State Institute for**

Brain Research. Until 1930 he functioned as its director, trained Russian researchers in architectonics in Berlin and initiated a collection of sections consisting of the brains of various soviet ethnic groups. The collection was to provide material for registering racial differences by means of morphological methods. This project was undertaken in cooperation with the Department of Racial Research and received German financial support until 1933.

The inauguration of the imposing **KWI for Brain Resarch** in 1931 marked a climax in the Vogt's careers. The multivalent research ideas they had proposed at the turn of the century were realised in the creation of several departments. In addition to the large department for architectonic studies consisting of Anatomy and Histology, the departments for Electrophysiology, Electro-techniques, Physiology, Chemistry and Pharmacology, Human Genetics, Experimental Genetics, Experimental Variation Studies, Psychology and Phonetics were opened. Affiliated to the Institute in Berlin-Buch were clinical wards of 60 beds to exclusively serve the research programme. The project, which attracted international attention, was financed as a joint venture by the Kaiser-Wilhelm-Gesellschaft and the Rockefeller Foundation as well as by the German Empire, the Prussian State and the City of Berlin.

The Berlin magistrature granted Oskar Vogt the right to examine any psychiatric or neurological patient being treated in a municipal asylum provided the patient consented. Also, provision was made that the brain of such deceased patients would be sent to the KWI by the psychiatric hospitals. These generous allowances by the public health administration were a novelty, driven by political motives of the social hygiene programs of the time.

Irrespective of ideology or nationality, established scientists and medical doctors had put forth eugenic concepts and promoted their practical application long before national socialism instituted selection and killing programs.

In Berlin-Buch as well as in Moscow so-called elite brains were collected in an effort to find the morphological substrate for outstanding talents in the sense of intellectual achievements and psychic endowments. Consequently scientific interest also turned to the so-called degenerated

types. Developping eugenic methods to biologically prevent crimes and mental illnesses on the one hand and the possibility of achieving genetic betterment of the human race ("Höherzüchtung des Menschen", O. Vogt) on the other were considered valid research undertakings, also within the KWI.

It would be short-sighted to confuse the Vogts' personal disputes concerning the ideology and racial policies of the national socialists, which indeed led to massive intrigues against them and finally to the dissolution of Oskar Vogt's lifelong contract with the Kaiser-Wilhelm-Gesellschaft in 1936, with the scientific discussions of the period.

The establishment of the German Brain Research Company, funded by the Krupp family and the Vogts' own capital, enabled them to set up their **Institute for Brain Research and General Biology** in Neustadt in 1936/37. The location of the small town in the Black Forest was conveniently close to the Swiss border as well as to the universities of Freiburg i.Br., Basle, Zurich and Strasbourg. There the Vogts and their co-workers were relatively safe from national socialist interventions or aerial warfare.

During the French Military Government and the first decade of the Republic of Germany the Institute was confronted with financial problems. More often than once the Vogts considered relocating the Institute with the collection of brain slides, regarded as unique, to a foreign country. After the failure of extensive negotiations with the ministries of Baden and the Max Planck Society (Max-Planck-Gesellschaft) which functioned as a legal successor to the dissolved Kaiser-Wilhelm-Gesellschaft, the Medical Academy of Düsseldorf acquired the Institute in 1965 with the help of a donation from Thyssen. In 1971 the Institute, under the directorship of Adolf Hopf, moved to the new campus of the University. Today it is still located there and bears the official name **C. and O. Vogt Institute for Brain Research**.

The Vogts continued their work on the architectonics of the thalamus and brain-morphogenesis in Neustadt during World War II. During the post-war years they employed new histochemical techniques to answer questions on the cytological details of neurons. They examined the nucleolus of nerve cells and its role in regenerating the Nissl substance. With their last project they aimed at gaining insights into the histo-

pathological morphology of schizophrenia, an approach to the problem which still is as controversial as it was then. Also, the Vogts explored the process of ageing in the brain and maintained that activity delays ageing. Their own scientific work spanned their entire lives and seems to prove this assertion.

The archives give a strong impression of the Vogts' enormous efforts and meticulous research, but it is the brain collection that best mirrors the quality of obsession, with which they strived to unveil the human brain's enigmas. The final aim was no less than to improve conditions of mankind.

The Vogts belonged to that part of the scientific community which satisfied the materialistic imperatives of the natural sciences of the times. They believed in a continous methodic progress, exact and empirically proved, and thus the enlightenment of cerebral structure-function-interrelationship by a "future brain research" (O. Vogt) – a theory strictly opposed by John Eccles with his neurophilosophical principle of "dualistic interactionism".

Our time's renaissance of structural-functional brain mapping with its new imaging and receptor techniques, and the impact of modern neuroscience on our perception of man - or the self and its brain - make research of the Vogts' achievements more than mere historiographical work.

References

Vogt, Cécile and Oskar, Scientific papers and publications, preserved in the *C. and O. Vogt Archives and Library*, Heinrich Heine Universität, Düsseldorf.

Brodmann, Korbinian: *Vergleichende Lokalisationslehre der Großhirnrinde in ihren Prinzipien dargestellt auf Grund des Zellenbaues* [Comparative Localization Theory of the Cerebral Cortex], (Barth, Leipzig 1909).

Eccles, John C.: Wie das Selbst sein Gehirn steuert [How the Self controls its Brain], (Piper, München 1994).

Grell, Ursula: On the History of the C. and O. Vogt Institute for Brain Research, *Fol. Anat.* 25 (1997), 17-24.

Grell, Ursula: Around Brodmann's map – a selective historial view on architectonic enterprises and personal connections, In *Book of Abstracts - First Vogt-Brodmann-Symposion* (Düsseldorf 1999), xii-xvii.

Grell, Ursula: Exhibition to the First Vogt-Brodmann-Symposion, Düsseldorf 1999.

Grell, Ursula: Empirism and Modernity in the Brain Research of Cécile and Oskar Vogt in the Berlin of the Twenties (discussion paper, Lausanne 1999).

Hassler, Rolf: Cécile und Oskar Vogt. In Kurt Kolle (ed.), *Große Nervenärzte* [Famous Neurologists] (Thieme, Stuttgart, 1959), Vol. 2, 45-65.

Hopf, Adolf: Oskar Vogt. 100th Anniversary of his Birthday, *J. Hirnforsch.* 12, 1-10 (1970)

The Convergence of Structure and Function - Second Vogt-Brodmann Symposium, Book of Abstracts (Jülich 2004).

Vitae academicae of Cécile and Oskar Vogt

	Cécile Vogt née Mugnier	**Oskar Vogt**
1870		Born in *Husum*, April 6th
1875	Born in *Annécy*, March 27th	
1888-1894		Student of Medicine and Psychology in *Kiel* and *Jena*; Hypnotherapy *Zurich* (Forel)
1893	Bacc., Student of Medicine *Paris*	
1894-1895		MD, licensure; Ass. Univ. *Leipzig* (Flechsig)
1898		Neurologische Zentralstation (priv. Neurological Center) founded in *Berlin*
1898	Laboratory work Univ. *Paris, France*	
1899	Marriage in *Berlin, Germany*	
1900	MD, licensure	
1902-1914	Head resp. vol. Ass. of Neurobiological Laboratory, associated to Physiol. Institute of *Berlin* Univ.	
1914-1937	Director resp. Head of Dept. of the Kaiser-Wilhelm-Inst. (KWI) for Brain Research, *Berlin*	
1925-1930	Examination of W.I. Lenin's brain, State Institute for Brain Research in *Moscow, Russia*, estd., first Director	
1931	KWI for Brain Research moved to the new Campus *Berlin-Buch*	
1933-1936	Prosecution by NS regime and suspension for political reasons	
1937	Migration to *Freiburg* i. Breisgau, Foundation of the Brain Research Company and a private Inst. f. Hirnforschung u. Allgemeine Biologie	
1959		Died in *Freiburg* July 31
1962	Moved to her doughter Marthe Vogt died in *Cambridge*, *England* Mai 4	

Vita academica of John Carew Eccles

1903	Born in Melbourne, Australia, January 27th
1925	Bachelor of Medicine (MB) and Surgery (BS), Univ. *Melbourne*
1926-1929	Master (M.A.) and Doctorate (Ph.D.) completed at University of *Oxford,* U.K.
1927-1937	Fellowships, assistant of Prof. C. S. Sherrington, at the University of *Oxford*
1937-1943	Director of Kanematsu Memorial Institute of Pathology, *Sydney,* Australia
1938	Foundation Fellow of the Royal Australasian College of Physicians
1941	Fellow of the Royal Society, London (FRS)
1944-1951	Professor of Physiology at the Univ. of Otago, *Dunedin*, New Zealand
1952-1966	Professor of Physiology, Australian National University *Canberra*
1954	Foundation Fellow of the Australian Academy of Science
1957-1961	President of the Australian Academy of Science
1958	Knight Bachelor (Sir)
1963	Nobel Prize Physiology & Medicine (with A.L. Hodgkin and A.F. Huxley)
1966-1968	Senior Researcher at the Institute for Biomedical Research, *Chicago,* U.S.A.
1968-1975	Distinguished Professor of Physiology and Biophysics, NY State Univ. *Buffalo*
1975-1997	Senior scholar and author living in *Ticino*, Switzerland, died May 2nd, 1997.

Medizinische Fakultät
Institut für Geschichte der Medizin

HEINRICH HEINE
UNIVERSITÄT DÜSSELDORF

Institute for the History of Medicine, John C. Eccles Archive
www.uniklinik-duesseldorf.de/medizingeschichte

To the Board of the
John C. Eccles Archive
Inst. f. History of Medicine, Heinrich-Heine-University
Universitaetsstr. 1
D-40225 Düsseldorf
Germany

Email: BibGeschMed@uni-duesseldorf.de
Phone: +49-(0)211-81-13945; Fax: +49-(0)211-81-13949

Application for Use

Family **name**, given name:

Profession, academic title:

Private address:

E-Mail:

Institution, address:

I hereby apply for permission to use the John Eccles Archive *asking for insight into unpublished material.*
Subject and purpose of research:

Schedule of archival work:

Records / correspondence applied for (names of correspondents incl. years of birth / death on a separate list):

I intend to use technical devices: □ *laptop,* □ *camera,* □ *other ……*
My research topic can be made available to other users of this archive: □*Yes /* □*No*
I consulted the online repository www.kalliope-portal.de ~Eccles*:* □*Yes /* □*No*
A voucher copy of each publication based on the archive material will be made available to the Eccles Archive free of charge: □*Yes /* □*No*

Declaration: *I read the Bylaws of the John C. Eccles Archive and approve them. I commit myself to comply with copyright and data privacy regulations, as well as moral and personality rights. I clear the Eccles Archive from liability for violations. Any private data gained from the Eccles Archives will be used only in code.*

Place, date and signature
of the researcher / advisor

Cécile und Oskar Vogt-Institut für Hirnforschung GmbH, Düsseldorf
Direktor: Univ.-Prof. Dr. med. Karl Zilles

An die
Leitung des Cécile und Oskar Vogt-Archivs
Universitätsklinikum Düsseldorf
Moorenstr. 5 (Geb. 22.03)
D-40225 Düsseldorf
Telefon: +49-(0)211-81-14899 /-12777; Fax: +49-(0)211-81-12336

CÉCILE UND OSKAR VOGT-ARCHIV

Benutzungsantrag

Vor- und Zuname:

Beruf:

Staatsangehörigkeit:

(Heimat-) Anschrift/ Telefon/ Fax/ E-Mail:

und Düsseldorfer Anschrift (bei Auswärtigen)

Benutzungsthema:

Auftraggeber (mit Anschrift), wenn Benutzung nicht ausschließlich in eigener Sache erfolgt. Bei Master-( ), Examens-( ), Doktor-( ) u. sonstigen Prüfungsarbeiten( ) Angabe des betreuenden Dozenten:

Referenzen:

Ich habe dieses Archiv bereits im Jahre …..... genutzt. Wegen des aktuellen Nutzungsvorhabens habe ich zuvor schriftlich/telefonisch angefragt bzw. mich zur persönlichen Benutzung angemeldet: ja ( ) / nein ( ).
Benutzungszweck: dienstlich ( ), wissenschaftlich ( ), gewerblich ( ), ( ) .....

Erklärung: Die Benutzungsordnung habe ich zur Kenntnis genommen und verpflichte mich, ihre Bestimmungen einzuhalten. Urheber- und Persönlichkeitsrechte, vor allem das Datenschutzrecht, sowie die berechtigten Interessen Dritter werden von mir beachtet. Bei Verletzung dieser Rechte stehe ich dafür selbst ein. Namen von Personen, deren Einverständnis mit der Publikation nicht vorausgesetzt werden kann, werde ich gegebenenfalls nur in verschlüsselter Form wiedergeben. Ich bin bereit, von jeder Arbeit, für die Archivalien des Vogt-Archivs benutzt worden sind, bei Veröffentlichung unaufgefordert ein Belegexemplar oder, wenn keine Publikation erfolgt, eine Kopie kostenlos an das Archiv abzugeben: ( ) ja / ( ) nein

Ort, Datum, Unterschrift

Cécile und Oskar Vogt-Archiv
Benutzungsordnung

1. Zur **Archivbenutzung** kann zugelassen werden, wer einen bestimmten wissenschaftlichen bzw. publizistischen Zweck verfolgt oder ein rechtliches Interesse an der Einsichtnahme in Archivalien geltend macht, ferner die Gewähr zur Einhaltung dieser Ordnung bietet. Die Benutzung zu diesen Zwecken ist gebührenfrei.
2. Auf Verlangen muss sich der **Antragsteller** (Mindestalter 18 Jahre) über seine Person ausweisen. Die Archivleitung kann außerdem die Vorlage einer Empfehlung verlangen. Werden andere Personen als Hilfskräfte oder Beauftragte zu seinen Arbeiten herangezogen, so ist auch von ihnen ein eigener Antrag zu stellen, der vom Hauptantragsteller gegenzuzeichnen ist. Ausländer sind Deutschen im Sinne des Artikels 116 GG gleichgestellt, doch kann die Archivalienbenutzung durch ausländische Staatsbürger eingeschränkt oder versagt werden, wenn keine Gegenseitigkeit gewährleistet ist.
3. Der **Benutzungsantrag** ist schriftlich zu stellen (Vordruck). Er muss genaue Angaben über das Thema des Antragsteller enthalten; allgemein formulierte Gesuche um Einsichtnahme in ganze Abteilungen des Archivs sind unzulässig. Wechselt das Arbeitsthema, ist ein neuer Benutzungsantrag zu stellen.
4. Über den Benutzungsantrag entscheidet die Archivleitung. Die Genehmigung gilt jeweils für das laufende Kalenderjahr. Eine einmal erteilte - gegebenenfalls mit Auflagen versehene **Genehmigung** - kann jederzeit, insbesondere bei Verstößen gegen die Benutzungsordnung, wieder entzogen werden. Ausgenommen von der allgemeinen Benutzung sind Archivbestände, die noch einer Sperrfrist oder besonderen Schutzbestimmungen unterliegen, die berechtigte Interessen Dritter gefährden könnten und die wegen ihres schlechten Ordnungs- oder Erhaltungszustandes nicht vorlagefähig sind.
5. Die **Vorlage der Archivalien** erfolgt - nach dem Ermessen der Archivleitung entweder im Original, in Abschriften oder Kopien - nur in den dafür vorgesehenen Räumen, wo der Besucher fachkundig beraten wird; auf weitergehende Hilfen besteht kein Anspruch. Archivalien,

Findhilfsmittel und Bücher des Archivs dürfen aus diesen Räumen nicht entfernt werden. Gleichzeitig werden nur so viele Archivalien vorgelegt, dass eine Vollständigkeitskontrolle bei Rückgabe möglich bleibt. Die Vorlage kann ganz abgelehnt werden, wenn die mit der Benutzung verfolgten Zwecke auch durch die Einsichtnahme in Druckschriften erreicht werden können oder die Ermittlung eines Archivals unverhältnismäßigen Aufwand erfordert.

6. Der Archivbesucher ist im **Umgang mit Archivalien** und Findbüchern zu größter Sorgfalt verpflichtet und haftet für jede Fahrlässigkeit. Ihm sind eigenmächtige Veränderungen daran, wie An- und Unterstreichungen, Vermerke oder Zeichen irgendwelcher Art untersagt; die Anfertigung von Handpausen sowie die Anwendung von Quarzlampen oder chemischen Reagenzien sind nicht zulässig. Die Ordnung der Archivalien darf nicht eigenmächtig geändert werden. Der Benutzer muss ihren Zustand beim Empfang sofort überprüfen und etwaige Schäden unverzüglich anzeigen, andernfalls kann er zum Kostenersatz (Restaurierung) herangezogen werden. Die Verwendung eigener Geräte wie z.B. Schreib- und Rechenmaschinen, Sprechgeräte, Foto- und Filmapparate sowie Computer bedürfen besonderer Genehmigung.
7. Eine **Ausleihe** von Archivalien und Büchern findet grundsätzlich nicht statt. Über Ausnahmen in besonders begründeten Fällen (z.B. für den Leihversand von Ausstellungsstücken) entscheidet die Archivleitung.
8. Fotografische, elektrostatische oder auf anderem Wege herzustellende **Reproduktionen** von Einzelstücken - nicht ganzer Akten oder Reposituren - sind genehmigungspflichtig. Sie können auf schriftlichen Antrag (Vordruck) gegen Entrichtung der Gebühren angefertigt werden. Eine Vorauszahlung der Gebühren kann verlangt werden. Sie sind ausschließlich für den persönlichen Gebrauch (Arbeitskopien) bestimmt und dürfen daher nur für den beantragten Zweck ausgewertet, ferner nicht an Dritte weitergegeben werden. Ihre Veröffentlichung unter Angabe der Herkunft bedarf der ausdrücklichen Zustimmung der Archivleitung. Alle Namen von Personen, die oder deren Rechtsnachfolger sich nicht schriftlich mit einer Veröffentlichung des Namens einverstanden erklärt haben, sind vor einer Publikation fotokopierter Dokumente oder deren Abschriften unkenntlich zu machen. Der Benutzer ist darü-

berhinaus verpflichtet, von ihm angefertigte Auszüge oder Abschriften von Archivalien vor ihrer Weitergabe oder Veröffentlichung auf Anforderung der Leitung des Archivs zur Überprüfung vorzulegen und etwaigen Beanstandungen nachzukommen.

9. Die bei der Akteneinsicht gewonnenen **Kenntnisse** dürfen nur im Rahmen der im Antrag genannten (wissenschaftlichen) Arbeit verbreitet werden. Sofern sie nicht dafür verwertet worden sind, dürfen sie nicht an andere als die mit der Arbeit unmittelbar befassten Personen weitergegeben werden.
10. Diese **Benutzungsordnung** tritt am 1.1.1997 in Kraft.

John C. Eccles Archive
Bylaws[1]

1. For **use** of the archive, readers persuing a certain scholarly issue or proving legal interest in the records can be admitted if they acknowledge and comply with the regulations. For these purposes use is free of charge.
2. The **applicant** (minimum age 18 years) has to identify himself upon request, moreover the archive can ask for references. For each person a separate application is needed, which in case of assistants has to be signed by their employer also. In principle, equality is granted for all nationalities.
3. A written **application** (form) is necessary comprising a concrete research issue; general requests for seeing archival files cannot be allowed. In case of change of the topic a new application is required.
4. The Board of the Archive decides upon the application. Their **permission**, from case to case under certain conditions, is valid for the calender year and can be withdrawn at any time, especially in case of violation of these bylaws. Records under retention period or special precaution with regards to third persons, as well as documents in a questionable state of conservation or order cannot be used.

[1] Analogous to the bylaws of the Cécile and Oskar Vogt Archive dated 1.1.1997, see above.

5. The archival records can be **presented** as original documents or copies, where necessary with obliterations, in the designated room from which no documents shall be removed by the readers. The amount of archival material presented is restricted according to the possibilities of control. The presentation of archival material can be denied if the purpose of research can also be accomplished by use of publications.
6. Readers are to **handle the archival material with care** and are liable for any damage. All kinds of marking up, labelling or changing the text of records are strictly forbidden. Chemicals or other devices endangering the conservational status are prohibited. Standard equipment is paper and pencil, no rubber; the use of technical instruments such as computers or cameras has to be applied for. In case some archival material appears to be damaged the user has to inform the archivist immediately.
7. In principle material from the Eccles Collection is **not destined for loan.** The board decides about any exception upon request and statement of grounds (e.g. borrowing for an exhibition with special regards to transport, insurance etc.).
8. **Copies** of single archival documents, no complete files, can be ordered in writing according to the scale of fees (form). Further use or reproduction other than for the use permitted are not allowed. Names of persons, who or whose heirs have not agreed in writing, must not be published and shall be obliterated. Users can be asked to display transcriptions or copies made by them and have them corrected by the archivist.
9. Knowledge gained by archival studies shall be kept **confidential** and only be used in the framework of the (scholarly) works permitted.
10. These **bylaws** come into force on 8.8.2011.

John Eccles' private Library

by Ulrich Koppitz, Marita Bruijns-Pötschke, Asli Cevahir,
Paula Elsholz, Anika Schürmann, Daniel Vienken

One of the hardest tasks for the historians working on the heritage of John Eccles was to care for the library, or rather to take the decision to start with the publications in spite of the desire to see the unpublished material.

However, sorting some 287 removal-boxes it soon became clear, that the private library would be of enormous help to the sorting of the manuscripts later. Moreover, some manuscripts and correspondence were stored in the library enclosed in the corresponding books, and several books bear hand-written annotations.[1]

Library	**Open Stacks**	**Stored**
Books (N=2445)	72,8% (N=1788)	27,2% (N=667)
Extensive notes	3% (N=52)	0
Annotations	14% (N=244)	4% (N=30)
Papers included	18% (N=325)	11% (N=74)
Dedication	10% (N=184)	9% (N=63)

Thus, a systematics was developed to provide a reasonable portion of his impressive private library on open stacks. According to the German regulation for private archives,[2] collections and works are to be separated, so that all works and publications by John Eccles himself are labeled in category 1, whereas other books belong to category 4. Original editions of his books and their translations are labeled according to sequence and language, also re-editions and volumes if necessary.[3]

[1] For example, in his own copy of the Festschrift dedicated to him 1984 he amended the caption of the photograph page 411 that it was taken in Dunedin 1951 already and not in "Canberra 1953/54". Material from books is filed separately with notes indicating these interrelations, cf. chapter about The Archives and Kalliope.

[2] Regeln zur Nachlass-Archivierung (RNA), vgl. www.nachlassdatenbank.de

[3] Thus, all translations into Italian bear label 1B-i, with the following numbers parallel to the original sequence of publications, e.g.: [1B-i15] = Karl R. Popper and John C. Eccles: *L'Io e il Suo Cervello,* 1st, ed, 3 vols. Rome 1981 of their classic *The Self and Its Brain*, divided further into reprint editions and volumes. Translations include Chinese (c), French (f), German (g), Italian (i), Japanese (j), Korean (k), Portuguese

Many contributions by himself to conference or edited volumes have been discovered among the voucher copies labeled 1C, so that some improvements to the list of his publications could be achieved.[4]

Labels	Description	Number
1A-	*Articles by John Eccles, bound in series*	*602*
1B-a	*Books published by Eccles, orig. edition*	*29*
1B-c /f/g/i/j/k/p/s	*Translations, re-editions etc.*	*41*
1C-	*Books with contributions by Eccles*	*143*
4B-1000s	Fields of own publications (neuroscience, anthropology etc.)	963
4B-2000sq	Secondary literature biographical (books)	4
4B-3000sq	Science in general	76
4B-4000sq	Humanities in general	285
4B-5000sq	Biographies	175
4B-6000sq	Illustrated volumes biographical	94
4B-7000sq	Belles-lettres	356
4B-8000sq	Illustrated volumes in general, arts and travel	311

Over the decades, John Eccles must have spent a fortune in subscriptions to dozens of scientific journals,[5] and he constantly voiced his sympathy with long-time perspectives, books and libraries:[6]

"[…] Even with these facilities there is a serious failure of historical scholarship in our present scientific literature. References are usually restricted to the immediate past - 5 to 10 years at most. The consequences are that most young scientists lack perspective in their work. […] After more than 50 years of scientific publication I am sensitive to the prevailing ignorance that there is of the historical developments that have led

(p), Russian (r) and Spanish (s) editions. Compare labels [in brackets] of the chapter *Catalogue raisonnée* in this booklet or the chronological List of Publications online.

[4] Compare the following chapter *About the Revised List of Publications* in this booklet.

[5] The journals are unbound and stored in the institute, users are refered to the library copies of these journals in the Universitaets- und Landesbibliothek Düsseldorf.

[6] Quoted from: John C. Eccles, In praise of books. In: *Für Klaus Piper zum 70. Geburtstag* (Piper, Munich 1981), 48-50, here: 48, 50.

over the last few decades to our present knowledge and understanding." "[…] The doom prophecies of the futorologists should not panic us into a technology where computer storage replaces books. Let us remember the joy of owning a personal library for browsing in, for reading again some treasured work and for searching in for ideas and inspirations in one's own cultural life. […] So in writing my paean of praise of books, I add my plea for conservation."

In comparison with some scholars of the former generation, Charles Scott Sherrington or William Osler, John Eccles was not a collector of bibliophile volumes, he laid emphasis more on the contents than value of his book collection. Published in the 20th century mostly after 1950, his books served the needs of the corresponding period in life, from text-books and literature purchased by the young researcher in Oxford over specialist and conference volumes added afterwards to a large interdisciplinary collection, often with dedications to the senior scholar.

Personal relationship and most valuable research information combined the scholarly offprint culture especially with regard to overseas correspondence up to the third quarter of the 20th century. Thus an interesting part of the private library is the offprint collection focussing on a sample of colleagues, some of which even sent their collected works bound in series.[7]

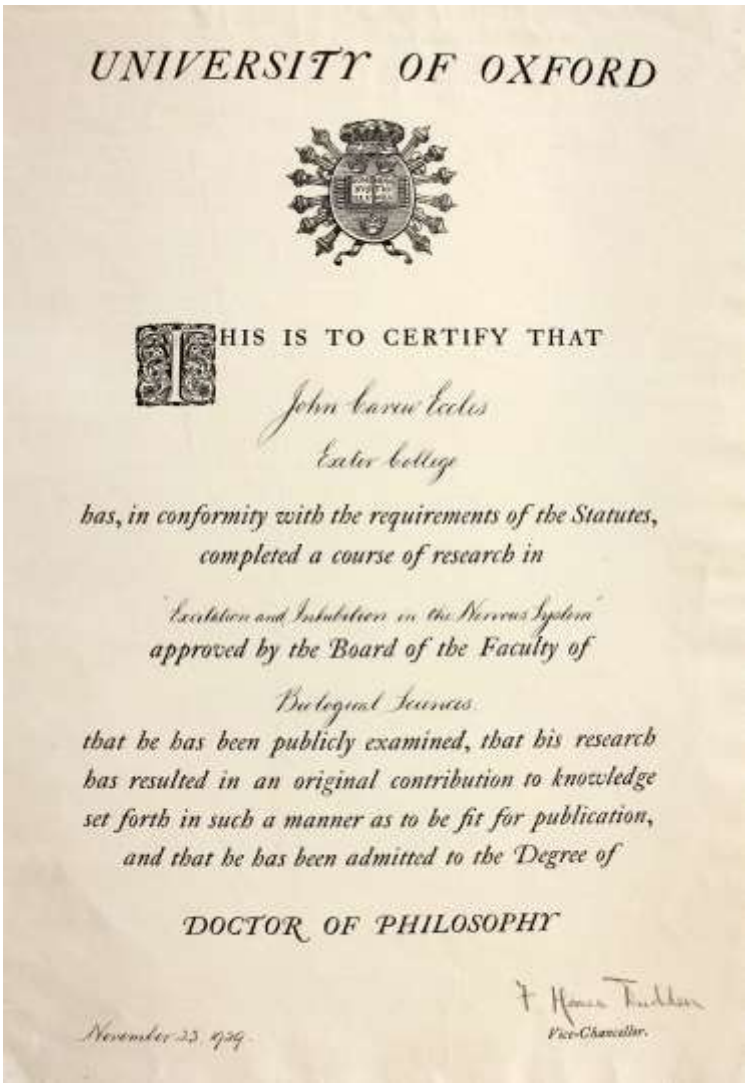
Since summer 2010, John Eccles' private library is open to scientific use in a separate room of the Library of the Institute for the History of Medicine in Düsseldorf, together with the historical library of the Cécile and Oskar Vogt Institute for Brain Research. With this background and at the original desk the archival material can be studied.[8]

[7] The offprint collection is labeled 4A- focussing on Altman, Andersen, Bardis, Bishop, Brodal, Brooks, Changeux, Cotman, Desmedt, Doty, Hökfelt, Hubel, Ito, Jones, Jung, Karczmar, Katz, Keynes, Kandel, Kornhuber, Krnjevic, Kuffler, Libet, Lundberg, Miledi, Mountcastle, Oscarsson, Philipps, Porter, Roland, Sperry, Stephan, Strata, Szentagothay, Tobias, Walberg, Weiss, Willis and Wilson.

[8] The library can be studied on appointment, for the archival material an application form will be requested – all information and catalogues online at www.uniklinik-duesseldorf.de/eccles.

Nothing can advertise such an inspiring work-place better than a quotation from John Eccles' biographical article published 1977:[9]

"[…] The last journey of my odyssey is now ended, again across the ocean to Europe […]. I have here all my books and journals - many thousands of volumes and a large collection of reprints, so that I can continue my academic life, concentrating on the field that lured me into neurophysiology over 50 years ago - the mind-brain problem."



UNIVERSITY OF OXFORD

THIS IS TO CERTIFY THAT

John Carew Eccles

Exeter College

has, in conformity with the requirements of the Statutes, completed a course of research in

Excitation and Inhibition in the Nervous System

approved by the Board of the Faculty of

Biological Sciences

that he has been publicly examined, that his research has resulted in an original contribution to knowledge set forth in such a manner as to be fit for publication, and that he has been admitted to the Degree of

DOCTOR OF PHILOSOPHY

November 23, 1939

Vice-Chancellor.

[9] Quoted from: John Eccles, My Scientific Odyssey. In: *Annual Review of Physiology* 39 (1977), 1-18, 17. Two more autobiographic articles exist: John Eccles: Under the spell of the synapse. In F. Worden et al. (eds.): *The neurosciences: paths of discovery* (Cambridge, Ms 1975), 159-179; John Eccles: The human mystery: a lifelong search for truth. In *Civitas* 38 (1983), 301-305; moreover passages in articles about Charles Sherrington, Karl Popper and the Publishers Götze, Piper and Weidmann.

About the Revised List of Publications by John C. Eccles

by Ulrich Koppitz, Carsten Isberner,
Karl-Heinz Kuhlmann, Isabell Pieper-Scholz

The private library owned by John Eccles comprised the offprint collection of articles authored by himself bound in series as well as numerous voucher copies of books. Under these favourite circumstances, over 60 additional entries and ca. 220 bibliographical specifications could be achieved in comparison to the already comprehensive bibliography published by the Australian Academy of Science.[1] Most additional contributions have been discovered in edited volumes, e.g. in a publication of lectures titled “Neuroworlds” organized in Düsseldorf.[2]

However, these additional entries should not confuse the original numbers distributed by John Eccles in his own collection bound in series and sent to numerous colleagues, so that in principle the original labels have been maintained and partly extended.[3] Moreover, the books have been labelled differently in their own category 1B, structured in connection with their numerous translations and re-editions.[4] The revised list of publications with 706 bibliographical entries for 631 original works plus translations and re-editions is published as a chronological list online and on the following pages sorted thematically as *Catalogue raisonnée*.[5]

---

[1] Online as well as printed: David Curtis and Per Andersen: John Carew Eccles 1903-1997, *Historical Records of Australian Science*, 13 (2001), 439-473; preliminary bibliographies published in: Otto Creutzfeldt, Robert F. Schmidt and William D. Willis (eds.): *Sensori-Motor Integration in the Nervous System* (Berlin: Springer 1984), 3-15 and: Helena Eccles und Hans J. Biersack (eds.): *Sir John Eccles: in memoriam, a tireless warrior for dualism* (Landsberg: ecomed, 2000), 187-191.

[2] Eccles, John C.: Der Dualismus von "Ich" und Gehirn. In: Jutta Fedrowitz, Dirk Matejovski and Gert Kaiser (eds.): *Neuroworlds: Gehirn - Geist - Kultur* (Frankfurt: Campus 1994), 208-222.

[3] E.g. after discovery of an Italian publication Eccles 1991, after publication number 590 a 590x was inserted for: John C.: L'interazione mente/cervello: Configurazione ultramicroscopica e funzione della corteccia cerebrale. In Giulio Giorello and Piergiorgio Strata (ed.): *L'automa spirituale: menti, cervelli e computer* (Rome, Bari: Laterza 1991), 59-76 [1A-590x].

[4] Cf. Chapter *Library* above, category 1 for own works, 1A means articles, 1B books, 1B-a original editions numbered in sequence etc.

[5] Cf., again, www.uniklinik-duesseldorf.de/eccles.

Searching numerous databases and online catalogues for additional bibliographical data, an effort was made for a more systematic inquiry, a comparison of the revised publication list with results from database research in *Web of Science* incl. *(Old-)Medline* on the one hand and from selected merged online library catalogues on the other.[6]

As presupposed, the online results were, firstly, very good and quick with regards to journal articles, secondly, almost complete but - because of numerous doublettes – not so quick concerning books and translations, but thirdly, rather disappointing with regards to articles in books. The same resulted from multi-database search engines.[7]

Dealing with an author like John Eccles who published widely in science as well as in the humanities, these results are not only of statistical relevance. To highlight the difference between articles and books, the publications can be weighted by pages, and in comparison to 5367 pages found in the *Web of Science* (articles, 38%), our revised list counts 14062 pages altogether in original publications, of course not including translations and re-editions.

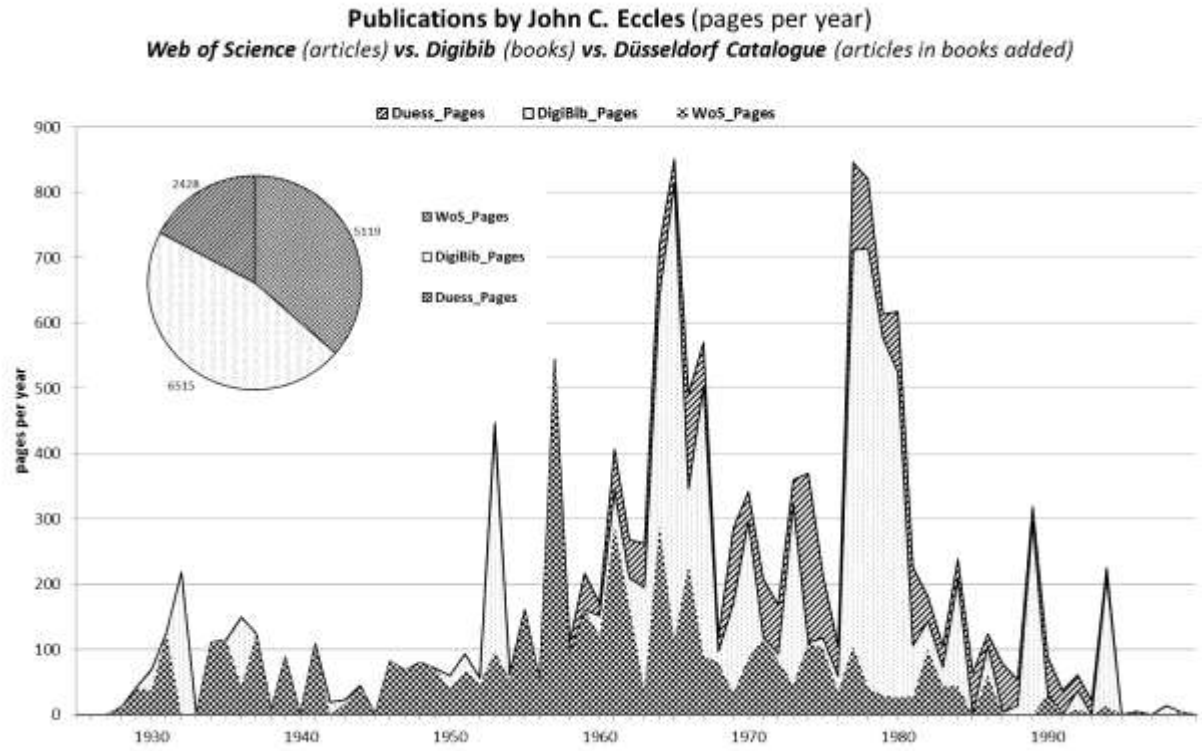
Without going into detail, as an indicator for topics and disciplines, the top ten of co-authorships in both samples reveal significant changes:

Top 10 Co-Authors in Web of Science	**Top 10 Co-Authors in Revised List**
1) TABORIKOVA, Helena (496 pages, 36 publications)	1) POPPER, Karl R. (660 pages, 2 publications)
2) ECCLES, Rose M. (372 pages, 25 publications)	2) MCGEER, Patrick L. (646 pages, 2 publications)
3) COOMBS, Jack S. (308 pages, 14 publications)	3) TABORIKOVA, Helena (515 pages, 43 publications)
4) FATT, Paul (267 pages, 12 publl.)	4) ECCLES, Rose M. (388 pages, 27 publl.)
5) SCHMIDT, Robert F. (260 pp, 17 publl.)	5) ITO, Masao (387pages, 7 publications)
6) SASAKI, Kazuo (226 pages, 13 publications)	6) SHERRINGTON, Charles S. (363 pages, 12 publications)
7) SABAH, Nassir (217 pages, 15 publications)	7) SZENTAGOTHAI, Janos (335 pages, 2 publications)
8) ANDERSEN, Per (193 pp, 16 publl.)	8) COOMBS, Jack S. (313 pp, 18 publl.)
9) LLINAS, Rudolfo (172 pp, 10 publl.)	9) SCHMIDT, Robert F. (275 pp, 26 publl.)
10) CURTIS, David (171 pages, 12 publl.)	10) FATT, Paul (271 pages, 16 publl.)

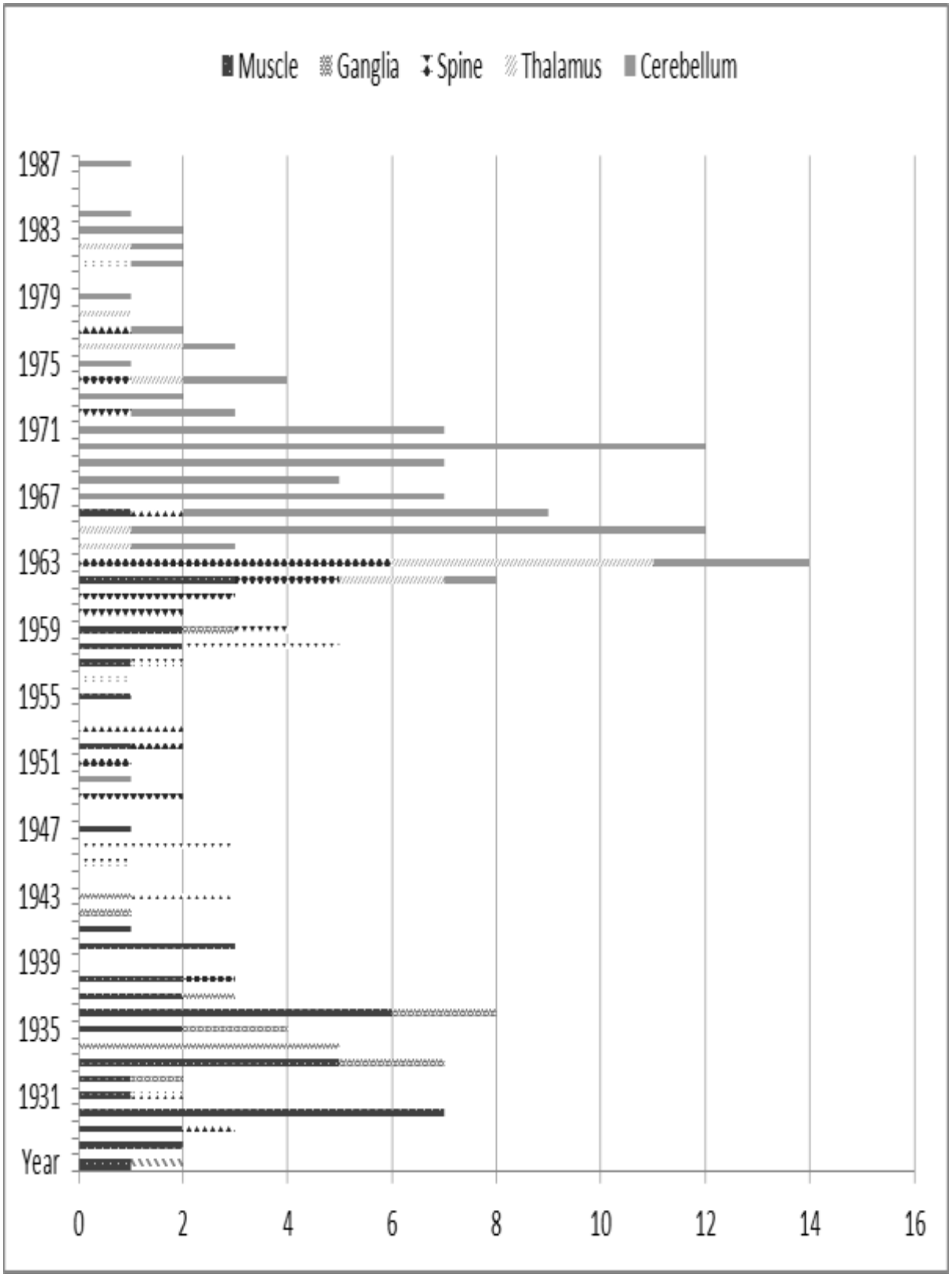
[6] Also with seach engines provided by Google, esp. Google Scholar.

[7] DigiBib (HBZ North-Rhine-Westfalia) was focussed on merged online library catalogues in USA (NLM), UK, Australia, Germany, Italy and Switzerland plus WorldCat.

The following graph illustrates the timeline of change in publication forms chosen by Eccles according to topics and disciplines, and the growing number of books (46% of pages published)[8] and book contributions (17%) after the Nobel prize 1963.
As a result, an interdisciplinary author like John Eccles cannot be characterized from his journal articles only, in quantitative as well as qualitative respects. In a research perspective, further bibliometric inquiries promise interesting comparisons in the fields of citation analyses, affiliations, and networks based on co-authors on the one hand and on the other correspondents in the archival material.[9]
Some features apt for network analyses of personal archives are also provided by the online portal Kalliope. [10]



[8] From merged library catalogues via Digibib, 6515 pages cf. pale zone of graph.
[9] Cp. bibliometric studies compairing publications and correspondence systematically, e.g. Heiner Fangerau: *Spinning the scientific web - Jacques Loeb (1859-1924) und sein Programm einer internationalen biomedizinischen Grundlagenforschung* (Berlin: Akademie-Verlag 2010).
[10] Cf. www.kalliope-portal.de, see chapter below: Prospects - Archives and Kalliope.



Publications per year in selected categories according to the catalogue raisonnée (1.1, 1.3, 1.4, 1.5, 1.6).

Catalogue raisonée of the publications by John C. Eccles

by Isabell Pieper-Scholz, Carsten Isberner, Ulrich Koppitz

The revised list of publications in mere chronological order can be studied at www.uniklinik-duesseldorf.de/eccles ~Eccles' Publications.[1] In addition, the following thematic catalogue reveals coherence and developments more clearly, although many of the 642 titles would rather fit in more than one of the 12 categories chosen:

1.) **Nervous System Physiological Phenomena**

MeSH D009424 [G11.561]: titles 1-73 (published 1929-1994)

1.1) **Muscle** and **Reflex**

D009469/D012098 [A08.800.550.550.550]: titles 74-121 (1928-1963)

1.2) **Neurons**

MeSH D009474 [A08.663]: titles 122-204 (1931-1990)

1.2.1) **Synapses**

MeSH D013569 [A08.850]: titles 205-274 (1930-1986)

1.3) **Ganglia**

MeSH D005724 [A08.340]: titles 275-290 (1933-1960)

1.4) **Spinal Cord**

MeSH D013116 [A08.186.854]: titles 291-330 (1930-1982)

1.5) **Hippocampus** D00624 [A08.186.211.464.405] and **Thalamus**

MeSH D013788 [A08.186.211.730.317.826] : titles 331-344 (1963-1983)

1.6) **Cerebellum**

D002531 [A08.186.211.132.810.428.200]: titles 345-399 (1929-1988)

2.) Humanities [K01] and interdisciplinary works

2.1) **Philosophy**

MeSH D010684 [K01.752]: titles 424-469 (1947-1999)

2.1.1) **Mind-Body-relationship**

MeSH D019222: titles 470-570 (1952-1998)

2.1.2) **Evolution** (Biological: MeSH D005075 [G05.355.044]; Cultural MeSH

D003468 [I01.076.201.450.370] : titles 571-597 (1966-1996)

2.2) **Historiography** MeSH D006663 [K01.400.441] incl. Nuclear Warfare

D009689 [I01.880.735.944.600] : titles 598-642 (1952-1992)

---

[1] In square brackets firstly the label of the library is indicated [1A for articles, 1B for books], secondly the number [N°] of the publication in the chronological list on the website mentioned, where the search engine of the browser can be applied].

Nervous System Physiological Phenomena
MeSH D009424 [G11.561]

1. Eccles, John C. and Charles S. Sherrington: Improved bearing for the torsion myograph. In *Journal of Physiology* 69 (1929), i [1A-004; N° 4]
2. Eccles, John C., Ragnar Granit and John Z. Young: Impulses in the giant nerve fibres of earthworms. In *Journal of Physiology* 77 (1932), 23P [1A-020; N° 21]
3. Eccles, John C. and J. H. C. Thompson: An investigation of the visco-elastic properties of rubber. In *Proc.R.Soc. Lond.A* 148 (1935), 171-185 [1A-030; N° 31]
4. Eccles, John C.: Physical problems in neurology. In *Australian Journal of Science* 4 (1941), 4-8 [1A-062; N° 63]
5. Eccles, John C. and A. James Flynn: Experimental photoretinitis. In *Med. J. Aust.* 1 (1943), 339-342 [1A-069; N° 70]
6. Brooks, Chandler McC. and John C. Eccles: An electrical hypothesis of central inhibition. In *Nature* 159 (1947), 760-764 [1A-079; N° 80]
7. Bradley, K. and John C. Eccles: Strychnine as a depressant of primary inhibition. In *Nature* 171 (1953), 1061 [1A-111; N° 114]
8. Coombs, J. S., John C. Eccles and P. Fatt: The action of the inhibitory transmitter. In *Aust. J. Sci.* 16 (1953), 1-5 [1A-112; N° 115]
9. Bradley, K., D. M. Easton and John C. Eccles: An investigation of primary or direct inhibition. In *Journal of Physiology* 122 (1953), 474-488 [1A-117; N° 120]
10. Brooks, Vernon B., D. R. Curtis and John C. Eccles: Mode of action of tetanus toxin. In *Nature* 175 (1955), 120-121 [1A-122; N° 125]
11. Curtis, David R., John C. Eccles and Rosamond M. Eccles: Pharmacological studies on reflexes. In *American Journal of Physiology* 183 (1956), 606 [1A-130; N° 133]
12. Eccles, John C.: The clinical significance of research work on the chemical transmitter substances of the nervous system. In *Medical Journal of Australia* 44 (1957), 745-753 [1A-141; N° 144]
13. Eccles, John C.: Problems of plasticity and organization at simplest levels of mammalian central nervous system. In *Perspectives in Biology and Medicine* 1 (1958), 379-396 [1A-156; N° 160]
14. Eccles, John C.: Problems in neuropharmacology. In Collegium Internationale Neuro-Psycho-Pharmacologicum (ed.): *Symposia et Conferences Generales* (Elsevier, Amsterdam 1959), 57-58 [1A-173; N° 178]
15. Eccles, John C.: Plasticity at the simplest levels of the nervous system. In James T. Culbertson (ed.): *The centennial lectures commemorating the one hundredth anniversary of E. R. Squibb & Sons* (G.P. Putnam's Sons, New York 1959), 217-244 [1A-174; N° 179]
16. Eccles, John C.: The properties of dendrites. In D.B. Tower and J. P. Schadé (ed.): *Structure and function of the cerebral cortex. Proceedings of the second international meeting of neurobiologists (Amsterdam 1959)* (Elsevier, Amsterdam 1960), 192-203 [1A-185; N° 190]

17. Araki, T., John C. Eccles and Masao Ito: Latency of central inhibition. In *Journal of Physiology* 154 (1960), 29P [1A-188; N° 193]
18. Eccles, John C.: The nature of central inhibition. The Ferrier Lecture. In *Proc.R.Soc.Lond.B* 153 (1961), 445-476 [1A-192; N° 197]
19. Eccles, John C., W. Kozak and F. Magni: Dorsal root reflexes of muscle group I afferent fibres. In *Journal of Physiology* 159 (1961), 128-146 [1A-201; N° 206]
20. Eccles, John C., Rosamond M. Eccles and F. Magni: Central inhibitory action attributable to presynaptic depolarization produced by muscle afferent volleys. In *Journal of Physiology* 159 (1961), 147-166 [1A-202; N° 207]
21. Eccles, John C., Rosamond M. Eccles, Ainsby Iggo and A. Lundberg: Electrophysiological investigations on Renshaw cells. In *Journal of Physiology* 159 (1961), 461-478 [1A-203; N° 208]
22. Eccles, John C.: Homeostatic mechanisms in the nervous system. In C.F. Cori, V.G. Foglia, L.F. Leloir and S. Ochoa (ed.): *Perspectives in Biology* (Elsevier, Amsterdam 1962), 361-368 [1A-223; N° 229]
23. Eccles, John C., Robert F. Schmidt and William D. Willis: Depolarization of central terminals of cutaneous afferent fibres. In *Journal of Neurophysiology* 26 (1963), 646-661 [1A-231; N° 237]
24. Eccles, John C.: Modes of communication between nerve cells. Fourth Matthew Flinders Lecture. In *Australian Academy of Science Year Book* 1963 (1963), 87-107 [1A-234; N° 240]
25. Eccles, John C., Robert Schmidt and William D. Willis: Pharmacological studies on presynaptic inhibition. In *Journal of Physiology* 168 (1963), 500-530 [1A-236; N° 242]
26. Eccles, John C.: Researches on the central nervous system. In *Pontificia Academia Scientiarum Commentarii* 1 (1963), 1-16 [1A-237; N° 243]
27. Andersen, Per, John C. Eccles, Y. Loyning and P. E. Voorhoeve: Strychnine-resistant inhibition in the brain. In *Nature* 200 (1963), 843-845 [1A-238; N° 244]
28. Eccles, John C.: The controls of sensory communication to the brain. In *Australasian Annals of Medicine* 13 (1964), 102-113 [1A-249; N° 255]
29. Eccles, John C.: Inhibitory controls on the flow of sensory information in the nervous system. In R. W. Gerard, J. W. Duyff (ed.): *Information processing in the nervous system* (Excerpta Medica, Amsterdam 1964), 24-40 [1A-256; N° 262]
30. Eccles, John C.: Modes of transmission within the nerve cells and between nerve cells. In Rudolf Zaunick (ed.): *Die Nervenphysiologie in gegenwärtiger Sicht. Nova Acta Leopoldina 28* (Barth, Leipzig 1964), 33-57 [1A-262; N° 270]
31. Eccles, John C.: Some observations on the strategy of neurophysiological research. In Kaare Rodahl and Bela (jr.) Issekutz (ed.): *In: Nerve as a tissue* (Harper & Row, New York 1966), 445-455 [1A-297; N° 311]

32. Eccles, John C., K. Sasaki and Piergiorgio Strata: A comparison of the inhibitory actions of Golgi cells and of basket cells. In *Experimental Brain Research* 3 (1967), 81-94 [1A-306; N° 320]
33. Eccles, John C.: The functioning of neural machinery in the central nervous system. Funktionsweisen des neuralen Mechanismus im Zentralnervensystem. In *Naturwissenschaftliche Rundschau* 20 (1967), 139-151 [1A-308; N° 322]
34. Armstrong, D. M., John C. Eccles, R. J. Harvey and Peter B. Matthews: Responses in the dorsal accessory olive of the cat to stimulation of hind limb afferents. In *Journal of Physiology* 194 (1968), 125-145 [1A-320; N° 334]
35. Eccles, John C.: Chairman's opening remarks. In Gordon Wolstenholme and Maeve O'Connor (ed.): *Growth of the nervous system. A Ciba Foundation Symposium* (Churchill, London 1968), 1-2 [1A-333x; N° 349]
36. Eccles, John C.: *The inhibitory pathways of the central nervous system. The Sherrington Lectures 9, 1966* (Liverpool UP, London 1969). [1A-336; N° 352]
37. Eccles, John C.: Excitatory and inhibitory mechanisms in brain. In Herbert H. Jasper, Arthur A. Ward and Alfred Pope (ed.): *Basic mechanisms of the epilepsies* (Little, Brown & Co, Boston 1969), 229-261 [1A-342; N° 358]
38. Eccles, John C.: The dynamic loop hypothesis of movement control. In K. N. Leibovic (ed.): *Information processing in the nervous system* (Springer, New York, Heidelberg, Berlin 1969), 245-269 [1A-345; N° 361]
39. Eccles, John C.: Preface. In K. N. Leibovic (ed.): *Information processing in the nervous system* (Springer, New York, Heidelberg, Berlin 1969), v-vi [1A-345; N° 362]
40. Eccles, John C., I. Rosén, Peter Scheid and Helena Taborikova: Responses of interpositus cells to stimulation of cutaneous mechanoreceptors. In: *Society for Neurosciences* 1972), [1A-379; N° 399]
41. Eccles, John C.: Trophic influences in the mammalian central nervous system. In Morris Rockstein: *Development and aging in the nervous system. Proceedings of a symposium on the development and aging in the nervous system, Miami, Feb. 19-20, 1973* (Academic Press, New York, London 1973), 89-103 [1A-389; N° 409]
42. Eccles, John C.: Trophic interactions in the mammalian central nervous system. In *Annals of the New York Academy of Sciences* 228 (1974), 406-423 [1A-397; N° 419]
43. Eccles, John C.: The plasticity of the mammalian central nervous system with special reference to new growths in response to lesions. In *Naturwissenschaften* 63 (1976), 8-15 [1A-419; N° 443]
44. Eccles, John C.: The coding of stimulus intensity by the frequency of impulse discharges from receptors. In *Trends in Biochemical Sciences* 1 (1976), 68 [1A-423; N° 447]
45. Eccles, John C.: Hemispheric function in the human brain. In *Perspectives Biol. Med.* 19 (1976), 290-293 [1A-425; N° 449]

46. McGeer, Patrick L., John C. Eccles and Edith G. McGeer: *Molecular neurobiology of the mammalian brain* (Plenum, New York, London 1978). 0306310953 [1B-a16; N° 482]
47. Eccles, John C.: Conclusion du colloque. In Étienne Wolff (ed.): *La transmission neuromusculaire - les médiateurs et le milieu intérieur. Colloque international organisé à l'occasion de la célébration du centenaire de la mort de Claude Bernard 1978* (Masson, Paris 1980), 333-335 [1A-484x; N° 508]
48. Eccles, John C.: Modular organization principles in the central nervous system. Opening remarks. In Janos Szentágothai, J. Hamori and M. Palkovits (ed.): *Advances in Physiological Sciences. Proceedings of the 28th international congress of physiological sciences, Budapest 1980. Volume 2. Regulatory functions of the CNS subsystems.* (Akadémiai Kiadò, Budapest 1981), 55-57 [1A-487; N° 511]
49. Eccles, John C.: Physiology of motor control in man. In *Applied Neurophysiology* 44 (1981), 5-15 [1A-494; N° 517]
50. Eccles, John C.: Closing remarks: towards the illimitable future. In International society for neurochemistry (ed.): *International symposium on nervous system regeneration. Sept 1-5, Univ. of Catania, Medical School. Abstracts of lectures and posters* (University of Catania, Catania 1981), 111 [1A-530x ; N° 554]
51. Eccles, John C.: Voluntary movement. In *Freiburger Universitätsblätter* 74 (1981), 24-28 [1A-502; N° 525]
52. Eccles, John C.: Cerebral mechanisms in pain perception. In *Panminerva Medica* 24 (1982), 1-13 [1A-505; N° 527]
53. Eccles, John C.: The initiation of voluntary movements by the supplementary motor area. In *Archiv für Psychiatrie und Nervenkrankheiten* 231 (1982), 423-441 [1A-508; N° 530]
54. Eccles, John C.: Some circuit operations in the mammalian brain. In *Acta Anatomica* 113 (1982), 325-339 [1A-512; N° 534]
55. Eccles, John C.: Closing remarks: physiology and pharmacology of epileptogenic phenomena. In Manfred R. Klee, H. Dieter Lux and Erwin-J. Speckmann (ed.): *Physiology and pharmacology of epileptogenic phenomena* (Raven, New York 1982), 401-405 [1A-515x; N° 538]
56. Eccles, John C.: Neurobiologia de la intencionalidad: la iniciaciòn des movimientos voluntarios. In *Campus, Revista de la Universidad de Alicante* Primavera (1983), 7-14 [1A-528 ; N° 550]
57. Eccles, John C.: Local cortical Circuits by M. Abeles. Review. In *Naturwissenschaften* (1983), [1A-529 ; N° 551]
58. Eccles, John C.: Foreword. In Fleur L. Strand (ed.): *Physiology: A regulatory systems approach. 2nd edition* (New York, London, Macmillan & Collier 1983), ix [1A-529x ; N° 552]
59. Eccles, John C.: Closing remarks: towards the illimitable future in nervous system regeneration. In B. Haber, J.R. Perez Polo, G.A. Haslim, A.M.G. Stella

(ed.): *Towards the illimitable future in nervous system regeneration* (Alan R. Liss, New York 1983), 397-405 [1A-530 ; N° 553]

60. Eccles, John C.: Voluntary movement. In *Hexagon* 12-5 (1984), 1-9 [1A-541; N° 566]
61. Eccles, John C.: Review of Local cortical circuits by M. Abeles. In *Naturwissenschaften* 71 (1984), 54 [1A-541x ; N° 567]
62. Eccles, John C.: Physiological and pharmacological investigations on pain control. In *Schweizerische Monatsschrift fur Zahnmedizin* 94 Spec No (1984), 1004-1013 [1A-542 ; N° 568]
63. Eccles, John C., Milan R. Dimitrijevic (eds.): *Recent achievements in restorative neurology 1: Upper motor neuron functions and dysfunctions* (Karger, Basel 1985) [1B-a24; N° 575a]
64. Eccles, John C.: Epilogue. In Paul J. Delwaide and A. Gorio (ed.): *Clinical neorophysiology in peripheral neuropathies* (Elsevier, Amsterdam 1985), 165-168 [1A-553 ; N° 580]
65. Eccles, John C.: Learning in the motor system. In *Progress in Brain Research* 64 (1986), 3-18 [1A-563 ; N° 592]
66. Eccles, John C.: Mechanisms of learning in complex neural systems. In (ed.): *Handbook of Physiology, Sect.1. The nervous system, part 1* (American Physiol. Soc., Bethesda 1987), 137-167 [1A-568 ; N° 597]
67. Eccles, John C.: Neurologically effective nerve growths in the mammalian brain: recent work of Tsukahara and Kawaguchi. In Albrecht Struppler and Adolf Weindl (ed.): *Clinical aspects of sensory motor integration (advances in applied neurological sciences 4)* (Springer, Berlin 1987), 317-323 [1A-571 ; N° 602]
68. Eccles, John C. and Otto Creutzfeld (ed.): *Study week on: The principles of design and operation of the brain, October 19-24, 1988. Pontificiae Academiae scientiarum scripta varia 78.* (Libreria Editrice Vaticana, Vatican 1990). 88-77610387 [1B-a26a; N° 617]
69. Creutzfeld, Otto and John C. Eccles (ed.): *The principles of design and operation of the brain: proceedings of a study week organized by the Pontifical Academy of Sciences 1987* (Springer, Berlin 1990). [1B-a26b; N° 618]
70. Eccles, John C. et al.: Concluding comments. In John C. Eccles and Otto Creutzfeld (ed.): *The principles of design and operation of the brain* (Pontificia Academia Scientiarum, Vatican City 1990), 581-589 [1A-585; N° 621]
71. Eccles, John C.: Altered sensation and pain: How pain is generated in the neocortex. In Milan R. Dimitrijevic, B. A. Kakulas and G. Vrbova (ed.): *Recent achievements in restorative neurology 3: Altered sensation and pain* (Karger, Basel 1990), 181-188 [1A-588x; N° 626]
72. Eccles, John C.: How the brain gives the experience of pain. In *International Journal of Tissue Reactions* 16 (1994), 3-17 [1A-598; N° 640]

Muscle, Reflex, neuromuscular junction
MeSH D009469 [A08.800.550.550.550]

73. Creed, Richard S. and John C. Eccles: The incidence of central inhibition on restricted fields of motor units. In *Journal of Physiology* 6 (1928), 109-120 [1A-001; N° 1]
74. Eccles, John C. and Ragnar Granit: Crossed extensor reflexes and their interaction. In *Journal of Physiology* 67 (1929), 97-118 [1A-002; N° 2]
75. Cooper, Sybil and John C. Eccles: Isometric muscle twitch. In *Journal of Physiology* 69 (1929), iii [1A-005; N° 5]
76. Eccles, John C. and Charles S. Sherrington: Numbers and contraction values of individual motor units examined in some muscles of the limb. In *Proc.R.Soc.Lond.B* 106 (1930), 326-357 [1A-007; N° 7]
77. Cooper, Sybil and John C. Eccles: The isometric responses of mammalian muscles. In *Journal of Physiology* 69 (1930), 377-385 [1A-008; N° 8]
78. Eccles, John C. and Charles S. Sherrington: Flexor reflex responses to successive afferent volleys. In *Journal of Physiology* 70 (1930), xxv [1A-009; N° 9]
79. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. I. Latent period. In *Proc.R.Soc.Lond.B* 107 (1931), 511-534 [1A-010; N° 10]
80. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. II. The reflex response evoked by two centripetal volleys. In *Proc.R.Soc.Lond.B* 107 (1931), 535-556 [1A-011; N° 11]
81. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. III. The central effects produced by an antidromic volley. In *Proc.R.Soc. Lond.B* 107 (1931), 557-585 [1A-012; N° 12]
82. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. IV. After-discharge. In *Proc. R. Soc. Lond. B* 107 (1931), 586-596 [1A-013; N° 13]
83. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. V. General conclusions. In *Proc.R.Soc. Lond.B* 107 (1931), 597-605 [1A-014; N° 14]
84. Eccles, John C. and Charles S. Sherrington: Studies on the flexor reflex. VI. Inhibition. In *Proc.R.Soc. Lond.B* 109 (1931), 91-113 [1A-017; N° 15]
85. Eccles, John C. and H. E. Hoff: Stimulation of the pace-maker of the mammalian heart. In *Journal of Physiology* 72 (1931), 31P [1A-016; N° 16]
86. Brown, G. L., John C. Eccles and H. E. Hoff: The action of the vagus on the nodal rhythm of the mammalian heart. In *Journal of Physiology* 75 (1932), 9P-10P [1A-019; N° 20]
87. Eccles, John C.: The effects of eserine and atropine on the vagal slowing of the heart. In *Journal of Physiology* 80 (1933), 25P-26P [1A-022; N° 23]
88. Eccles, John C. and E. Hoff: The rhythm of the heart beat. I. Location, action potential and electrical excitability of the pacemaker. In *Proc.R.Soc.Lond.B* 115 (1934), 307-327 [1A-024; N° 25]

89. Eccles, John C. and E. Hoff: The rhythm of the heart beat. II. Disturbance of rhythm produced by late premature beats. In *Proc.R.Soc.Lond.B* 115 (1934), 327-351 [1A-025; N° 26]
90. Eccles, John C. and E. Hoff: The rhythm of the heart beat. III. Disturbance of rhythm by early premature beats. In *Proc.R.Soc.Lond.B* 115 (1934), 352-368 [1A-026; N° 27]
91. Brown, G. L. and John C. Eccles: The action of a single vagal volley on the rhythm of the heart beat. In *Journal of Physiology* 82 (1934), 211-241 [1A-028; N° 29]
92. Brown, G. L. and John C. Eccles: Further experiments on vagal inhibition of the heart beat. In *Journal of Physiology* 82 (1934), 242-257 [1A-029; N° 30]
93. Eccles, John C. and J. W. Magladery: The action potential of smooth muscle. In *Journal of Physiology* 87 (1936), 57P-58P [1A-036; N° 37]
94. Eccles, John C. and J. W. Magladery: Pharmacological investigations on smooth muscle. In *Journal of Physiology* 87 (1936), 87P [1A-038; N° 39]
95. Eccles, John C. and John W. Magladery: Responses of denervated smooth muscle. In *Journal of Physiology* 89 (1937), 45P-46P [1A-043; N° 44]
96. Eccles, John C. and J. W. Magladery: The excitation and response of smooth muscle. In *Journal of Physiology* 90 (1937), 31-67 [1A-044; N° 45]
97. Eccles, John C. and J. W. Magladery: Rhythmic responses of smooth muscle. In *Journal of Physiology* 90 (1937), 68-99 [1A-045; N° 46]
98. Eccles, John C.: Premature beats and the heart rhythm. In *Journal of Physiology* 90 (1937), 11P-13P [1A-046; N° 47]
99. Brown, G. L. and John C. Eccles: Vagal inhibition of the cardiac pacemaker. In *Journal of Physiology* 90 (1937), 14P-15P [1A-047; N° 48]
100. Eccles, John C.: The responses which nerve impulses evoke in nerve and muscle cells. In *Proc.R.Soc.Lond.B* 123 (1937), 412P-414P [1A-048; N° 49]
101. Eccles, John C. and W. J. O'Connor: Responses evoked by a nerve volley in mammalian striated muscle. In *Journal of Physiology* 94 (1938), 7P-9P [1A-052; N° 53]
102. Eccles, John C. and W. J. O'Connor: Action potentials evoked by indirect stimulation of curarized muscle. In *Journal of Physiology* 94 (1938), 9P-11P [1A-053; N° 54]
103. Eccles, John C. and W. J. O'Connor: The action of eserine on striated muscle. In *Journal of Physiology* 95 (1939), 36P-38P [1A-057; N° 58]
104. Eccles, John C. and W. J. O'Connor: Responses which nerve impulses evoke in mammalian striated muscles. In *Journal of Physiology* 97 (1939), 44-102 [1A-058; N° 59]
105. Eccles, John C.: Changes in muscle produced by nerve degeneration. In *Med.J.Aust.* 1 (1941), 573-575 [1A-060; N° 61]
106. Eccles, John C.: Disuse atrophy of skeletal muscle. In *Med.J.Aust.* 2 (1941), 160-164 [1A-061; N° 62]

107. Eccles, John C. and W. J. O'Connor: Abortive impulses at the neuro-muscular junction. In *Journal of Physiology* 100 (1941), 318-328 [1A-066; N° 67]
108. Eccles, John C., Bernhard Katz and Stephen W. Kuffler: Effect of eserine on neuromuscular transmission. In *Journal of Neurophysiology* 5 (1942), 211-230 [1A-067; N° 68]
109. Eccles, John C.: Investigations on muscle atrophies arising from disuse and tenotomy. In *Journal of Physiology* 103 (1944), 253-266 [1A-073; N° 74]
110. Brooks, Chandler McC. and John C. Eccles: Inhibitory action on a motor nucleus and focal potentials generated therein. In *Journal of Neurophysiology* 11 (1948), 401-416 [1A-085; N° 87]
111. Bradley, K. and John C. Eccles: Analysis of the fast afferent impulses from thigh muscles. In *Journal of Physiology* 122 (1953), 462-473 [1A-116; N° 119]
112. Eccles, John C., P. Fatt and S. Landgren: Central pathway for direct inhibitory action of impulses in largest afferent nerve fibres to muscle. In *Journal of Neurophysiology* 19 (1956), 75-98 [1A-131; N° 134]
113. Buller, A. J., John C. Eccles and Rosamond M. Eccles: Controlled differentiation of muscle. In *Journal of Physiology* 143 (1958), 23P-24 P [1A-159; N° 163]
114. Eccles, John C. and A. W. Liley: Factors controlling the liberation of acetylcholine at the neuromuscular junction. In *American Journal of Physical Medicine* 38 (1959), 96-103 [1A-166; N° 170]
115. Buller, A. J., Rosamond M. Eccles and John C. Eccles: Further observations on the controlled differentiation of muscle. In *Journal of Physiology* 148 (1959), 78 P [1A-176; N° 181]
116. Eccles, John C. and A. W. Liley: Factors controlling the liberation of acetylcholine at the neuromuscular junction. In H. D. Bouman and A. L. Woolf (ed.): *The Utrecht Symposium on the innervation of muscle* (Williams & Wilkins, Baltimore 1960), 50-57 [1A-166x; N° 171]
117. Eccles, John C., W. Kozak and F. Magni: Dorsal root reflexes in muscle afferent fibres. In *Journal of Physiology* 153 (1960), 48P-49P [1A-184; N° 189]
118. Eccles, John C.: Physiological investigations on neuromuscular transmission. In *Dai 16 Kai Nihon Igakuki Sokai Kakujitsu Koenshu* 1 (1963), 656-668 [1A-240; N° 246]
119. Eccles, John C.: Interrelationship between nerve and muscle cell. In Ernest Gutmann and Pavel Hnik (ed.): *The effect of use and disuse on neuromuscular functions* (Czechoslovak Academy of Sciences, Prague 1963), 19-28 [1A-242; N° 248]
120. Eccles, John C.: Specificity of neural influence on speed of muscle contractions. In Ernest Gutmann and Pavel Hnik (ed.): *The effect of use and disuse on neuromuscular functions* (Czechoslovak Academy of Sciences, Prague 1963), 111-128 [1A-243; N° 249]
121. Eccles, John C.: The effect of nerve cross union on muscle contraction. In Ade T. Milhorat (ed.): *Exploratory concepts in muscular dystrophy and related*

disorders. Proceedings of the international conference convened by muscular dystrophy associations of America at Arden House, Harriman, New York, Oct 22-27, 1966 (Excerpta Medica, Amsterdam 1967), 151-160 [1A-317; N° 331]

Neurons

MeSH D009474 [A08.663]

122. Eccles, John C. and H. E. Hoff: Rhythmic responses of motoneurones. In *Journal of Physiology* 71 (1931), xxi [1A-015; N° 17]
123. Eccles, John C. and E. Hoff: The rhythmic discharge of motoneurones. In *Proc.R.Soc.Lond.B* 110 (1932), 483-514 [1A-018; N° 18]
124. Eccles, John C. and J. J. Pritchard: The action potential of motoneurones. In *Journal of Physiology* 89 (1937), 43P-45P [1A-042; N° 43]
125. Brooks, Chandler McC., John C. Eccles and J. L. Malcolm: Responses of inhibited motoneurones. In *Federation Proceedings* 7 (1948), 15 [1A-082; N° 84]
126. Brooks, Chandler McC. and John C. Eccles: Inhibition of antidromic responses of motoneurones. In *J.Neurophysiol.* 11 (1948), 431-444 [1A-087; N° 89]
127. Barakan, T. H., C. B. B. Downman and John C. Eccles: Electric potentials generated by antidromic volleys in quadriceps and hamstring motoneurones. In *Journal of Neurophysiology* 12 (1949), 393-424 [1A-089; N° 91]
128. Eccles, John C.: The responses of motoneurones. In *British Medical Bulletin* 6 (1950), 304-311 [1A-093; N° 95]
129. Eccles, John C. and W. Rall: Post-tetanic potentiation of responses of motoneurones. In *Nature* 166 (1950), 465-466 [1A-094; N° 96]
130. Downman, C. B. B., John C. Eccles and A. K. McIntyre: Responses of motoneurones undergoing chromatolysis. In *Proceedings of the University of Otago Medical School* 29 (1951), 4-5 [1A-096; N° 98]
131. Brock, L. G., J. S. Coombs and John C. Eccles: Action potentials of motoneurones with intracellular electrodes. In *Proceedings of the University of Otago Medical School* 29 (1951), 14-15 [1A-098; N° 100]
132. Brock, L. G., John C. Eccles and W. Rall: Experimental investigations on the afferent fibres in muscle nerves. In *Proceedings of the Royal Society of London Series B, Containing Papers of a Biological Character* 138 (1951), 453-75 [1A-099; N° 101]
133. Eccles, John C. and W. Rall: Repetitive monosynaptic activation of motoneurones. In *Proc.R.Soc.Lond.B* 138 (1951), 475-498 [1A-100; N° 102]
134. Brock, L. G., J. S. Coombs and John C. Eccles: The recording of potentials from motoneurones with an intracellular electrode. In *Journal of Physiology* 117 (1952), 431-460 [1A-103; N° 105]

135. Eccles, John C.: The electrophysiological properties of the motoneurone. In *Cold Spring Harbor Symposia on Quantitative Biology* 17 (1952), 175-183 [1A-107; N° 110]
136. Downman, C. B. B., John C. Eccles and A. K. McIntyre: Functional changes in chromatolysed motoneurones. In *Journal of Comparative Neurology* 98 (1953), 9-36 [1A-108; N° 111]
137. Brock, L. G., J. S. Coombs and John C. Eccles: Antidromic propagation of impulses into motoneurones. In J. L. Malcolm (ed.): *The Spinal Cord. Ciba Foundation Symposium* (Churchill, London 1953), 120-129 [1A-110; N° 113]
138. Brock, L. G., J. S. Coombs and John C. Eccles: Intracellular recording from antidromically activated motoneurones. In *Journal of Physiology* 122 (1953), 429-61 [1A-115; N° 118]
139. Eccles, John C.: The central action of antidromic impulses in motor nerve fibres. In *Pflügers Archiv - European Journal of Physiology* 260 (1955), 385-415 [1A-123; N° 126]
140. Coombs, J. S., John C. Eccles and P. Fatt: The electrical properties of the motoneurone membrane. In *Journal of Physiology* 130 (1955), 291-325 [1A-125; N° 128]
141. Coombs, J. S., John C. Eccles and P. Fatt: The specific ionic conductances and the ionic movements across the motoneuronal membrane that produce the inhibitory post-synaptic potential. In *Journal of Physiology* 130 (1955), 326-374 [1A-126; N° 129]
142. Coombs, J. S., John C. Eccles and P. Fatt: Excitatory synaptic action in motoneurones. In *Journal of Physiology* 130 (1955), 374-395 [1A-127; N° 130]
143. Coombs, J. S., John C. Eccles and P. Fatt: The inhibitory suppression of reflex discharges from motoneurones. In *Journal of Physiology* 130 (1955), 396-413 [1A-128; N° 131]
144. Coombs, J. S., John C. Eccles and P. Fatt: The ionic permeability of the motoneurone membrane. In *J.Cell.Comp.Physiol.* 46 (1955), 362-363 [1A-129; N° 132]
145. Eccles, John C., P. Fatt and S. Landgren: The inhibitory pathway to motoneurones. In *Progress in Neurobiology* (1956), 73-82 [1A-133; N° 136]
146. Coombs, J. S., D. R. Curtis and John C. Eccles: Time courses of motoneuronal responses. In *Nature* 178 (1956), 1049-1050 [1A-134; N° 137]
147. Brooks, Vernon B., D. R. Curtis and John C. Eccles: The action of tetanus toxin on the inhibition of motoneurones. In *Journal of Physiology* 135 (1957), 655-672 [1A-136; N° 139]
148. Eccles, John C., Rosamond M. Eccles and A. Lundberg: Durations of after-hyperpolarization of motoneurones supplying fast and slow muscles. In *Nature* 179 (1957), 866-868 [1A-137; N° 140]
149. Eccles, John C., Rosamond M. Eccles and A. Lundberg: Synaptic actions on motoneurones in relation to the two components of the group I muscle afferent volley. In *Journal of Physiology* 136 (1957), 527-546 [1A-140; N° 143]

150. Eccles, John C., Rosamond M. Eccles and A. Lundberg: The convergence of monosynaptic excitatory afferents on to many different species of alpha motoneurones. In *Journal of Physiology* 137 (1957), 22-50 [1A-142; N° 145]
151. Eccles, John C.: The generation of impulses by nerve cells. In *Australian Journal of Science* 19 (1957), 161-168 [1A-143; N° 146]
152. Eccles, John C.: Tonic and phasic motoneurones and the gamma loop. In Ludo VanBogaert (ed.): *Premier Congrès International des Sciences Neurologiques. Première journée commune. Réunions plénières. Rapports et discussions* (Pergamon Press, London 1957), 81-87 [1A-144; N° 147]
153. Eccles, John C.: Abnormalities in the behaviour of chromatolyzed moto-neurones. In International Congress of Electroencephalography and Clinical Neurophysiology (ed.): *Fourth International Congress of Electro-Encephalography and Clinical Neurophysiology* (Pergamon Press, London 1959), 149-150 [1A-145; N° 148]
154. Coombs, J. S., D. R. Curtis and John C. Eccles: The interpretation of spike potentials of motoneurones. In *Journal of Physiology* 139 (1957), 198-231 [1A-147; N° 150]
155. Coombs, J. S., D. R. Curtis and John C. Eccles: The generation of impulses in motoneurones. In *Journal of Physiology* 139 (1957), 232-249 [1A-148; N° 151]
156. Coombs, J. S., John C. Eccles and P. Fatt: Propriétés électriques de la membrane de surface d'un motoneurone. In: *Microphysiologie comparée des éléments excitables. Colloques Internationaux de Centre national de la recherche scientifique 67* (CNRS, Paris 1957), 73-90 [1A-149; N° 152]
157. Libet, Benjamin, John C. Eccles and R. R. Young: Responses of single chromatolysed motoneurones. In *Federation Proceedings* 17 (1958), 96 [1A-153; N° 156]
158. Eccles, John C.: The behaviour of nerve cells. In Gordon Wolstenholme and Cecilia O'Connor (ed.): *The neural basis of behaviour. In commemoration of Sir Charles Sherrington, 1857-1952. Ciba Foundation Symposia* (Churchill, London 1958), 28-47 [1A-154; N° 157]
159. Eccles, John C., Rosamond M. Eccles and A. Lundberg: The action potentials of the alpha motoneurones supplying fast and slow muscles. In *Journal of Physiology* 142 (1958), 275-291 [1A-155; N° 158]
160. Eccles, John C., Benjamin Libet and R. R. Young: The behaviour of chromatolysed motoneurones studied by intracellular recording. In *Journal of Physiology* 143 (1958), 11-40 [1A-157; N° 161]
161. Coombs, J. S., D. R. Curtis and John C. Eccles: The electrical constants of the motoneurone membrane. In *Journal of Physiology* 145 (1959), 505-528 [1A-162; N° 166]
162. Curtis, David R. and John C. Eccles: The time courses of excitatory and inhibitory synaptic actions. In *Journal of Physiology* 145 (1959), 529-546 [1A-163; N° 167]

163. Eccles, John C.: Neuron physiology - introduction. In John Field, H. W. Magoun and Victor E. Hall (ed.): *Handbook of Physiology: Neurophysiology I* (American Physiological Society, Washington 1959), 59-74 [1A-168; N° 173]
164. Buller, A. J., Rosamond M. Eccles and John C. Eccles: The influence of motoneurones on the differentiation of fast and slow muscles. In International Congress of Physiological Sciences (ed.): *XXI Congreso internacional de ciencias fisiológicas* Buenos Aires 1959), 45 [1A-170; N° 175]
165. Eccles, John C. and K. Krnjevic: Some post-tetanic changes in primary afferent fibres. In *Journal of Physiology* (1959), 22P-23 P [1A-175; N° 180]
166. Buller, A. J., John C. Eccles and Rosamond M. Eccles: Interactions between motoneurones and muscles in respect of the characteristic speeds of their responses. In *Journal of Physiology* 150 (1960), 417-439 [1A-182; N° 187]
167. Eccles, John C., Rosamond M. Eccles, Ainsby Iggo and A. Lundberg: Electrophysiological studies on gamma motoneurones. In *Acta Physiologica Scandinavica* 50 (1960), 32-40 [1A-186; N° 191]
168. Eccles, John C., Rosamond M. Eccles and F. Magni: Monosynaptic excitatory action on motoneurones regenerated to antagonistic muscles. In *Journal of Physiology* 154 (1960), 68-88 [1A-189; N° 194]
169. Eccles, John C., Rosamond M. Eccles and A. Lundberg: Types of neurones in and around the intermediate nucleus of the lumbo-sacral cord. In *Journal of Physiology* 154 (1960), 89-114 [1A-190; N° 195]
170. Araki, T., John C. Eccles and Masao Ito: Correlation of the inhibitory postsynaptic potential of motoneurones with the latency and time course of inhibition of monosynaptic reflexes. In *Journal of Physiology* 154 (1960), 354-377 [1A-191; N° 196]
171. Eccles, John C.: Inhibitory pathways to motoneurones. In E. Florey (ed.): *Nervous inhibition. Proceedings of the second Friday Harbor Symposium* (Pergamon, New York 1961), 47-60 [1A-199; N° 204]
172. Eccles, John C., Rosamond M. Eccles, Ainsby Iggo and Masao Ito: Distribution of recurrent inhibition among motoneurones. In *Journal of Physiology* 159 (1961), 479-499 [1A-204; N° 209]
173. Eccles, John C., F. Magni and William D. Willis: Depolarization of central terminals of group I afferent fibres from muscle. In *Journal of Physiology* 160 (1962), 62-93 [1A-206; N° 212]
174. Eccles, John C.: Central connections of muscle afferent fibres. In David Barker (ed.): *Muscle receptors. Proceedings of a meeting held in Sept. 1961 as part of the Golden Jubilee Congress of the University of Hong Kong* (Hongkong UP, Hongkong 1962), 81-101 [1A-207; N° 213]
175. Eccles, John C., P. G. Kostyuk and Robert F. Schmidt: Central pathways responsible for depolarization of primary afferent fibres. In *Journal of Physiology* 161 (1962), 237-257 [1A-209; N° 215]
176. Eccles, John C., Rosamond M. Eccles and C. N. Shealy: An investigation into the effect of degenerating primary afferent fibers on the monosynaptic in-

nervation of motoneurones. In *Journal of Neurophysiology* 25 (1962), 544-558 [1A-215; N° 221]

177. Eccles, John C., Rosamond M. Eccles, C. N. Shealy and William D. Willis: Experiments utilizing monosynaptic excitatory action on motoneurones for testing hypotheses relating to specificity of neuronal connections. In *Journal of Neurophysiology* 25 (1962), 559-580 [1A-216; N° 222]
178. Eccles, John C.: Abnormal connections in the central nervous system. In Robert G. Grenell (ed.): *Neural physiopathology, some relationships of normal to altered nervous system activity* (Harper & Row, New York 1962), 16-38 [1A-218; N° 224]
179. Eccles, John C., Robert F. Schmidt and William D. Willis: Primary afferent depolarization of group Ib afferent fibres of muscle. In: *XXII Internat. Cong. Physiol. Sci. Abstracts Communicat. 919* Leiden 1962), [1A-219; N° 225]
180. Eccles, John C., Rosamond M. Eccles and W. Kozak: Further investigations on the influence of motoneurones on the speed of muscle contraction. In *Journal of Physiology* 163 (1962), 324-339 [1A-220; N° 226]
181. Andersen, Per and John C. Eccles: Inhibitory phasing of neuronal discharge. In *Nature* 196 (1962), 645-647 [1A-221; N° 227]
182. Eccles, John C., Robert F. Schmidt and William D. Willis: Depolarization of central terminals of group Ib afferent fibres of muscle. In *Journal of Neurophysiology* 26 (1963), 1-27 [1A-224; N° 230]
183. Boyd, Ian A. and John C. Eccles: Fast- and slow-conducting small motor fibres in nerves to mammalian skeletal muscle. In *Journal of Physiology* 165 (1963), 29P [1A-227; N° 233]
184. Eccles, John C., Rosamond M. Eccles and Masao Ito: Effects of intracellular potassium and sodium injections on the inhibitory postsynaptic potential. In *Proceedings of the Royal Society of London B* 160 (1964), 181-196 [1A-250; N° 256]
185. Eccles, John C., Rosamond M. Eccles and Masao Ito: Effects produced on inhibitory postsynaptic potentials by the coupled injections of cations and anions into motoneurones. In *Proceedings of the Royal Society of London B* 160 (1964), 197-210 [1A-251; N° 257]
186. Eccles, John C.: The excitatory responses of motoneurones. In John C. Eccles, J. P. Schadé (ed.): *Physiology of spinal neurones; Progress in brain research 12* (Elsevier, Amsterdam 1964), 1-13 [1A-258; N° 264]
187. Andersen, Per, John C. Eccles, Robert F. Schmidt and T. Yokota: Identification of relay cells and interneurons in the cuneate nucleus. In *Journal of Neurophysiology* 27 (1964), 1080-1095 [1A-265; N° 273]
188. Eccles, John C., Nassir H. Sabah and Helena Taborikova: Responses evoked in neurons of the fastigial nucleus by cutaneous mechanoreceptors. In *Brain Research* 35 (1971), 523-527 [1A-367; N° 386]

189. Eccles, John C.: Functional significance of arrangement of neurones in cell assemblies. In *Archiv für Psychiatrie und Nervenkrankheiten* 215 (1971), 92-106 [1A-368; N° 387]
190. Eccles, John C., I. Rosen, Peter Scheid and Helena Taborikova: Cutaneous afferent responses in interpositus neurones of the cat. In *Brain Research* 42 (1972), 207-211 [1A-373; N° 393]
191. Eccles, John C., Peter Scheid and Helena Taborikova: Responses of red nucleus neurones to cutaneous afferent inputs. In *Brain Research* 53 (1973), 440-444 [1A-386; N° 406]
192. Eccles, John C.: Physiologie der Nervenzelle und ihrer Synapsen. In O. H. Gauer, K. Kramer, R. Jung (ed.): *Physiologie des Menschen, 2nd edition, 10: Allgemeine Neurophysiologie* (Urban & Schwarzenberg, Munich 1974), 109-164 [1A-405]

    Eccles, John C. and Peter Scheid: Physiologie der Nervenzelle und ihrer Synapsen. In O. H. Gauer, K. Kramer, R. Jung (ed.): *Physiologie des Menschen, 3rd edition, 10: Allgemeine Neurophysiologie* (Urban & Schwarzenberg, Munich 1980), 109-164 [1A-405; N° 429]
193. Eccles, John C., Nassir H. Sabah and Helena Taborikova: The pathways responsible for excitation and inhibition of fastigial neurones. In *Experimental Brain Research* 19 (1974), 78-99 [1A-395; N° 417]
194. Eccles, John C., I. Rosen, Peter Scheid and Helena Taborikova: Temporal patterns of responses of interpositus neurons to peripheral afferent stimulation. In *Journal of Neurophysiology* 37 (1974), 1424-1437 [1A-402; N° 426]
195. Eccles, John C., I. Rosen, Peter Scheid and Helena Taborikova: Patterns of convergence onto interpositus neurons from peripheral afferents. In *Journal of Neurophysiology* 37 (1974), 1438-1448 [1A-403; N° 427]
196. Eccles, John C., T. Rantucci, I. Rosen, Peter Scheid and Helena Taborikova: Somatotopic studies on cerebellar interpositus neurons. In *Journal of Neurophysiology* 37 (1974), 1449-1459 [1A-404; N° 428]
197. Eccles, John C., R. A. Nicoll, W. F. Schwarz, Helena Taborikova and T. J. Willey: Reticulospinal neurons with and without monosynaptic inputs from cerebellar nuclei. In *Journal of Neurophysiology* 38 (1975), 513-530 [1A-408; N° 432]
198. Eccles, John C., R. A. Nicoll, Helena Taborikova and T. J. Willey: Medial recticular neurons projecting rostrally. In *Journal of Neurophysiology* 38 (1975), 53531-8 [1A-409; N° 433]
199. Eccles, John C., Peter Scheid and Helena Taborikova: Responses of red nucleus neurons to antidromic and synaptic activation. In *Journal of Neurophysiology* 38 (1975), 947-964 [1A-412; N° 436]
200. Eccles, John C., R. A. Nicoll, D. W. Schwarz, Helena Taborikova and T. J. Willey: Medial reticular and perihypoglossal neurons projecting to cerebellum. In *Journal of Neurophysiology* 39 (1976), 102-108 [1A-421; N° 445]

201. Eccles, John C., R. A. Nicoll, T. Rantucci, Helena Taborikova and T. J. Willey: Topographic studies on medial reticular nucleus. In *Journal of Neurophysiology* 39 (1976), 109-118 [1A-422; N° 446]
202. Eccles, John C.: Another approach to neurobiology. Review of Local Circuit Neurons by Pasko Rakic. In *Perspectives in Biology and Medicine* 21 (1978), 469-470 [1A-452; N° 475]
203. Eccles, John C.: Chromatolysis of neurones after axon section. In Milan R. Dimitrijevic, B.A. Kakulas and G. Vrbova (ed.): *Recent achievements in restorative neurology 2: Progressive neuromuscular diseases* (Karger, Basel 1986), 318-331 [1A-560 ; N° 588]
204. Deecke, Lüder, John C. Eccles and Vernon B. Mountcastle (ed.): *From neuron to action: an appraisal of fundamental and clinical research* (Springer, Berlin, New York 1990). 3540520724 [1B-a27; N° 619]

Synapses

MeSH D013569 [A08.850]

205. Eccles, John C.: Synaptic and neuro-muscular transmission. In *Ergebnisse der Physiologie* 38 (1936), 339-444 [1A-040; N° 41]
206. Eccles, John C.: Synaptic and neuro-muscular transmission. In *Physiol. Rev.* 17 (1937), 538-555 [1A-049; N° 50]
207. Eccles, John C. and W. J. O'Connor: Excitatory actions at the neuro-muscular junction. In *Journal of Physiology* 95 (1939), 32P-33P [1A-055; N° 56]
208. Eccles, John C. and W. J. O'Connor: "Inhibitory" actions at the neuro-muscular junction. In *Journal of Physiology* 95 (1939), 34P-36P [1A-056; N° 57]
209. Eccles, John C., Bernhard Katz and Stephen W. Kuffler: Electric potential changes accompanying neuro-muscular transmission. In *Biological Symposia* 3 (1941), 349-370 [1A-059; N° 60]
210. Eccles, John C., Bernhard Katz and Stephen W. Kuffler: Nature of the 'endplate potential' in curarized muscle. In *J.Neurophysiol.* 4 (1941), 362-387 [1A-063; N° 64]
211. Eccles, John C. and Stephen W. Kuffler: Initiation of muscle impulses at neuro-muscular junction. In *J.Neurophysiol.* 4 (1941), 402-417 [1A-064; N° 65]
212. Eccles, John C. and Stephen W. Kuffler: The endplate potential during and after the muscle spike potential. In *J. Neurophysiol.* 4 (1941), 486-506 [1A-065; N° 66]
213. Eccles, John C.: An electrical hypothesis of synaptic and neuromuscular transmission. In *Nature* 156 (1945), 680-682 [1A-074; N° 75]
214. Eccles, John C.: Synaptic potentials of motoneurones. In *J.Neurophysiol.* 9 (1946), 87-120 [1A-075; N° 76]
215. Eccles, John C.: An electrical hypothesis of synaptic and neuromuscular transmission. In *Ann.N.Y.Acad.Sci.* 47 (1946), 429-455 [1A-077; N° 78]

216. Eccles, John C.: Conduction and synaptic transmission in the nervous system. In *Annual Review of Physiology* 10 (1948), 93-116 [1A-083; N° 85]
217. Brooks, Chandler McC. and John C. Eccles: An analysis of synaptic excitatory action. In *J.Neurophysiol.* 11 (1948), 365-376 [1A-084; N° 86]
218. Brooks, Chandler McC., John C. Eccles and J. L. Malcolm: Synaptic potentials of inhibited motoneurones. In *J.Neurophysiol.* 11 (1948), 417-430 [1A-086; N° 88]
219. Eccles, John C. and W. V. MacFarlane: Actions of anti-cholinesterases on endplate potential of frog muscle. In *Journal of Neurophysiology* 12 (1949), 59-80 [1A-088; N° 90]
220. Eccles, John C.: A review and restatement of the electrical hypothesis of synaptic excitatory and inhibitory action. In *Archs.Sci.physiol.* 3 (1949), 567-584 [1A-090; N° 92]
221. Eccles, John C. and A. K. McIntyre: Plasticity of mammalian monosynaptic reflexes. In *Nature* 167 (1951), 466-468 [1A-095; N° 97]
222. Eccles, John C. and W. Rall: Effects induced in a monosynaptic reflex path by its activation. In *J.Neurophysiol.* 14 (1951), 353-376 [1A-101; N° 103]
223. Brock, L. G., J. S. Coombs and John C. Eccles: Synaptic excitation and inhibition. In *Journal of Physiology* 117 (1952), 8P [1A-104; N° 106]
224. Eccles, John C., P. Fatt and K. Koketsu: Cholinergic and inhibitory synapses in a central nervous pathway. In *Aust. J. Sci.* 16 (1953), 50-54 [1A-114; N° 117]
225. Eccles, John C., P. Fatt and K. Koketsu: Cholinergic and inhibitory synapses in a pathway from motor-axon collaterals to motoneurones. In *Journal of Physiology* 126 (1954), 524-562 [1A-121; N° 124]
226. Eccles, John C., Rosamond M. Eccles and P. Fatt: The action of drugs on central cholinergic synapses. In *Journal of Physiology* 129 (1955), 40P-41P [1A-124; N° 127]
227. Eccles, John C., Rosamond M. Eccles and P. Fatt: Pharmacological investigations on a central synapse operated by acetylcholine. In *Journal of Physiology* 131 (1956), 154-169 [1A-132; N° 135]
228. Eccles, John C.: Excitatory and inhibitory synaptic action. In Harvey Society (ed.): *Harvey Lectures 51* (Wiley-Liss, New York 1957), 1-24 [1A-139; N° 142]
229. Eccles, John C., Rosamond M. Eccles and A. Lundberg: Synaptic actions on motoneurones caused by impulses in Golgi tendon organ afferents. In *Journal of Physiology* 138 (1957), 227-252 [1A-146; N° 149]
230. Coombs, J. S., John C. Eccles and P. Fatt: Nature du potentiel post-synaptique inhibiteur. In: *Microphysiologie comparée des éléments excitables. Colloques Internationaux de Centre national de la recherche scientifique 67* (CNRS, Paris 1957), 281-297 [1A-150; N° 153]
231. Eccles, John C. and J. C. Jaeger: The relationship between the mode of operation and the dimensions of the junctional regions at synapses and motor

end-organs. In *Proceedings of the Royal Society of London, Series B* 148 (1957), 38-56 [1A-152; N° 155]

232. Eccles, John C., K. Krnjevic and Ricardo Miledi: Delayed effects of peripheral severance of afferent nerve fibres on the efficacy of their central synapses. In *Journal of Physiology* 145 (1959), 204-220 [1A-161; N° 165]
233. Eccles, John C.: Monosynaptic excitatory patterns and connections of group Ia afferent fibres from muscle. In International Congress of Physiological Sciences (ed.): *XXI Congreso internacional de ciencias fisiológicas* Buenos Aires 1959), 87-93 [1A-169; N° 174]
234. Eccles, John C.: Excitatory and inhibitory synaptic action. In *Annals of the New York Academy of Sciences* 81 (1959), 247-264 [1A-171; N° 176]
235. Curtis, David R. and John C. Eccles: Repetitive synaptic activation. In *Journal of Physiology* 145 (1959), 43P-44 P [1A-177; N° 182]
236. Curtis, David R. and John C. Eccles: Synaptic action during and after repetitive stimulation. In *Journal of Physiology* 150 (1960), 374-398 [1A-180; N° 185]
237. Eccles, John C., Rosamond M. Eccles and F. Magni: Development of monosynaptic paths following changed motoneurone function. In *Journal of Physiology* 152 (1960), 29P-30P [1A-183; N° 188]
238. Eccles, John C.: Membrane time constants of cat motoneurones and time courses of synaptic action. In *Experimental Neurology* 4 (1961), 1-22 [1A-193; N° 198]
239. Eccles, John C.: The mechanism of synaptic transmission. In *Ergebnisse der Physiologie, Biologischen Chemie und Experimentellen Pharmakologie* 51 (1961), 299-430 [1A-194; N° 199]
240. Eccles, John C.: The effects of use and disuse on synaptic function. In Jean F. Delafresnaye (ed.): *Brain mechanisms and learning. A symposium organized by The Council for International Organizations of Medical Sciences <Montevideo 1959>* (Blackwell, Oxford 1961), 335-352 [1A-197; N° 202]
241. Eccles, John C.: The effect of frequency of activation on transmission across synapses. In Carlos Chagas and Antonio Paes-de-Carvalho (ed.): *Bioelectrogenesis* (Elsevier, Amsterdam 1961), 297-309 [1A-198; N° 203]
242. Eccles, John C.: The synaptic mechanism of postsynaptic inhibition. In E. Florey (ed.): *Nervous inhibition. Proceedings of the second Friday Harbor Symposium* (Pergamon, New York 1961), 70-86 [1A-200; N° 205]
243. Eccles, John C. and O. Oscarsson: Spécificité des connections synaptiques dans le système nerveux central. In *Actualités neurophysiologiques* 3 (1961), 1-21 [1A-205; N° 210]
244. Eccles, John C., P. G. Kostyuk and Robert F. Schmidt: Presynaptic inhibition of the central actions of flexor reflex afferents. In *Journal of Physiology* 161 (1962), 258-281 [1A-210; N° 216]

245. Eccles, John C., Robert F. Schmidt and William D. Willis: Presynaptic inhibition of the spinal monosynaptic reflex pathway. In *Journal of Physiology* 161 (1962), 282-297 [1A-211; N° 217]
246. Andersen, Per, John C. Eccles and Thomas A. Sears: Presynaptic inhibitory action of cerebral cortex on the spinal cord. In *Nature* 194 (1962), 740-741 [1A-212; N° 218]
247. Andersen, Per, John C. Eccles and Robert F. Schmidt: Presynaptic inhibition in the cuneate nucleus. In *Nature* 194 (1962), 741-743 [1A-213; N° 219]
248. Eccles, John C.: Presynaptic and postsynaptic inhibition in the central nervous system. In *Dai 16 Kai Nihon Igakukai Sokai Kakujitsu Koenschu* 4 (1963), 95-110 [1A-225; N° 231]
249. Eccles, John C., Robert F. Schmidt and William D. Willis: The location and mode of action of the presynaptic inhibitory pathways on to group I afferent fibres from muscle. In *Journal of Neurophysiology* 26 (1963), 506-522 [1A-226; N° 232]
250. Eccles, John C., Robert F. Schmidt and William D. Willis: The mode of action of the synaptic mechanism producing presynaptic inhibition. In *Journal of Physiology* 26 (1963), 523-538 [1A-228; N° 234]
251. Eccles, John C.: *The physiology of synapses* (Springer, Berlin, Göttingen, Heidelberg 1964). [1B-a04]

    Eccles, John C.: *Physiology of Synapses [japanese edition]* (Springer, Berlin 1965). [1B-j04]

    Eccles, John C.: *Fizjologia synaps nerwowych* (Panstwowy Zaklad Wydawnictw Lekarskich, Warszawa 1968). [not available]

    Eccles, John C.: *Fiziologija synapsov* (Mir, Moscow 1966). [not available; N° 245]
252. Eccles, John C.: Specificity of monosynaptic innervation of motoneurones. In Ernest Gutmann and Pavel Hnik (ed.): *The effect of use and disuse on neuromuscular functions. Proceedings of a symposium held at Liblice ... 1962* (Czechoslovak Academy of Sciences, Prague 1963), 229-246 [1A-244; N° 250]
253. Eccles, John C.: Der Mechanismus der postsynaptischen Hemmung. In *Angewandte Chemie* 76 (1964), 674-681 [1A-255; N° 261]
254. Eccles, John C.: The ionic mechanism of postsynaptic inhibition. In *Science* 145 (1964), 1140-1147 [1A-261; N° 269]
255. Eccles, John C.: The identification of postsynaptic inhibitory cells and synapses. In *Pontifica Academia Scientiarum, Commentarii* 1 (1964), 44 [1A-263; N° 271]
256. Eccles, John C.: The ionic mechanism of postsynaptic inhibition. In Nobel Foundation (ed.): *Les prix Nobel en 1963 / Nobel lectures 1963* Stockholm 1964), 261-283 [1A-264]

    Eccles, John C.: The ionic mechanism of postsynaptic inhibition. In Nobel Foundation (ed.): *Nobel lectures, including presentation speeches and laureate's biographies: Physiology or medicine, 1963-1970* (Elsevier, Amsterdam 1972), 6-27 [1A-264-2; N° 272]

257. Andersen, Per, John C. Eccles, T. Oshima and Robert F. Schmidt: Mechanisms of synaptic transmission in the cuneate nucleus. In *Journal of Neurophysiology* 27 (1964), 1096-1116 [1A-266; N° 274]
258. Eccles, John C.: The ionic mechanism of postsynaptic inhibition. Nobel lecture. In *Aust. J. Sci.* 27 (1964), 121-131 [1A-270; N° 278]
259. Eccles, John C.: The synapse. In *Scientific American* 212 (1965), 56-66 [1A-272]

    Eccles, John C.: The synapse <Repr. from: Scientific American 212 (1965), 56-66>. In Donald Kennedy (ed.): *Readings from Scientific American. From cell to organism* (Freeman, San Francisco 1967), 166-176 [1A-272-2]

    Eccles, John C.: The synapse <Repr. from: Scientific American 212 (1965), 56-66>. In Richard F. Thompson (ed.): *Readings from Scientific American. Physiological psychology* (Freeman, San Francisco 1972), 136-146 [1A-272-3]

    Eccles, John C.: The synapse [repr. from Scientific American 212 (1965), 56-66]. In Richard F. Thompson (ed.): *Progress in psychobiology* (Freeman, San Francisco 1976), 89-99 [1A-272-4; N° 280]
260. Eccles, John C.: Pharmacology of central inhibitory synapses. In *British Medical Bulletin* 21 (1965), 19-25 [1A-273; N° 281]
261. Eccles, John C.: Presynaptic inhibition in the central nervous system. In *Acta Physiologica Academiae Scientiarum Hungaricae* 26 (1965), 163-180 [1A-274; N° 282]
262. Eccles, John C.: The control of neuronal activity by postsynaptic inhibitory action. In: *XXIII Internat. Cong. Physiol. Sci: Invited Lectures* (Excerpta Medica, Amsterdam 1965), 84-95 [1A-279; N° 287]
263. Andersen, Per and John C. Eccles: Locating and identifying postsynaptic inhibitory synapses by the correlation of physiological and histological data. In Janos Szentágothai (ed.): *Modern trends in neuro-morphology. Symposia Biologica Hungarica 5* (Akadémiai Kiadó, Budapest 1965), 219-242 [1A-281; N° 289]
264. Eccles, John C.: The ionic mechanisms of excitatory and inhibitory synaptic action. In *Annals of the New York Academy of Sciences* 137 (1966), 473-494 [1A-301; N° 315]
265. Eccles, John C.: Postsynaptic inhibition in the central nervous system. In Gardner C. Quarton, Theodore Melnechuk and Francis O. Schmitt (ed.): *The neurosciences - a study program* (Rockefeller UP, New York 1967), 408-427 [1A-316; N° 330]
266. Eccles, John C.: Postsynaptic inhibition in the central nervous system. In Curt von Euler, S. Skoglund and U. Söderberg (ed.): *Structure and function of inhibitory neuronal mechanisms. Proceedings of the 4th international meeting of neurobiologists, Stockholm, Sept 1966* (Pergamon, Oxford 1968), 291-308 [1A-324; N° 339]
267. Eccles, John C.: Physiologie der Nervenzelle und ihrer Synapse. In O. H. Gauer, K. Kramer, R. Jung (ed.): *Allgemeine Neurophysiologie (Physiologie*

des Menschen, 10) (Urban & Schwarzenberg, Munich et al 1971), 107-148 [1A-365; N° 384]

268. Eccles, John C.: Specific ionic conductances at synapses. In D. P. AgIn: *Perspectives in membrane biophysics, a tribute to Kenneth S. Cole* (Gordon & Breach, London 1972), 219-243 [1A-381; N° 401]
269. Eccles, John C.: Synaptic plasticity. In *Naturwissenschaften* 66 (1979), 147-153 [1A-464; N° 487]
270. Eccles, John C. and Patrick L. McGeer: Ionotropic and metabotropic synaptic transmission. In *Trends in Neurosciences* 2 (1979), 39-40 [1A-469; N° 492]
271. Eccles, John C.: Sinapsi: Fisiologia della sinapsi centrale. In Aldo Ferrabino (ed.): *Enciclopedia del novecento, 6* (Istituto della Enciclopedia Italiana, Rome 1981), 577-612 [1A-537; N° 561]
272. Eccles, John C.: Sinapsi: Fisiologia della sinapsi periferica. In Aldo Ferrabino (ed.): *Enciclopedia del novecento, 6* (Istituto della Enciclopedia Italiana, Rome 1981), 612-634 [1A-538; N° 562]
273. Eccles, John C.: The form and function of synapses. In Otto Creutzfeld, Robert F. Schmidt and William D. Willis (ed.): *Sensory-motor integration in the nervous system (Experimental brain research suppl. 9) [dedicated to Sir John Eccles on the occasion of his 80th birthday]* (Springer, Berlin et al. 1984), 301-304 [1A-543; N° 569]
274. Eccles, John C.: The investigations of N. Tsukahara on relocation of synapses on red nucleus neurones. In *Neuroscience Research* 3 (1986), 476-486 [1A-562 ; N° 591]

Ganglia

MeSH D005724 [A08.340]

275. Eccles, John C.: Action potentials from the superior cervical ganglion. In *Journal of Physiology* 80 (1933), 23P [1A-021; N° 22]
276. Eccles, John C.: Synaptic transmission through a sympathetic ganglion. In *Journal of Physiology* 81 (1934), 8P [1A-023; N° 24]
277. Eccles, John C.: Inhibition in the superior cervical ganglion. In *Journal of Physiology* 82 (1934), 25P [1A-027; N° 28]
278. Eccles, John C.: After-discharge from the superior cervical ganglion. In *Journal of Physiology* 84 (1935), 50P [1A-031; N° 32]
279. Eccles, John C.: Actions of antidromic impulses on ganglion cells. In *Journal of Physiology* 85 (1935), 32P [1A-032; N° 33]
280. Eccles, John C.: The action potential of the superior cervical ganglion. In *Journal of Physiology* 85 (1935), 179-206 [1A-033; N° 34]
281. Eccles, John C.: Facilitation and inhibition in the superior cervical ganglion. In *Journal of Physiology* 85 (1935), 207-238 [1A-034; N° 35]
282. Eccles, John C.: Slow potential waves in the superior cervical ganglion. In *Journal of Physiology* 85 (1935), 464-501 [1A-035; N° 36]

283. Eccles, John C.: The action of preganglionic impulses on ganglion cells. In *Journal of Physiology* 87 (1936), 81P-82P [1A-037; N° 38]
284. Eccles, John C.: The actions of antidromic impulses on ganglion cells. In *Journal of Physiology* 88 (1936), 1-39 [1A-039; N° 40]
285. Eccles, John C.: The interpretation of potentials led from the superior cervical ganglion. In *Journal of Physiology* 89 (1937), 41P-43P [1A-041; N° 42]
286. Eccles, John C.: The discharge of impulses from ganglion cells. In *Journal of Physiology* 91 (1937), 1-22 [1A-050; N° 51]
287. Eccles, John C.: Anti-cholinesterases and the rate of decay of the synaptic transmitter in the superior cervical ganglion. In *Journal of Physiology* 94 (1938), 6P-7P [1A-051; N° 52]
288. Eccles, John C.: Synaptic potentials and transmission in sympathetic ganglion. In *Journal of Physiology* 101 (1943), 465-483 [1A-068; N° 69]
289. Eccles, John C.: The nature of synaptic transmission in a sympathetic ganglion. In *Journal of Physiology* 103 (1944), 27-54 [1A-070; N° 71]
290. Buller, A. J., John C. Eccles and Rosamond M. Eccles: Differentiation of fast and slow muscles in the cat hind limb. In *Journal of Physiology* 150 (1960), 399-416 [1A-181; N° 186]

Spinal Cord

MeSH D013116 [A08.186.854]

291. Eccles, John C. and Charles S. Sherrington: Reflex summation in the ipsilateral spinal flexion reflex. In *Journal of Physiology* 69 (1930), 1-28 [1A-006; N° 6]
292. Creed, Richard S., Derek E. Denny-Brown, John C. Eccles, Edward G. T. Liddell and Charles S. Sherrington: *Reflex activity of the spinal cord* (Oxford UP, London 1932). [1B-a01; N° 19]
293. Eccles, John C.: The spinal cord and reflex action. In *Annual Review of Physiology* 1 (1939), 363-384 [1A-054; N° 55]
294. Eccles, John C.: Synaptic transmission in the spinal cord. In *Nature* 153 (1944), 432 [1A-071; N° 72]
295. Eccles, John C.: Catelectronic potentials in the dorsal roots of the spinal cord. In *Nature* 154 (1944), 395-396 [1A-072; N° 73]
296. Eccles, John C. and J. L. Malcolm: Dorsal root potentials of the spinal cord. In *Journal of Neurophysiology* 9 (1946), 139-160 [1A-076; N° 77]
297. Eccles, John C.: Acetylcholine and synaptic transmission in the spinal cord. In *J.Neurophysiol.* 10 (1947), 197-204 [1A-078; N° 79]
298. Brooks, Chandler McC. and John C. Eccles: Electrical investigation of the monosynaptic pathway through the spinal cord. In *J.Neurophysiol.* 10 (1947), 251-274 [1A-080; N° 82]

299. Brooks, Chandler McC. and John C. Eccles: A study of the effects of anaesthesia and asphyxia on the monosynaptic pathway through the spinal cord. In *J.Neurophysiol.* 10 (1947), 349-360 [1A-081; N° 83]
300. Brooks, Chandler McC., C. B. B. Downman and John C. Eccles: After-potentials and excitability of spinal motoneurones following antidromic activation. In *J.Neurophysiol.* 13 (1950), 9-38 [1A-091; N° 93]
301. Brooks, Chandler McC., C. B. B. Downman and John C. Eccles: After-potentials and excitability of spinal motoneurones following orthodromic activation. In *J.Neurophysiol.* 13 (1950), 157-176 [1A-092; N° 94]
302. Brock, L. G., J. S. Coombs and John C. Eccles: The nature of the monosynaptic excitatory and inhibitory processes in the spinal cord. In *Proceedings of the Royal Society of London Series B, Containing Papers of a Biological Character* 140 (1952), 170-176 [1A-105; N° 107]
303. Eccles, John C. and A. K. McIntyre: The effects of disuse and of activity on mammalian spinal reflexes. In *Journal of Physiology* 121 (1953), 492-516 [1A-113; N° 116]
304. Eccles, John C., P. Fatt and S. Landgren: The 'direct' inhibitory pathway in the spinal cord. In *Aust. J. Sci.* 16 (1954), 130-134 [1A-118; N° 121]
305. Eccles, John C., P. Fatt, S. Landgren and G. J. Winsbury: Spinal cord potentials generated by volley in the large muscle afferents. In *Journal of Physiology* 125 (1954), 590-606 [1A-120; N° 123]
306. Curtis, David R., John C. Eccles and Rosamond M. Eccles: Pharmacological studies on spinal reflexes. In *Journal of Physiology* 136 (1957), 420-434 [1A-138; N° 141]
307. Curtis, David R., John C. Eccles and A. Lundberg: Intracellular recording from cells in Clarke's column. In *Acta Physiologica Scandinavica* 43 (1958), 303-314 [1A-160; N° 164]
308. Eccles, John C. and K. Krnjevic: Afferent fibre potentials in the spinal cord. In *Journal of Physiology* 146 (1959), 31P-32 P [1A-165; N° 169]
309. Eccles, John C. and K. Krnjevic: Potential changes recorded inside primary afferent fibres within the spinal cord. In *Journal of Physiology* 149 (1959), 250-273 [1A-178; N° 183]
310. Eccles, John C. and K. Krnjevic: Presynaptic changes associated with post-tetanic potentiation in the spinal cord. In *Journal of Physiology* 149 (1959), 274-287 [1A-179; N° 184]
311. Eccles, John C., Rosamond M. Eccles and F. Magni: Presynaptic inhibition in the spinal cord. In *Journal of Physiology* 154 (1960), 28P [1A-187; N° 192]
312. Eccles, John C., John I. Hubbard and O. Oscarsson: Intracellular recording from cells in the ventral spino-cerebellar tract. In *Journal of Physiology* 158 (1961), 486-516 [1A-195; N° 200]
313. Eccles, John C., O. Oscarsson and William D. Willis: Synaptic action of group I and II afferent fibres of muscle on the cells of the dorsal spino-cerebellar tract. In *Journal of Physiology* 158 (1961), 517-543 [1A-196; N° 201]

314. Eccles, John C., P. G. Kostyuk and Robert F. Schmidt: On the nature and functional significance of the electrotonic potential of the dorsal root of the spinal cord. In *Journal of Physiology [Kiev]* 8 (1962), 21-37 [1A-208; N° 214]
315. Eccles, John C., P. G. Kostyuk and Robert F. Schmidt: The effect of electric polarization of the spinal cord on central afferent fibres and on their excitatory synaptic action. In *Journal of Physiology* 162 (1962), 138-150 [1A-214; N° 220]
316. Eccles, John C.: Spinal neurones: synaptic connexions in relation to chemical transmitters and pharmacological responses. In William D. M. Paton (ed.): *Pharmacological analysis of central nervous action. Proceedings of the first international pharmacological meeting: Mode of action of drugs, August 22-25, 1961, vol. 8* (Pergamon, Oxford 1962), 157-182 [1A-222; N° 228]
317. Eccles, John C., Robert F. Schmidt and William D. Willis: Inhibition of discharges into the dorsal and ventral spinocerebellar tracts. In *Journal of Neurophysiology* 26 (1963), 635-645 [1A-230; N° 236]
318. Eccles, John C.: Postsynaptic and presynaptic inhibitory actions in the spinal cord. In Giuseppe Moruzzi, Alfred Fessard and Herbert H. Jasper (ed.): *Progress in brain research, 1: Brain mechanisms. International colloquium sponsored by the international brain research organisation (IBRO) on specific and unspecific mechanisms of sensory motor integration, Pisa, 1961* (Elsevier, Amsterdam, New York 1963), 1-18 [1A-241; N° 247]
319. Andersen, Per, John C. Eccles and Thomas A. Sears: Cortically evoked depolarization of primary afferent fibers in the spinal cord. In *Journal of Neurophysiology* 27 (1964), 63-77 [1A-245; N° 251]
320. Andersen, Per, John C. Eccles, Robert F. Schmidt and T. Yokota: Slow potential waves produced in the cuneate nucleus by cutaneous volleys and by cortical stimulation. In *Journal of Neurophysiology* 27 (1964), 78-91 [1A-246; N° 252]
321. Andersen, Per, John C. Eccles, Robert F. Schmidt and T. Yokota: Depolarization of presynaptic fibers in the cuneate nucleus. In *Journal of Neurophysiology* 27 (1964), 92-106 [1A-247; N° 253]
322. Eccles, John C. and J. P. Schadé (ed.): *Organization of the spinal cord; Progress in Brain Research 11* (Elsevier, Amsterdam 1964). [1B-a05; N° 265]
323. Eccles, John C.: Presynaptic inhibition in the spinal cord. In John C. Eccles, J. P. Schadé (ed.): *Physiology of spinal neurones (Progress in brain research 12)* (Elsevier, Amsterdam 1964), 65-89 [1A-259; N° 266]
324. Eccles, John C. and J. P. Schadé (ed.): *Physiology of spinal neurones; Progress in Brain Research 12* (Elsevier, Amsterdam 1964). [1B-a06; N° 267]
325. Eccles, John C.: Functional organization of the spinal cord. In *Anesthesiology* 28 (1967), 31-45 [1A-304; N° 318]
326. Eccles, John C.: The inhibitory control of spinal reflex action. In *Electroencephalography and Clinical Neurophysiology* Suppl. 25 (1967), 20-34 [1A-313; N° 327]

327. Eccles, John C., R. Nicoll, D. W. F. Schwarz and Helena Taborikova: Cerebello-spinal pathway via the fastigial nucleus and the medial reticular formation. In *Brain Research* 66 (1973), 525-530 [1A-392; N° 414]
328. Eccles, John C., T. Rantucci, Peter Scheid and Helena Taborikova: Somatotopic studies on red nucleus: spinal projection level and respective receptive fields. In *Journal of Neurophysiology* 38 (1975), 965-980 [1A-413; N° 437]
329. Eccles, John C.: Climbing fibre inputs from the interosseous and knee joint nerves. In R. Porter (ed.): *Studies in neurophysiology, presented to A. K. McIntyre* (Cambridge UP, Cambridge 1978), 105-108 [1A-453; N° 476]
330. Eccles, John C.: Organization in the spinal cord by A.G. Brown. Review. In *Naturwissenschaften* 69 (1982), 560 [1A-509; N° 531]

Hippocampus MeSH D00624 [A08.186.211.464.405] and **Thalamus** MeSH D013788 [A08.186.211.730.317.826]

331. Andersen, Per, John C. Eccles and Y. Løyning: Recurrent inhibition in the hippocampus with identification of the inhibitory cell and its synapses. In *Nature* 198 (1963), 540-542 [1A-229; N° 235]
332. Andersen, Per, John C. Eccles and Y. Løyning: Identification of inhibitory neurones in the hippocampus. In *Nature* 199 (1963), 699-700 [1A-233; N° 239]
333. Andersen, Per, John C. Eccles and Chandler McC. Brooks: Electrical responses of the ventro-basal thalamus. In W. Bargmann and J. P. Schadé (ed.): *Lectures on the diencephalon; Progress in brain research 5* (Elsevier, Amsterdam 1964), 100-113 [1A-248; N° 254]
334. Andersen, Per, John C. Eccles and Y. Løyning: Location of postsynaptic inhibitory synapses on hippocampal pyramids. In *Journal of Neurophysiology* 27 (1964), 592-607 [1A-252; N° 258]
335. Andersen, Per, John C. Eccles and Y. Løyning: Pathway of postsynaptic inhibition in the hippocampus. In *Journal of Neurophysiology* 27 (1964), 608-619 [1A-253; N° 259]
336. Andersen, Per, Chandler McC. Brooks, John C. Eccles and Thomas A. Sears: The ventro-basal nucleus of the thalamus: potential fields, synaptic transmission and excitability of both presynaptic and postsynaptic components. In *Journal of Physiology* 174 (1964), 348-369 [1A-268; N° 276]
337. Andersen, Per, John C. Eccles and Thomas A. Sears: The ventrobasal complex of the thalamus: types of cells, their responses and their functional organization. In *Journal of Physiology* 174 (1964), 370-399 [1A-269; N° 277]
338. Eccles, John C.: Inhibition in thalamic and cortical neurones and its role in phasing neuronal discharges. William G. Lennox Memorial Lecture, 1964. In *Epilepsia* 6 (1965), 89-115 [1A-277; N° 285]
339. Eccles, John C.: Properties and functional organization of cells in the ventrobasal complex of the thalamus. In Dominick P. Purpura and Melvin D.

Yahr (ed.): *The Thalamus* (Columbia UP, New York, London 1966), 129-141 [1A-294; N° 302]

340. Nicoll, R. A., John C. Eccles, T. Oshima and F. Rubia: Prolongation of hippocampal inhibitory postsynaptic potentials by barbiturates. In *Nature* 258 (1975), 625-627 [1A-418; N° 442]
341. Eccles, John C., R. A. Nicoll, T. Oshima and F. J. Rubia: The anionic permeability of the inhibitory postsynaptic membrane of hippocampal pyramidal cells. In *Proceedings of the Royal Society of London Series B* 198 (1977), 345-361 [1A-438; N° 459]
342. Allen, G. I., John C. Eccles, R. A. Nicoll, T. Oshima and F. J. Rubia: The ionic mechanisms concerned in generating the IPSPs of hippocampal pyramidal cells. In *Proceedings of the Royal Society of London Series B* 198 (1977), 363-384 [1A-439; N° 460]
343. Eccles, John C.: Hippocampal plasticity. In M. Cuenod, G.W. Kreutzberg, F.E. Bloom (ed.): *Development and clinical specificity of neurons. Prog. Brain Res. 51* (Elsevier, Amsterdam 1979), [1A-468; N° 491]
344. Eccles, John C.: Foreword. In Wilfried Seifert (ed.): *Neurobiology of the hippocampus* (Academic, London et al 1983), xiii-xvi [1A-539 ; N° 563]

Cerebellum

MeSH D002531 [A08.186.211.132.810.428.200]

345. Denny-Brown, Derek, John C. Eccles and E. G. T. Liddell: Observations on electrical stimulation of the cerebellar cortex. In *Proc.R.Soc.Lond.B* 104 (1929), 518-536 [1A-003; N° 3]
346. Eccles, John C.: Interpretation of action potentials evoked in the cerebral cortex. In *Electroencephalography & Clinical Neurophysiology* 3 (1951), 449-464 [1A-102; N° 104]
347. Andersen, Per, John C. Eccles and P. E. Voorhoeve: Inhibitory synapses on somas of Purkinje cells in the cerebellum. In *Nature* 199 (1963), 655-656 [1A-232; N° 238]
348. Eccles, John C., R. Llinas and K. Sasaki: Excitation of cerebellar Purkinje cells by the climbing fibres. In *Nature* 203 (1964), 245-246 [1A-254; N° 260]
349. Andersen, Per, John C. Eccles and P. E. Voorhoeve: Postsynaptic inhibition of cerebellar Purkinje cells. In *Journal of Neurophysiology* 27 (1964), 1138-1153 [1A-267; N° 275]
350. Eccles, John C., R. Llinas and K. Sasaki: Golgi cell inhibition in the cerebellar cortex. In *Nature* 204 (1964), 1265-1266 [1A-271; N° 279]
351. Eccles, John C.: Functional meaning of the patterns of synaptic connections in the cerebellum. In *Perspectives in Biology & Medicine* 8 (1965), 289-310 [1A-275; N° 283]

352. Eccles, John C., R. Llinás and K. Sasaki: Inhibitory systems in the cerebellar cortex. In *Proceedings of the Australian Association of Neurologists* 3 (1965), 7-14 [1A-284; N° 292]
353. Eccles, John C., R. Llinás and K. Sasaki: The inhibitory interneurones within the cerebellar cortex. In *Experimental Brain Research* 1 (1966), 1-16 [1A-285; N° 293]
354. Eccles, John C., R. Llinas and K. Sasaki: The mossy fibre-granule cell relay of the cerebellum and its inhibitory control by Golgi cells. In *Experimental Brain Research* 1 (1966), 82-101 [1A-287; N° 295]
355. Eccles, John C.: Functional organization of the cerebellum in relation to its role in motor control. In Ragnar Granit (ed.): *Muscular afferents and motor control. Proc. first Nobel Symposium June 1965 at Södergarn* (Almquist & Wiksell, Stockholm 1966), 19-36 [1A-293; N° 301]
356. Eccles, John C.: Cerebral synaptic mechanisms. In John C. Eccles (ed.): *Brain and conscious experience* (Springer, New York 1966), 24-58 [1A-295; N° 304]
357. Eccles, John C.: Cerebral synaptic mechanisms. In *Pontifica Academia Scientiarum, Commentarii* 30 (1966), 41-87 [1A-296y; N° 310]
358. Eccles, John C., K. Sasaki and Piergiorgio Strata: The profiles of physiological events produced by a parallel fibre volley in the cerebellar cortex. In *Experimental Brain Research* 2 (1966), 18-34 [1A-299; N° 313]
359. Eccles, John C., R. Llinas and K. Sasaki: Parallel fibre stimulation and the responses induced thereby in the Purkinje cells of the cerebellum. In *Experimental Brain Research* 1 (1966), 17-39 [1A-286; N° 294]
360. Eccles, John C., R. Llinas and K. Sasaki: The excitatory synaptic action of climbing fibres on the Purkinje cells of the cerebellum. In *Journal of Physiology* 182 (1966), 268-296 [1A-288; N° 296]
361. Eccles, John C., R. Llinas, K. Sasaki and P. E. Voorhoeve: Interaction experiments on the responses evoked in Purkinje cells by climbing fibres. In *Journal of Physiology* 182 (1966), 297-315 [1A-289; N° 297]
362. Eccles, John C., R. Llinas and K. Sasaki: The action of antidromic impulses on the cerebellar Purkinje cells. In *Journal of Physiology* 182 (1966), 316-345 [1A-290; N° 298]
363. Eccles, John C., R. Llinas and K. Sasaki: Intracellularly recorded responses of the cerebellar Purkinje cells. In *Experimental Brain Research* 1 (1966), 161-183 [1A-291; N° 299]
364. Eccles, John C.: Actions excitatrices et inhibitrices des fibres moussues cérébelleuses sur les cellules de Purkinje. In *Actualités neurophysiologiques* 7 (1967), 91-108 [1A-310; N° 324]
365. Eccles, John C., K. Sasaki and Piergiorgio Strata: Interpretation of the potential fields generated in the cerebellar cortex by a mossy fibre volley. In *Experimental Brain Research* 3 (1967), 58-80 [1A-305; N° 319]

366. Eccles, John C.: Long-loop reflexes from muscle afferents to the brain-stem and cerebellum. In *Atti della Academia Medica Lombarda* 21 (1967), 1-19 [1A-309; N° 323]
367. Eccles, John C., Masao Ito and Janos Szentágothai: *The cerebellum as a neuronal machine* (Springer, Berlin, Heidelberg, New York 1967). [1B-a10; N° 325]
368. Eccles, John C.: Circuits in the cerebellar control of movement. In *Proceedings of the National Academy of Sciences of the United States of America* 58 (1967), 336-343 [1A-312; N° 326]
369. Eccles, John C., L. Provini and Piergiorgio Strata: Patterns of climbing fibre input to the cerebellar anterior lobe. In *Brain Research* 5 (1967), 425-430 [1A-314; N° 328]
370. Eccles, John C.: Influence of spino-cerebellar pathways on the cerebellar control of spinal motoneurones. In *Electroencephalography & Clinical Neurophysiology* 25 (1968), 394 [1A-322x; N° 337]
371. Eccles, John C.: The way in which the cerebellum processes sensory information from muscle. In Melvin D. Yahr and Dominick P. Purpura (ed.): *Neurophysiological basis of normal and abnormal motor activities. Proceedings of the 3rd symposium of the Parkinson's disease information and research center of Columbia University, Nov. 28-29th 1966* (Raven, New York 1967), 379-414 [1A-323; N° 338]
372. Eccles, John C.: Integration of information in the cerebellum. In: *Proceedings of the International Union of Physiological Sciences. 24th International Congress, 6* 1968), 19-20 [1A-325; N° 340]
373. Eccles, John C., L. Provini and Piergiorgio Strata: Fine patterns of projection from hindlimb afferents to the cat cerebellar anterior lobe. In: *Proceedings of the International Union of Physiological Sciences. 24th International Congress, 7* 1968), 326 [1A-326; N° 341]
374. Eccles, John C., L. Provini, Piergiorgio Strata and Helena Taborikova: Analysis of electrical potentials evoked in the cerebellar anterior lobe by stimulation of hindlimb and forelimb nerves. In *Experimental Brain Research* 6 (1968), 171-194 [1A-328; N° 343]
375. Eccles, John C., L. Provini, Piergiorgio Strata and Helena Taborikova: Topographical investigations on the climbing fiber inputs from forelimb and hindlimb afferents to the cerebellar anterior lobe. In *Experimental Brain Research* 6 (1968), 195-215 [1A-329; N° 344]
376. Eccles, John C., N. Tsukahara and Helena Taborikova: Excitation and inhibition of cells in the cerebellum of Mustelus canis. In *Biological Bulletin* 135 (1968), 418 [1A-331; N° 346]
377. Eccles, John C., N. Tsukahara and Helena Taborikova: The responses of granule cells in the cerebellum of Mustelus canis. In *Biological Bulletin* 135 (1968), 440 [1A-322; N° 347]

378. Kitai, S. T., Helena Taborikova, N. Tsukahara and John C. Eccles: The distribution to the cerebellar anterior lobe of the climbing and mossy fiber inputs from the plantar and palmar cutaneous afferents. In *Experimental Brain Research* 7 (1969), 1-10 [1A-333; N° 348]
379. Eccles, John C.: The coordination of information by the cerebellar cortex. In Simeon Locke (ed.): *Modern neurology papers in tribute to Denny-Brown* (Little, Brown & Co, Boston 1969), 135-147 [1A-335; N° 351]
380. Eccles, John C., H. Korn, Helena Taborikova and N. Tsukahara: Slow potential fields generated in cerebellar cortex by mossy fiber volleys. In *Brain Research* 15 (1969), 276-280 [1A-340; N° 356]
381. Eccles, John C.: The development of the cerebellum of vertebrates in relation to the control of movement. In *Naturwissenschaften* 56 (1969), 525-534 [1A-343; N° 359]
382. Eccles, John C., D. S. Faber, J. T. Murphy, Nassir H. Sabah and Helena Taborikova: Firing patterns of Purkinje cells in response to volleys from limb nerves. In *Brain Research* 14 (1969), 222-226 [1A-337; N° 353]
383. Eccles, John C., Helena Taborikova and N. Tsukahara: Responses of the Purkyne cells of a selachian cerebellum (Mustelus canis). In *Brain Research* 17 (1970), 57-86 [1A-346; N° 363]
384. Eccles, John C., D. S. Faber, S. T. Kitai, T. Shimono and Helena Taborikova: Inhibition of antidromic invasion of Purkyne cells in the selachian cerebellum. In *Brain Research* 17 (1970), 360-365 [1A-348; N° 365]
385. Eccles, John C., D. S. Faber, J. T. Murphy, Nassir H. Sabah and Helena Taborikova: The integrative performance of the cerebellar Purkyne cell. In Per Andersen, Jan K. S. Jansen (ed.): *Excitatory synaptic mechanisms. Proceedings of the 5th international meeting of neurobiologists. Sandefjord, Norway, 15-17 Sept. 1969* (Oslo UP, Oslo 1970), 223-236 [1A-351; N° 368]
386. Eccles, John C., D. Faber and Helena Taborikova: Antidromic invasion of cerebellar Purkyne cells. In *Journal of Physiology* 210 (1970), 173P-174P [1A-354; N° 371]
387. Eccles, John C.: The topography of the mossy and climbing fibre inputs to the anterior lobe of the cerebellum. In William S. Fields and William D. jr. Willis (ed.): *The cerebellum in health and disease. Dallas neurological symposium* (Warren H. Green, St. Louis 1970), 231-262 [1A-344; N° 360]
388. Eccles, John C., Helena Taborikova and N. Tsukahara: Responses of the granule cells of the selachian cerebellum (Mustelus canis). In *Brain Research* 17 (1970), 87-102 [1A-347; N° 364]
389. Eccles, John C.: Neurogenesis and morphogenesis in the cerebellar cortex. In *Proceedings of the National Academy of Sciences of the United States of America* 66 (1970), 294-301 [1A-350; N° 367]
390. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Cutaneous mechanoreceptors acting on cerebellum via climbing fibres. In *Federation Proceedings* 30 (1971), 664, 2620 [1A-357; N° 374]

391. Eccles, John C., D. S. Faber, J. T. Murphy, Nassir H. Sabah and Helena Taborikova: Afferent volleys in limb nerves influencing impulse discharges in cerebellar cortex. I. In mossy fibers and granule cells. In *Experimental Brain Research* 13 (1971), 15-35 [1A-359; N° 376]
392. Eccles, John C., D. S. Faber, J. T. Murphy, Nassir H. Sabah and Helena Taborikova: Afferent volleys in limb nerves influencing impulse discharges in cerebellar cortex. II. In Purkyne cells. In *Experimental Brain Research* 13 (1971), 36-53 [1A-360; N° 377]
393. Eccles, John C.: Physiological significance of the cutaneous mechanoreceptor input to the cerebellum. In: *Proceedings of the International Union of Physiological Sciences, XXV Cong., Munich* Munich 1971), 156 [1A-364; N° 382]
394. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Significance of dual input to cat cerebellum via mossy and climbing fibres. In *Journal of Physiology* 218 (1971), 90P-91P [1A-366; N° 385]
395. Eccles, John C., D. S. Faber and Helena Taborikova: The action of a parallel fiber volley on the antidromic invasion of Purkyne cells of cat cerebellum. In *Brain Research* 25 (1971), 335-356 [1A-355; N° 372]
396. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Cerebellar Purkyne cell responses to cutaneous mechanoreceptors. In *Brain Research* 30 (1971), 419-424 [1A-358; N° 375]
397. Eccles, John C., D. S. Faber, J. T. Murphy, Nassir H. Sabah and Helena Taborikova: Investigations on integration of mossy fiber inputs to Purkyne cells in the anterior lobe. In *Experimental Brain Research* 13 (1971), 54-77 [1A-361; N° 378]
398. Eccles, John C.: The Purkynê cell: its physiological properties and performance. In V. Kruta (ed.): *Jan Evangelista Purkynê, 1787-1869. Centenary Symposium, Prague, 1969* (Brno UP, Brno 1971), 151-165 [1A-363; N° 380]
399. Eccles, John C.: Speech on the occasion of the reception on Sept. 10th at Libochovice Castle, the birthplace of Purkyne. In V. Kruta (ed.): *Jan Evangelista Purkynê, 1787-1869. Centenary Symposium, Prague, 1969* (Brno UP, Brno 1971), 281-282 [1A-363x; N° 381]
400. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Cutaneous mechanoreceptors influencing impulse discharges in cerebellar cortex. I. In mossy fibers. In *Experimental Brain Research* 15 (1972), 245-260 [1A-375; N° 395]
401. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Cutaneous mechanoreceptors influencing impulse discharges in cerebellar cortex. II. In Purkyne cells by mossy fiber input. In *Experimental Brain Research* 15 (1972), 261-277 [1A-376; N° 396]
402. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Cutaneous mechanoreceptors influencing impulse discharges in cere-

bellar cortex. III. In Purkyne cells by climbing fiber input. In *Experimental Brain Research* 15 (1972), 484-497 [1A-377; N° 397]

403. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Integration by Purkyne cells of mossy and climbing fiber inputs from cutaneous mechanoreceptors. In *Experimental Brain Research* 15 (1972), 498-520 [1A-378; N° 398]
404. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: Mode of operation of the cerebellum in the dynamic loop control of movement. In *Brain Research* 40 (1972), 73-80 [1A-371; N° 391]
405. Eccles, John C.: The role of the cerebellum in controlling movement. In C. B. B. Downman (ed.): *Modern trends in physiology* (Butterworths, London 1972), 86-111 [1A-372; N° 392]
406. Eccles, John C.: Unconscious actions emanating from human cerebral cortex. In *Philosophic Exchange* 1 (1972), 249-252 [1A-374; N° 394]
407. Eccles, John C.: The cerebellum as a computer: patterns in space and time. In *Journal of Physiology* 229 (1973), 1-32 [1A-382; N° 402]
408. Eccles, John C.: A re-evaluation of cerebellar function in man. In J. E. Desmedt (ed.): *New developments in electromyography and clinical neuro-physiology, 3* (Karger, Basel 1973), 209-224 [1A-383; N° 403]
409. Eccles, John C., Nassir H. Sabah and Helena Taborikova: Excitatory and inhibitory responses of neurones of the cerebellar fastigial nucleus. In *Experimental Brain Research* 19 (1974), 61-77 [1A-394; N° 416]
410. Eccles, John C., T. Rantucci, Nassir H. Sabah and Helena Taborikova: Somatotopic studies on cerebellar fastigial cells. In *Experimental Brain Research* 19 (1974), 100-118 [1A-396; N° 418]
411. Eccles, John C., I. Rosen, Peter Scheid and Helena Taborikova: The differential effect of cooling on responses of cerebellar cortex. In *Journal of Physiology* 249 (1975), 119-138 [1A-411; N° 435]
412. Eccles, John C., Nassir H. Sabah, Robert F. Schmidt and Helena Taborikova: A study of the cutaneous mechanoreceptive modalities projecting to the cerebellum. In H. H. Kornhuber (ed.): *The somatosensory system* (Thieme, Stuttgart 1975), 125-134 [1A-414; N° 438]
413. Eccles, John C.: Cerebellar cortex: Chairman's remarks. In: *Afferent and intrinsic organization of laminated structures in the brain. Expl. Brain Res., Suppl. 1* (Springer, Berlin 1976), 3-7 [1A-430; N° 455]
414. Eccles, John C.: Cerebellar function in the control of movement (with special reference to the pioneer work of Sir Gordon Holmes). In F. Clifford Rose (ed.): *Physiological aspects of clinical neurology* (Blackwell Scientific, Oxford 1977), 157-178 [1A-443; N° 464]
415. Eccles, John C.: An instruction-selection hypothesis of cerebral learning. In Pierre A Buser and Arlette Rougeul-Buser (ed.): *Cerebral correlates of conscious experience. Proceedings of an international symposium ... held in*

Senanque Abbey, France on 2-8 August 1977: INSERM symposium 6. (Elsevier, Amsterdam 1978), 155-175 [1A-449; N° 471]

416. Eccles, John C.: Introductory remarks. In J. Massion and K. Sasaki (ed.): *Cerebro-cerebellar interactions* (Elsevier, Amsterdam 1979), [1A-467; N° 490]
417. Eccles, John C.: Event-related potentials in the cerebral cortex. In Rita Levi-Montalcini (ed.): *Nerve cells, transmitters and behaviour* (Pontificia Academia Scientiarum, Vatican City 1980), 551-561 [1A-481; N° 502]
418. Eccles, John C.: The future of studies on the cerebellum. In Sanford L. Palay and Victoria Chan-Palay (ed.): *The cerebellum - new vistas (Expl. Brain Res. Suppl. 6)* (Springer, Berlin et al 1982), 607-622 [1A-513; N° 535]
419. Eccles, John C.: The horizontal (tangential) fibres system of lamina I of the cerebral neocortex. In *Acta Morphologica Hungarica* 31 (1983), 261-284 [1A-527 ; N° 549]
420. Eccles, John C.: Foreword. In Masao Ito (ed.): The cerebellum and neural control (Raven, New York 1984), vii-viii [1A-549; N° 574]
421. Eccles, John C.: The cerebral neocortex: a theory of its operation. In Edward G. Jones and Alan Peters (ed.): *Cerebral cortex. Vol. 2: Functional properties of cortical cells* (Plenum, New York, London 1984), 1-36 [1A-550x ; N° 577]
422. Eccles, John C.: Cerebral events in voluntary movement: the supplementary motor and premotor areas. In: *Experimental brain research* 58 (1985), a1-a17 [1A-551; N° 578]
423. Eccles, John C.: The synaptic uniqueness of the Purkyně cells. In Jaroslav Purs (ed.): *Jan Evangelista Purkyne in science and culture. Scientific conference Prague 1987 Aug. 26-30, 2* (Ústav československých a světových dějin Československé akademie věd, Prague 1988), 761-770 [1A-575 ; N° 607]

Philosophy

MeSH D010684 [K01.752]

424. Eccles, John C.: Man and freedom. In *Twentieth Century* 2 (1947), 5-23 [1A-079x; N° 81]
425. Eccles, John C. [discussion] In F. N. L. Poynter (ed.): *The history and philosophy of knowledge of the brain and its functions - an anglo-american symposium, London, July 15th - 17th, 1957 , sponsored by the Wellcome Historical Medical Library ...* (Blackwell, Oxford 1958). [1C-155x; N° 159]
426. Eccles, John C.: Reflections on the relationship of medical research to the physical and biological sciences. In *Australasian Annals of Medicine* 8 (1959), 95-97 [1A-164; N° 168]
427. Eccles, John C.: Mind, the ultimate expression of the living state. In: *The living state* (Western Reserve University, Cleveland 1963), 34-38 [1A-235; N° 241]

428. Colby, K. M., W. R. Dennes, John C. Eccles and R. M. Gerard: What is an individual? Panel presentation. In: *Mental health in a changing community* (Grune & Stratton, 1966), 129-134 [1A-302; N° 316]
429. Eccles, John C.: Neurosciences, achievement and promise. In *The Sciences* 7 (1967), 16-19 [1A-318; N° 332]
430. Eccles, John C.: Book review of 'Of molecules and men', by Frances Crick. In *Zygon - Journal of Religion and Science* 2 (1967), 281-283 [1A-319; N° 333]
431. Eccles, John C.: The necessity of freedom for the free-flowering of science. Dunning Trust Lecture, Queens University. In *Queens Quarterly <Kingston, Ontario>* (1969), [1A-341; N° 357]
432. Eccles, John C.: *Facing reality: Philosophical adventures of a brain scientist* (Springer, New York 1970). [1B-a12]

    Eccles, John C.: *Wahrheit und Wirklichkeit: Mensch und Wissenschaft [Facing reality]* (Springer, Berlin 1975). 0387070826 [1B-g12]

    Eccles, John C.: *Affrontare la Realtà: le avventure filosofiche di uno scientiziato del cervello* (Armando Armando, Rome 1979). [1B-i12]

    Eccles, John C.: *Affrontare la Realtà: le avventure filosofiche di uno scientiziato del cervello* (Armando, Rome 1996). [1B-i12-2]

    Eccles, John C.: *Nō to jitsuzai. Nōkenkyūsha no tetsugakuteki bōken [Facing reality]* (Orion (Kinokuniyashoten), Tokyo 1981). [1B-j12; N° 369]
433. Eccles, John C.: Animal experimentation versus human experimentation. In: *Defining the laboratory animal. 4th Symposium, International Committee on Laboratory Animals* (National Academy of Sciences USA, Washington D.C. 1971), 285-293 [1A-356; N° 373]
434. Eccles, John C.: Ideology and motivation: an attempt towards an anthropological prognosis. In *Universitas* 10 (1972), 1023-1029 [1A-380; N° 400]
435. Eccles, John C.: The discipline of science with special reference to the neurosciences. In *Daedalus* 102 (1973), 85-99 [1A-385; N° 405]
436. Eccles, John C.: The world of objective knowledge. In Paul A. Schilpp (ed.): *The philosophy of Karl Popper* (Open Court, La Salle 1974), 349-370 [1A-398; N° 420]
437. Eccles, John C.: Statement of gratitude [& discussion remarks]. In: *Modern science and moral values. Proc. 2nd. Internat. Conf. on the Unity of the Sciences, Tokyo* (International Cultural Foundation, New York 1974), 577; 156-157, 219-220, 515-516, 548-549, 552 [1A-400y; N° 424]
438. Popper, Karl R. and John C. Eccles: Falsifiability and freedom. In Fons Elders (ed.): *Reflexive water. The basic concerns of mankind* (Souvenir, London 1974), 69-131 [1A-401; N° 425]
439. Eccles, John C.: Hierarchical concepts in the control of movement. In Hans A. Krebs and Julian H. Shelley (ed.): *The creative process in science and medicine. Proceedings of the C. H. Boehringer Sohn symposium held at*

Kronberg, Taunus, 16-17 May 1974 (Excerpta Medica, Amsterdam 1975), 61-85 [1A-407; N° 431]

440. Eccles, John C.: Some aspects of the dialogue between biologists and philosophers in the 20th century: Communication systems of the brain. In Académie Royale de Belgique (ed.): *Connaissance scientifique et philosophie. Colloque organisé les 16 et 17 mai 1973 par l'Académie Royale de Sciences, lettres et des beaux-arts de Belgique à l'occasion du deuxième centenaire de sa fondation* (L'Académie Royale de Sciences, lettres et des beaux-arts de Belgique, Brussels 1975), 251-290 [1A-410; N° 434]
441. Eccles, John C.: Keynote address. In: *The centrality of science and absolute values* (International Cultural Foundation, New York 1976), xix-xxiii [1A-424; N° 448]
442. Eccles, John C.: How dogmatic can materialism be? In Gordon G. Globus, Maxwell Grover and Irwin Savodnik (ed.): *Consciousness and the brain. A scientific and philosophical inquiry* (Plenum, New York 1976), 155-160 [1A-427; N° 451]
443. Eccles, John C.: Chairman's address. In International Conference on the Unity of the Sciences (ed.): *The search for absolute values: harmony amongst the sciences. Proc. 5th Internat. Conf. on the Unity of the Sciences* (International Cultural Foundation, New York 1977), 13-18 [1A-440; N° 461]
444. Eccles, John C.: Lo sviluppo della persona umana: il ruola della deprivazione e della sofferenza. In: *L'Uomo della sindone* (Orizzonte Medico, Rome 1978), 24-51 [1A-454; N° 477]
445. Eccles, John C.: Chairman's address. In International Conference on the Unity of the Sciences (ed.): *The search for absolute values in a changing world. Proc. 6th Internat. Conf. on the Unity of the Sciences, Nov. 25-27 1977, San Francisco* (International Cultural Foundation, New York 1978), 13-16, 1271-1272 [1A-455; N° 478]
446. Eccles, John C.: The creation of the self. In *Bulletin of the Menninger Clinic* 43 (1979), 3-19 [1A-463; N° 486]
447. Eccles, John C.: Two approaches to neurobiology. In *Bioscience* 28 (1979), 204 [1A-466; N° 489]
448. Eccles, John C.: Vice-Chairman's address. In International Conference on the Unity of the Sciences (ed.): *The re-evaluation of existing values and the search for absolute values. Proc. 7th Internat. Conf. on the Unity of the Sciences, Nov. 24-26, Boston. 2 Vols.* (International Cultural Foundation, New York 1979), 17-18 [1A-470; N° 494]
449. Eccles, John C.: La realizzazione del 'Se'. In *Revista Medica della Suizzera Italiana* 1979 (1979), 537-544 [1A-473; N° 497]
450. Eccles, John C.: The discipline of biological science with special reference to the neurosciences. In *Rivista di Biologia* 73 (1980), 11-20 [1A-476; N° 498]

451. Eccles, John C.: Altruismus und pseudoaltruismus. In Otto Molden (ed.): *Der Mensch in der unvollkommenen Gesellschaft. Europäisches Forum Alpbach 1979* (F. Molden, Wien 1980), 72-81 [1A-477; N° 499]
452. Eccles, John C.: Brain, freedom and moral responsibility. In: *Proc. 8th Internat. Conf. on the Unity of the Sciences* (International Cultural Foundation, New York 1980), 147-155 [1A-482; N° 503]
453. Eccles, John C.: Vice chairman's address. In Eighth international conference on the unity of the sciences (ed.): *The responsibility of the academic community in the search for absolute values. Volume I.* (The international cultural foundation press, New York 1980), 19-20 [1A-482x; N° 504]
454. Eccles, John C.: Vice chairman's closing remarks. In Eighth international conference on the unity of the sciences (ed.): *The responsibility of the academic community in the search for absolute values. Volume II.* (The international cultural foundation press, New York 1980), 1017-1018 [1A-482y; N° 505]
455. Eccles, John C.: Die Menschliche Persönlichkeit: ein wissenschaftliches und philosophisches Problem. In *Naturwissenschaftliche Rundschau* 34 (1981), 227-237 [1A-490; N° 514]
456. Eccles, John C.: In praise of falsification. In Ryan D. Tweney, Michael E. Doherty and Clifford R. Mynatt (ed.): *On scientific thinking* (Columbia UP, New York 1981), 109-112 [1A-498; N° 521]
457. Eccles, John C.: Sir Karl Popper. In *Archiv für Psychiatrie und Nervenkrankheiten* 232 (1982), 1-3 [1A-519; N° 542]
458. Eccles, John C.: L'uomo e la scienza. In: *La cultura strumento di ripresa della vita* (JACA, Milan 1982), 24-32 [1A-524; N° 547]
459. Eccles, John C.: The mystery of personal existence. In *Scholar and Educator* 7 (1983), 5-18 [1A-533 ; N° 556]
460. Eccles, John C.: La meraviglia di essere uomo. In *Synesis (Assoc. ital. centri cultural. Milano)* 1-2/3 (1984), 159-172 [1A-544; N° 570]
461. Eccles, John C.: Self-consciousness and the human person. Che cosa è pensiero?, In *L'unità dell' essere. Atti dei convegni Lincei* 73 (1985), 215-235 [1A-552; N° 579]
462. Eccles, John C.: Reductionism and upward and downward causation. In *Biology Forum* 79 (1986), 381-405 [1A-559 ; N° 586]
463. Eccles, John C.: Strategy and some prospects in neuroscience. In Osamu Hayaishi (ed.): *Strategy and prospects in neuroscience. Taniguchi symposia on brain sciences, 10* (Japan Scientific Societies / VNU Science, Tokyo / Utrecht 1987), 3-25 [1A-570 ; N° 601]
464. Eccles, John C.: Creation of the self. In Étienne Wolff (ed.): *Mélanges de neurophysiologie à la mémoire du Prof. Alexandre Marcel Monnier* (Minard, Paris 1989), 129-136 [1A-578x; N° 614]
465. Eccles, John C.: Il mistero dell'esistenza umana. In: *Valori, scienza e trascendenza, 2: Un dibattito sulla dimensione etica e religiosa nella comunità*

scientifica internazionale (Fondazione Agnelli, Torino 1990), 237-252 [1A-587x; N° 624]

466. Eccles, John C.: Imagination and scientific reality. In William R. Shea and Antonio Spadafora (ed.): *Interpreting the world - science and society. Locarno international conferences on science and society held 1984 and 1986* (Watson, Canton 1992), 167-179 [1A-593; N° 632]
467. Eccles, John C.: A divine design: some questions on origins. An interview with Sir John Eccles (1982). In Henry Margenau and Roy Abraham Varghese (ed.): *Cosmos, bios, theos: scientists reflect on science, god and the origins of the universe, life, and homo sapiens* (Open court, La Salle, Ill. 1992), 160-164 [1A-594; N° 633]
468. Eccles, John C.: Two letters to Rocco Pezzimenti. In Rocco Pezzimenti (ed.): *Homo metaphysicus - with letters from K. R. Popper, V. Tonini, L. Pauling, J. Eccles, H. von Balthasar, P. Pavan* (LER, Naples, Rome 1992), 89-91 [1A-594x; N° 634]
469. Eccles, John C.: The discipline of biological science with special reference to the neurosciences. In *Rivista di Biologia* 92 (1999), 456-459 [1A-602; N° 643]

Mind-Body-relationship D019222 [F02.463.509]

470. Eccles, John C.: Hypotheses relating to the brain-mind problem. In *Nature* 168 (1952), 53-57 [1A-097; N° 99]
471. Eccles, John C.: Hypotheses relating to the brain-mind problem. In *Nature* 169 (1952), 292 [1A-105x; N° 108]
472. Eccles, John C.: *The neurophysiological basis of mind: The principles of neurophysiology. The Waynflete Lectures, 1952* (Clarendon, Oxford 1953). [1B-a02]

    Eccles, John C.: *The neurophysiological basis of mind: The principles of neurophysiology* (Clarendon, Oxford 1988). 0824013778 [1B-a02-2; N° 112]
473. Eccles, John C.: A note on Professor Sir Henry Cohen's Manson Lecture 'The status of brain in the concept of mind'. In *Philosophy* 29 (1954), 158-159 [1A-119; N° 122]
474. Eccles, John C.: The physiology of imagination. In *Scientific American* 199 (1958), 135-146 [1A-158; N° 162]
475. Eccles, John C.: Chairman's opening remarks. In Gordon Wolstenholme and Maeve O'Connor (ed.): *Ciba Foundation symposium on the nature of sleep* (Churchill, London 1961), 1-3 [1A-205x; N° 211]
476. Eccles, John C.: Bases neurophysiologiques de l'esprit. In Herman Gregoire (ed.): *La vie de l'homme* (Rene Kister, Genève 1962), Chapter IV, 5 [1A-217; N° 223]
477. Eccles, John C.: The neurophysiological basis of experience. In Mario Bunge (ed.): *The critical approach to science and philosophy: Essays in honour of*

Karl Popper (Free Press of Clencoe Collier-Macmillan, London 1964), 266-279 [1A-257; N° 263]

478. Eccles, John C.: Neuroanatomical basis of behaviour - the ultimate units. In A. Abrams, H. H. Garner and J. E. P. Toman (ed.): *Unfinished tasks in behavioural sciences* (Williams & Wilkins, Baltimore 1964), 12-32 [1A-260; N° 268]
479. Eccles, John C.: Conscious experience and the human brain. In *Trans.R. Soc. N. Zealand., Gen.* 1 (1965), 175-182 [1A-276; N° 284]
480. Eccles, John C.: Conscious experience and memory. In *Recent Advances in Biol. Psychiatry* 8 (1965), 235-236 [1A-278; N° 286]
481. Eccles, John C.: Possible ways in which synaptic mechanisms participate in learning, remembering, and forgetting. In Daniel P. Kimble (ed.): *The anatomy of memory. Proceedings of the first conference on learning, remembering, and forgetting. Vol. 1* (Science & Behavior, Palo Alto 1965), 12-87 [1A-280; N° 288]
482. Eccles, John C.: *The brain and the person. The Boyer Lectures* (Australian Broadcasting Commission, Sidney 1965). [1B-a07; N° 290]
483. Eccles, John C.: *The brain and the unity of conscious experience. Eddington Memorial Lecture, 1965* (Cambridge UP, Cambridge 1965). [1B-a08; N° 291]
484. Eccles, John C.: Brain and the development of the human person. In *Impact* 16 (1966), 93-112 [1A-292; N° 300]
485. Eccles, John C.: [discussion]. In A. V. S. de Reuck and Julie Knight (ed.): *Ciba foundation symposium: Touch, heat and pain* (Churchill, London 1966), 22-23, 28-29, 80-81, 141-144, 356-358, passim [1C-294x; N° 303]
486. Eccles, John C.: Introduction. In John C. Eccles (ed.): *Brain and conscious experience. Study week Sept. 28 to Oct 4, 1964, of the Pontificia Academia Scientiarium* (Springer, New York 1966), xv-xvi [1A-295w; N° 305]
487. Eccles, John C. (ed.): *Brain and conscious experience. Study week Sept. 28 to Oct. 4, 1964, of the Pontificia Academia Scientiarum* (Springer, New York 1966). [1B-a09; N° 306]
488. Eccles, John C.: Conscious experience and memory. In John C. Eccles (ed.): *Brain and conscious experience* (Springer, New York 1966), 314-344 [1A-295y; N° 307]
489. Eccles, John C. et al.: Final discussion. In John C. Eccles (ed.): *Brain and conscious experience. Study week Sept. 28 to Oct 4, 1964, of the Pontificia Academia Scientiarium* (Springer, New York 1966), 548-574 [1A-295z; N° 308]
490. Eccles, John C.: Conscious experience and memory. In *Pontifica Academia Scientiarum, Commentarii* 30 (1966), 469-513 [1A-296x; N° 309]
491. Eccles, John C.: Conscious experience and memory - academic address. In Joseph Wortis (ed.): *Recent Advances in Biological Psychiatry, 8. The Proceedings of the 20th annual convention and scientific program of the society of biological psychiatry, New York City, April 30 - May 2, 1965* (Plenum, New York 1966), 235-256 [1A-300; N° 314]

492. Eccles, John C.: Expérimentation sur l'homme en neurophysiologie. In: *La science biomedicale devant le dileme de l'expérimentation sur l'homme* (CIOMS/UNESCO, Paris 1968), 19 [1A-322; N° 336]
493. Eccles, John C.: The experiencing self. In John D. Roslansky (ed.): *The uniqueness of man, a discussion at the Nobel conference organized by Gustavus Adolphus College, St. Peter, Minnesota, 1968* (North-Holland, Amsterdam 1969), 101-135 [1A-339; N° 355]
494. Eccles, John C.: Possible synaptic mechanisms subserving learning. In: Brain and human behaviour. In A. G. Karczmar, J. C. Eccles (ed.): *Brain and human behaviour* (Springer, Heidelberg 1972), 39-61 [1A-370; N° 389]
495. Karczmar, A. G., J. C. Eccles (ed.): *Brain and human behaviour* (Springer, Heidelberg 1972). [1B-a13; N° 390]
496. Eccles, John C.: Brain, speech and consciousness. In *Naturwissenschaften* 60 (1973), 167-176 [1A-384; N° 404]
497. Eccles, John C.: *The understanding of the brain* (McGraw-Hill, New York 1973). [1B-a14]

    Eccles, John C.: *The understanding of the brain. 2nd edition* (McGraw & Hill, New York 1977). [1B-a14-2]

    Eccles, John C.: *Das Gehirn des Menschen [The understanding of the brain]* (Piper, Munich 1975). 3492021174 [1B-g14]

    Eccles, John C.: *Das Gehirn des Menschen. 2nd edition* (Piper, Munich 1979). [1B-g14]

    Eccles, John C.: Wie wurde der Mensch zu dem, was er ist? [Reprinted from: Das Gehirn des Menschen. Sechs Vorlesungen für Hörer aller Fakultäten. München 1975, 281-284.]. In Klaus Stadler (ed.): *Lust am Forschen. Ein Lesebuch zu den Naturwissenschaften* (Piper, Munich, Zurich 1989), 324-329 [1B-g14a]

    Eccles, John C.: *La Conoscenza del Cervello* (Piccin, Padova 1976). [1B-i14]

    Eccles, John C.: *La Conoscenza del Cervello* (Piccin, Padova 1980). [1B-a14_i2]

    Eccles, John C.: *La Conoscenza del Cervello* (Piccin, Padova 1984). [1B-i14-3]

    Eccles, John C.: *Nō. Sono kōzō to hataraki [The understanding of the brain]* (Kyōritsushuppan, Tokyo 1977). [1B-j14]

    Eccles, John C.: *El cerebro: morfologia y dinámica [The understanding of the brain]* (Interamericana, México 1975). [1B-s14; N° 407]
498. Eccles, John C.: Reflexions on mind. Review of The nature of mind by A. J. P. Kenny, H. C. Longuet-Higgins, J. R. Lucas & C. H. Waddington. In *Nature* 244 (1973), 183-184 [1A-388; N° 408]
499. Eccles, John C.: Preface. In Eric P. Polten (ed.): *Critique of the psycho-physical identity theory. A refutation of scientific materialism and an establishment of mind-matter dualism by means of philosophy and scientific method* (Mouton, The Hague, Paris 1973), ix-xiv [1A-390x; N° 411]
500. Eccles, John C.: How conscious is the brain? Review of The conscious brain by S. Rose. In *The Times Higher Education Supplement* 102 (1973), 15 [1A-391; N° 412]

501. Eccles, John C.: The physiology and physics of the free will problem. In Stephan L. Mintz and Susan M. Widmayer (ed.): *Progress in the neurosciences and related fields* (Plenum, New York 1974), 1-40 [1A-399; N° 421]
502. Eccles, John C.: Cerebral activity and the freedom of the will. In: *Modern science and moral values. Proc. 2nd. Internat. Conf. on the Unity of the Sciences, Tokyo* (International Cultural Foundation, New York 1974), 35-62 [1A-400x; N° 423]
503. Eccles, John C.: Cerebral activity and consciousness. In Francisco J. Ayala and Theodosius Dobzhansky (ed.): *Studies in the philosophy of biology: reduction and related problems* (MacMillan, London 1974), 87-107 [1A-406; N° 430]
504. Eccles, John C. and Peter Scheid: Music and speech: artistic functions of the human brain. In *Psychology of Music* 3 (1975), 21-35 [1A-416; N° 440]
505. Eccles, John C.: Brain and free will. In Gordon G. Globus, Grover Maxwell and Irwin Savodnik (ed.): *Consciousness and the brain. A scientific and philosophical inquiry* (Plenum, New York 1976), 101-121 [1A-426; N° 450]
506. Dewan, E. M., John C. Eccles, Gordon G. Globus, Keith Gunderson and et al: The role of scientific results in theories of mind and brain: A conversation among philosophers and scientists. In Gordon G. Globus, Maxwell Grover and Irwin Savodnik (ed.): *Consciousness and the brain. A scientific and philosophical inquiry* (Plenum, New York 1976), 317-328 [1A-427; N° 452]
507. Eccles, John C.: The brain-mind problem as a frontier of science. In *Progr. Sci. Culture* 1 (1976), 7-17 [1A-428; N° 453]
508. Eccles, John C.: Brain-mind problem as a frontier of science. In Timothy C. L. Robinson (ed.): *The future of science: 1975 Nobel Conference* (Wiley, New York 1977), 73-104 [1A-435; N° 456]
509. Eccles, John C.: An instruction-selection theory of learning in the cerebellar cortex. In *Brain Research* 127 (1977), 327-352 [1A-437; N° 458]
510. Eccles, John C.: Objectivity in the neurobiological sciences: the dialogue between philosophers on the mind-brain problem. In: *The case of objectivity. Proceedings of the 3rd International Humanistic Symposium at Athens and Pelion* (Hellenic Soc. Humanistic Studies, Athens 1977), 295-305 [1A-441]
    Eccles, John C.: Objektivität in den neurobiologischen Wissenschaften: Der Dialog zwischen Philosophen über das Geist-Gehirn-Problem <Transl.: Objectivity in the neurobiological sciences: the dialogue between philosophers on the mind-brain problem. In: The case of objectivity, Athen 1977, 295-305>. In Werner Becker and Kurt Hübner (ed.): *Objektivität in den Natur- und Geisteswissenschaften* (Hoffmann & Campe, Hamburg 1976), 144-153 [1A-441g; N° 462]
511. Popper, Karl R. and John C. Eccles: *The self and its brain. An argument for interactionism* (Springer, Berlin, Heidelberg, New York 1977). [1B-a15]
    Popper, Karl R. and John C. Eccles: *The self and its brain. An argument for interactionism* (Routledge, London 1995). [1B-a15-2]
    Popper, Karl R. and John C. Eccles: *Das Ich und sein Gehirn* (Piper, Munich 1982).

3492024475 [1B-g15]
Popper, Karl R. and John C. Eccles: *Das Ich und sein Gehirn* (Piper, Munich 1987). 3492024475 [1B-g15]
Popper, Karl R. and John C. Eccles: *Das Ich und sein Gehirn* (Piper, Munich 1996). 3492210961 [1B-g15-2]
Popper, Karl R. and John C. Eccles: *L'Io e il Suo Cervello* (Amando, Amando, Rome 1981). [1B-i15]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 1. Materia, coscienza e cultura* Roma 1981). [1B-i15-1a]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 2. Strutture e funzioni cerebrali* Roma 1981). [1B-i15-1b]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 3. Dialoghi aperti tra Popper e Eccles* Roma 1981). [1B-i15-1c]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 1. Materia, coscienza e cultura* Roma 1986). [1B-i15-2a]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 2. Strutture e funzioni cerebrali* Roma 1986). [1B-i15-2b]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 3. Dialoghi aperti tra Popper e Eccles* Roma 1986). [1B-i15-2c]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 1. Materia, coscienza e cultura* Roma 2001). [1B-i15-3a]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 2. Strutture e funzioni cerebrali* Roma 2001). [1B-i15-3b]
Popper, Karl R. and John C. Eccles: *L'io e il suo cervello: 3. Dialoghi aperti tra Popper e Eccles* Roma 2001). [1B-i15-3c]
Popper, Karl R. and John C. Eccles: *Jiga to nō (Jō) [The self and its brain]* (Shisaku-sha, Tokyo 1986). 4783501378 [1B-j15-a]
Popper, Karl R. and John C. Eccles: *Jiga to nō (Ge) [The self and its brain]* (Shisaku-sha, Tokyo 1986). 4783501386 [1B-j15-b]
Popper, Karl R. and John C. Eccles: *O eu e seu cérebro [The self and its brain]* (Papirus, Campinas 1991). 8523001476 [1B-p15-a]
Popper, Karl R. and John C. Eccles: *O cérebro e o pensamento [The self and its brain]* (Papirus, Campinas 1991). 8530801997 [1B-p15-b]
Popper, Karl R. and John C. Eccles: *El yo y su Cerebro* (Hoffmann-La Roche, Basilea 1980). [1B-s15; N° 466]

512. Eccles, John C.: Hirn und Bewusstsein. In Hoimar von Ditfurth (ed.): *Mannheimer Forum 77/78. Ein Panorama der Naturwissenschaften* (Boehringer, Mannheim 1977), 9-63 [1A-446; N° 468]
513. Eccles, John C.: Learning and memory in human brain and conscious mind. In *Hexagon [Basel: Hoffmann-La Roche]* 5 (1977), 1-10 [1A-447; N° 469]
514. Eccles, John C.: Preface. In Pierre A. Buser and Arlette Rougeul-Buser (ed.): *Cerebral correlates of conscious experience. Proceedings of an international*

symposium ... held in Senanque Abbey, France on 2-8 August 1977: INSERM symposium 6. (Elsevier, Amsterdam 1978), v-vi [1A-449x; N° 472]

515. Eccles, John C.: A critical appraisal of brain-mind theories. In Pierre A. Buser and Arlette Rougeul-Buser (ed.): *Cerebral correlates of conscious experience. Proceedings of an international symposium ... held in Senanque Abbey, France on 2-8 August 1977: INSERM symposium 6.* (Elsevier, Amsterdam 1978), 347-355 [1A-450; N° 473]
516. Eccles, John C.: An approach to neurobiology. Review of The purposive brain by Ragnar Granit. In *Perspectives in Biology and Medicine* 21 (1978), 466-469 [1A-451; N° 474]
517. Eccles, John C.: A critical appraisal of brain-mind problems. In International Conference on the Unity of the Sciences (ed.): *The search for absolute values in a changing world. Proc. 6th Internat. Conf. on the Unity of the Sciences, Nov. 25-27 1977, San Francisco* (International Cultural Foundation, New York 1978), 961-966 [1A-457; N° 480]
518. Eccles, John C.: Das Problem von Gehirn und Geist. In: *Die Psychologie des 20. Jahrhunderts* (Kindler, Zurich 1978), 1131-1177 [1A-458; N° 481]
519. Eccles, John C.: *The human mystery. The Gifford Lectures, 1977-78* (Springer, Berlin 1979). [1B-a17]

    Eccles, John C.: *Le Mystère humain: conférences Gifford, Université d'Edimbourg 1977-1978* (Pierre Madarga, Brussels 1981). [1B-f17]

    Eccles, John C.: *Il mistero Uomo: Conference Gifford, Universita di Edimburgo 1977-78* (Il Saggiatore, Milan 1981). [1B-i17]

    Eccles, John C.: *Il mistero Uomo: Conference Gifford, Universita di Edimburgo 1977-78* Milan 1995). [1B-i17-2]

    Eccles, John C.: *Il mistero Uomo: Conference Gifford, Universita di Edimburgo 1977-78* Milan 1990). [1B-i17-3; N° 484]
520. Eccles, John C.: Der Nervenapparat des Gehirns und das Gehirn-Bewußtsein-Problem. In Otto Molden (ed.): *Europäisches Forum Alpbach 1978* (F. Molden, Wien 1979), 90-107 [1A-465; N° 488]
521. Eccles, John C.: The human brain and the human person. In International Conference on the Unity of the Sciences (ed.): *The re-evaluation of existing values and the search for absolute values. Proc. 7th Internat. Conf. on the Unity of the Sciences, Nov. 24-26, Boston. 2 Vols.* (International Cultural Foundation, New York 1979), 1125-1140 [1A-470; N° 493]
522. Eccles, John C.: Nei meandri del cervello alla scoperta della mente. In *Scienza e Vita nuova* 1 (1979), 18-25 [1A-471; N° 495]
523. Eccles, John C.: The human person and the brain - la persona umana e il cervello. In *Civiltà delle Macchine* 26 (1979), 20-26 [1A-472; N° 496]
524. Eccles, John C. and Hans Zeier: *Gehirn und Geist* (Kindler, Munich 1980). [1A-479; N° 500]
525. Eccles, John C. (ed.): *The human psyche. The Gifford Lectures, 1979* (Springer, Berlin, Heidelberg, New York 1980). [1B-a19]

Eccles, John C. (ed.): *Die Psyche des Menschen: Die Gifford Lectures an der Universität von Edinburgh 1978-79* (Reinhardt, Munich 1985). [1B-g19]

Eccles, John C. (ed.): *La Psiche Umana: le conferenze Gifford, Università di Edimburgo 1978-1979* (Manuali Sansoni, Florence 1983). [1B-i19; N° 501]

526. Eccles, John C.: The emotional brain. In *Bulletin et Memoires de l'Academie Royale de Médecine de Belgique* 135 (1980), 697-713 [1A-483; N° 506]
527. Eccles, John C.: New text asserts psychobiology as an independent science. Review of The psychobiology of mind by W.R. Uttal. In *Bioscience* 29 (1980), 482-483 [1A-486; N° 510]
528. Eccles, John C.: The self-conscious mind and the meaning and mystery of personal existence. In *Teachers College Record* 82 (1981), 403-426 [1A-489; N° 513]
529. Eccles, John C.: The modular operation of the cerebral neocortex considered as the material basis of mental events. In *Neuroscience* 6 (1981), 1839-1856 [1A-493; N° 516]
530. Eccles, John C.: Review of Programs of the brain by J. Z. Young. In *Quart. Rev. Biol.* 54 (1981), 361 [1A-495; N° 518]
531. Eccles, John C.: More on the body-mind problem. Review of The brain's mind: A neuroscience perspective on the mind-body problem, ed. by D. Bindra. In *Trends in Neurological Sciences* 4 (1981), xx [1A-496; N° 519]
532. Eccles, John C.: Sprache, Denken und Gehirn. In: *Kindler's Enzyklopädie Der Mensch, 6* (Kindler, Munich 1981), 275-304 [1A-500; N° 523]
533. Eccles, John C.: Mente. In Aldo Ferrabino (ed.): *Enciclopedia del novecento* (Istituto della Enciclopedia Italiana, Rome 1981, vol. 4), 91-102, [1A-501]

    Eccles, John C.: Mente. In Aldo Ferrabino (ed.): *Enciclopedia del novecento* (Istituto della Enciclopedia Italiana, Rome 1981, vol. 8), 704-713 [1A-501x; N° 524]
534. Eccles, John C.: Language, thought and brain. In *Epistemologia* 4 (1981), 97-126 [1A-503; N° 526]
535. Eccles, John C.: The liaison brain for voluntary movement: the supplementary motor area. In *Acta Biologica* 33 (1982), 157-172 [1A-510; N° 532]
536. Eccles, John C.: Beyond the brain. In *Omni [New York]* (1982), 57-62 [1A-515; N° 537]
537. Eccles, John C.: Our fragile brains. Review of A Christian perspective in brain research by D.G. Jones. In *Zygon - Journal of Religion and Science* 17 (1982), 219-223 [1A-517; N° 540]
538. Eccles, John C.: How the self acts on the brain. In *Psychoneuroendocrinology* 7 (1982), 271-283 [1A-521; N° 544]
539. Eccles, John C. (ed.): *Mind and brain: the many-faceted problems. Selected readings from the Proceedings of the International Conferences on the Unity of the Sciences* (Paragon House, Washington 1982). [1B-a21]

    Eccles, John C. (ed.): *Mind and brain: the many-faceted problems.* (Paragon House, New York 1987). [1B-a21-2; N° 546]

540. Eccles, John C.: Das Zeitgefühl. In *Naturwissenschaftliche Rundschau* 36 (1983), 427-432 [1A-532 ; N° 555]
541. Eccles, John C.: Prefazione. In Boris Luban-Plozza (ed.): *Il medico come medicina [Der Arzt als Arznei - das therapeutische Bündnis mit dem Patienten]* (Piccin, Padova 1983), vii-ix [1A-533x ; N° 557]
542. Eccles, John C.: Calcium in long-term potentiation as a model for memory. In *Neuroscience* 10 (1983), 1071-1081 [1A-534 ; N° 558]
543. Eccles, John C. and Daniel N. Robinson: *The wonder of being human: our brain and our mind* (Free Press / Collier Macmillan, New York / London 1984). [1B-a22]

    Eccles, John C. and Daniel N. Robinson: Bewußtsein bei Tieren - Bewußtsein beim Menschen [Reprinted from: Das Wunder des Menschseins - Gehirn und Geist. München 1985, 33-40.]. In Klaus Stadler (ed.): *Lust am Forschen. Ein Lesebuch zu den Naturwissenschaften* (Piper, Munich, Zurich 1989), 317-324 [1C-537g-b]

    Eccles, John C. and Daniel N. Robinson: Die Philosophie der Personalität (from: Das Wunder des Menschseins [The wonder of being human], 2nd ed. Munich 1986, 217-223). In Heidi Bohnet and Klaus Piper (ed.): *Lust am Denken: Ein Lesebuch aus Philosophie, Natur- und Humanwissenschaften 1981-1991* (Piper, Munich, Zurich 1992), 33-39 [1C-537g-b]

    Eccles, John C. and D. N. Robinson: *La Meraviglia di essere uomo* (Armando, Rome 1985). [1B-i22]

    Eccles, John C. and D. N. Robinson: *Kokoro ha nō wo koeru. Ningensonzai no Fushigi [The wonder of being human]* (Kinokuniyashoten, Tokyo 1989). 4314005130 [1B-j22; N° 565]
544. Eccles, John C.: The concept of the liason brain, In Otto Molden (ed.): *Europäisches Forum Alpbach 1984* (F. Molden, Vienna 1984) [1A-545; N° 571]
545. Eccles, John C.: Recognition - memory and consciousness. In *Pontif. acad. scientiarum scripta varia* 54 (1985), 309-332 [1A-550; N° 576]
546. Eccles, John C.: Mental summation: the timing of voluntary intentions by cortical activity [Comment on: Unconscious cerebral initiative and the role of conscious will in voluntary action by B. Libet]. In *Behavioral and brain sciences* 8 (1985), 542-543 [1A-554; N° 581]
547. Eccles, John C. and Roger Sperry: Mind enfolds brain: the mentalist revolution. In (ed.): *Nobel Prize conversations with Sir John Eccles, Roger Sperry, Ilya Prigogine, Brian Josephson, with a commentary by Norman Cousins* (Saybrook, San Francisco 1985), 37-68 [1A-555x ; N° 582]
548. Eccles, John C.: New light on the mind-brain-problem: How mental events could influence neural events. In Hermann Haken (ed.): *Complex systems - operational approaches in neurobiology, physics, and computers. Proceedings of the international symposium on synergetics at Schloss Elmau, Bavaria, May 6-11, 1985* (Springer, Berlin et al 1985), 81-106 [1A-556x ; N° 583]
549. Eccles, John C.: Mechanisms of long-term memory. In *Journal de Physiologie* 81 (1986), 312-317 [1A-557 ; N° 584]
550. Eccles, John C.: Do mental events cause neural events analogously to the probability fields of quantum mechanics? In *Proceedings of the Royal Society*

of London Series B, Containing Papers of a Biological Character 227 (1986), 411-428 [1A-561 ; N° 589]

551. Eccles, John C.: L'uomo e il suo cervello. In *Fondamenti* 5 (1986), 133-149 [1A-565 ; N° 594]
552. Eccles, John C.: L'effetto del pensiero silenzioso sulla corteccia cerebrale. In: *Synesis (Assoc. ital. centri cultural. Milano)* 4-3/4 (1987), 27-52 [1A-569; N° 598]
553. Eccles, John C.: Presentazione all'edizione Italiana di J. Eccles. In Henry Margenau (ed.): *Il miracolo dell'esistenza [The miracle of existence]* (Armando Armando, Rome 1987), 7-10 [1A-569y ; N° 600]
554. Eccles, John C.: The effect of silent thinking on the cerebral cortex. In B. Gulyas (ed.): *The brain-mind problem: philosophical and neurophysiological approaches* (Leuven UP, Leuven 1987), [1A-572 ; N° 603]
555. Eccles, John C.: Brain and mind, two or one, In Colin Blakemore (ed.): *Mind-waves. Thought on intelligence, identity and consciousness* (Basil Blackwell, New York 1987), 292-304 [1A-573; N° 604]
556. Eccles, John C.: Mammalian systems for storing and retrieving memory. In C. D. Woody, D. L. Alkon and J. L. McGaugh (ed.): *Cellular mechanisms of conditioning and behavioural plasticity* (Plenum, New York 1988), 289-302 [1A-576 ; N° 608]
557. Eccles, John C.: The spiritual nature of the self. In *Dynamische Psychiatrie. Internationale Zeitschrift für Psychiatrie und Psychoanalyse* 21 (1988), 20-34 [1A-577 ; N° 609]
558. Eccles, John C.: Hughlings Jackson's views on consciousness. In Christopher Kennard and Michael Swash (ed.): *Hierarchies in neurology. A reappraisal of a Jacksonian concept* (Springer, London et al 1989), 39-47 [1A-576x; N° 611]
559. Eccles, John C.: Geist-Leib-Problem (mind-body-problem). In Helmut Seiffert and Gerard Radnitzky (ed.): *Handlexikon zur Wissenschaftstheorie* (Ehrenwirth, Munich 1989), 101-106 [1A-580; N° 616]
560. Eccles, John C.: The mind-brain problem revisited: the microsite hypothesis. In John C. Eccles and Otto Creutzfeld (ed.): *The principles of design and operation of the brain* (Pontificia Academia Scientiarum, Vatican City 1990), 549-572 [1A-584; N° 620]
561. Eccles, John C.: Physics of brain-mind interactions. In *Behav. Brain Sci.* 13 (1990), 662 [1A-587; N° 623]
562. Eccles, John C.: A unitary hypothesis of mind-brain interaction in the cerebral cortex [erratum appeared in Proc R Soc Lond B Biol Sci 1990 Sep 22; 241 (1302): 250]. In *Proceedings of the Royal Society of London Series B, Containing Papers of a Biological Character* 240 (1990), 433-451 [1A-588; N° 625]
563. Eccles, John C.: The mystery of being human. In Nevil Mott (ed.): *Can scientists believe? Some examples of the attitude of scientists to religion* (James & James, London 1991), 79-98 [1A-589x; N° 627]

564. Eccles, John C.: L'interazione mente/cervello: Configurazione ultramicroscopica e funzione della corteccia cerebrale. In Giulio Giorello and Piergiorgio Strata (ed.): *L'automa spirituale: menti, cervelli e computer* (Rome, Bari, Laterza 1991), 59-76 [1A-590x; N° 629]
565. Beck, Friedrich and John C. Eccles: Quantum aspects of brain activity and the role of consciousness. In *Proceedings of the National Academy of Sciences of the United States of America* 89 (1992), 11357-11361 [1A-591x; N° 630]
566. Eccles, John C.: Evolution of complexity of the brain with the emergence of consciousness. In Karl H. Pribram (ed.): *Rethinking neural networks: quantum fields and biological data. Proceedings of the 1st Appalachian conference on behavioral neurodynamics* (Erlbaum, Hillsdale, New Jersey 1992), 1-28 [1A-592; N° 631]
567. Eccles, John C.: Der Dualismus von "Ich" und Gehirn. In Jutta Fedrowitz, Dirk Matejovski and Gert Kaiser (ed.): *Neuroworlds: Gehirn - Geist - Kultur* (Campus, Frankfurt 1994), 208-222 [1A-596; N° 637]
568. Gerin, Guido and John C. Eccles (ed.): *Manipolazioni al cervello, valutazioni etiche e diritti dell'uomo* Trieste 1994). [1B-a28; N° 638]
569. Eccles, John C.: *How the self controls its brain* (Springer, Berlin, New York 1994). [1B-a29]

    Eccles, John C.: *Comment la conscience contrôle le cerveau* (Fayard, Paris 1997). [1B-f29]

    Eccles, John C.: *Wie das Selbst sein Gehirn steuert* (Piper, Munich 1994). [1B-g29]

    Eccles, John C.: Die Einzigartigkeit eines jeden Selbst [From: Wie das Selbst sein Gehirn steuert. Piper: Munich 1994, 260-262]. In Heidi Bohnet-von der Thüsen (ed.): *Denkanstöße '96. Ein Lesebuch aus Philosophie, Natur- und Humanwissenschaften* (Piper, Munich 1996), [1B-g29-x]

    Eccles, John C.: *Come l'io controlla il suo cervello* (Milano 1994). [1B-i29]

    Eccles, John C.: *Jiko wa donoyōni nō wo kontorōru suruka [How the self controls its brain]* (Springer (Shupuringā Fearāku), Tokyo 1998). 4431708065 [1B-j29; N° 639]
570. Beck, Friedrich and John C. Eccles: Quantum processes in the brain: A scientific basis for consciousness. In *Cognitive Studies* 5 (1998), 95-109 [1A-601; N° 642]

Evolution (Biological: MeSH D005075 [G05.355.044] & Cultural MeSH D003468 [I01.076.201.450.370]

571. Eccles, John C.: The fundamental importance of brain research. In *Naturwissenschaften* 53 (1966), 165-166 [1A-298; N° 312]
572. Eccles, John C.: The fundamental importance of brain research. In Stuart Mudd (ed.): *Conflict resolution and world education* (Junk, The Hague 1966), 253-258 [1A-303; N° 317]
573. Eccles, John C.: The challenge of the brain – interview with MacKay. In *Science Journal* (1967), 79-83 [1A-307; N° 321]

574. Eccles, John C.: Evolution and the conscious self. In J. Roslansky (ed.): *The human mind* (North Holland, Amsterdam 1967), 3-28 [1A-315; N° 329]
575. Eccles, John C.: The importance of brain research for the educational, cultural, and scientific future of mankind. In *Perspectives in Biology & Medicine* 12 (1968), 61-68 [1A-330; N° 345]
576. Eccles, John C.: The future of the brain sciences. In Samuel Bogoch (ed.): *The future of the brain sciences. Proceedings of a conference held at the New York Academy of Medicine, May 2-4, 1968* (Plenum, New York 1969), xxxiii-xxxix [1A-338; N° 354]
577. Eccles, John C.: Some implications of the scientiae for the future of mankind. In *Studium Generale* 23 (1970), 917-924 [1A-353]

    Eccles, John C.: Some implications of the scientiae for the future of mankind. In Paul A. Weiss (ed.): *Knowledge in search of understanding: the Frensham papers* (Futura, New York 1975), 249-256 [1C-353-2; N° 370]
578. Eccles, John C.: Neurobiology: the new wave leading on from molecular biology. In *Federation Proceedings* 30 (1971), 1413-1415 [1A-362; N° 379]
579. Eccles, John C.: Cultural evolution versus biological evolution. In *Zygon - Journal of Religion and Science* 8 (1973), 282-293 [1A-390; N° 410]
580. Eccles, John C.: Our brains and our future. In Eugene H. Kone and Helene J. Jordan (ed.): *The greatest adventure - basic research that shapes our lives* (Rockefeller UP, New York 1974), 70-83 [1A-393; N° 415]
581. Eccles, John C.: Culture: The creation of man and the creator of man. In: *Modern science and moral values. Proc. 2nd. Internat. Conf. on the Unity of the Sciences, Tokyo* (International Cultural Foundation, New York 1974), 23-34 [1A-400; N° 422]
582. Eccles, John C.: Evolution of the brain in relation to the development of the self-conscious mind. In *Annals of the New York Academy of Sciences* 299 (1977), 161-179 [1A-445; N° 467]
583. Eccles, John C.: The evolution of altruism. In International Conference on the Unity of the Sciences (ed.): *The search for absolute values in a changing world. Proc. 6th Internat. Conf. on the Unity of the Sciences, Nov. 25-27 1977, San Francisco* (International Cultural Foundation, New York 1978), 827-831 [1A-456; N° 479]
584. Eccles, John C.: Review of Evolution and consciousness: Human systems in transition, ed. by E. Jantsch & C.H. Waddington. In *Zygon - Journal of Religion and Science* 15 (1980), 438-440 [1A-484; N° 507]
585. Eccles, John C.: Values and decisions. Review of The biological origins of human values by G.E. Pugh. In *Higher Education Review* 12 (1980), 84-87 [1A-485; N° 509]
586. Eccles, John C.: Bewusstsein der Tiere und Ich-Bewusstsein des Menschen: Ein Rätsel der Evolution. In *Naturwissenschaftliche Rundschau* 35 (1982), 393-399 [1A-516; N° 539]

587. Eccles, John C.: Animal consciousness and human self-consciousness. In *Experientia* 38 (1982), 1384-1391 [1A-522; N° 545]
588. Eccles, John C.: The human brain: the challenge to science. In *IBRO News* 11 (1983), 13-16 [1A-535 ; N° 559]
589. Eccles, John C.: Evoluzione biologica e culturale dell' uomo. In *Nuova civiltà delle machine* 2-3 (1984), 40-48 [1A-547; N° 573]
590. Eccles, John C.: Preface. In Robert M. Augros and George N. Stanciu (ed.): *The new story of science - mind and the universe* (Bantam, Toronto, New York 1986), ix-xii [1A-561x ; N° 590]
591. Eccles, John C.: Biologische und kulturelle Evolution des Menschen. In *Naturwissenschaftliche Rundschau* 39 (1986), 195-200 [1A-564; N° 593]
592. Eccles, John C.: *The evolution of the brain: creation of the conscious self* (Routledge, London, New York 1989). [1B-a25]

    Eccles, John C.: *Evolution of the brain: creation of the self* (Routledge, London, New York 1991). [1B-a25-2]

    Eccles, John C.: *Evolution of the brain: creation of the self* (Routledge, London 1996). [1B-a25-2]

    Eccles, John C.: *Nao de jin hua: zi wo yi shi de chuang sheng [Evolution of the brain - creation of the self]* (Shanghai ke ji jiao yu chu ban she, Shanghai 2004). 754283455X / 9787542834553 [not available]

    Eccles, John C.: *Nao de jin hua: zi wo yi shi de chuang sheng [Evolution of the brain - creation of the self]* (Shanghai ke ji jiao yu chu ban she, Shanghai 2007). 754283455X / 9787542834553 [not available]

    Eccles, John C.: *Evolution du cerveau et creation de la conscience: a la recherche de la vraie nature de l'homme* (Fayard, Paris 1992). [1B-f25]

    Eccles, John C.: *Evolution du cerveau et creation de la conscience: a la recherche de la vraie nature de l'homme* (Flammarion, Paris 1994). [1B-f25-2]

    Eccles, John C.: Die Erschaffung des Selbst oder der Seele [from: Die Evolution des Gehirns - die Erschaffung des Selbst. Piper: Munich 1989, 379-381]. In Heidi Bohnet-von der Thüsen (ed.): *Denkanstöße '92. Ein Lesebuch aus Philosophie, Natur- und Humanwissenschaften* (Piper, Munich 1992), 84-87 [1A-575g-a]

    Eccles, John C.: *Die Evolution des Gehirns - die Erschaffung des Selbst* (Piper, Munich 1989). [1B-g25]

    Eccles, John C.: Das Mysterium des Menschen (from: die Evolution des Gehirns [The evolution of the brain], Munich 1990, 387-391). In Heidi Bohnet and Klaus Piper (ed.): *Lust am Denken: Ein Lesebuch aus Philosophie, Natur- und Humanwissenschaften 1981-1991* (Piper, Munich, Zurich 1992), 249-253 [1C-575g-b]

    Eccles, John C.: *Evoluzione del cervello e creazione dell'io* Rome 1990). [1B-i25]

    Eccles, John C.: *Evoluzione del cervello e creazione dell'io* Rome 1995). [1B-i25-2]

    Eccles, John C.: *No no shinka [The evolution of the brain. Transl. Masao Ito]* (Tokyo Daigaku Shuppankai, Tokyo 1990). [1B-j25]

    Eccles, John C.: -- *[Evolution of the brain - creation of the self]* (Minumsa, [Korea] 1998). 9788937441134 [not available; N° 610]

593. Eccles, John C.: Der Ursprung des Geistes, des Bewußtseins und des Selbst-Bewußtseins im Rahmen der zerebralen Evolution. In Hans-Peter Dürr and Walther Ch. Zimmerli (ed.): *Geist und Natur: Über den Widerspruch zwischen naturwissenschaftlicher Erkenntnis und philosophischer Welterfahrung* (Scherz, Bern 1989), 79-89 [1A-578; N° 613]
594. Eccles, John C.: Kulturelle Evolution und schöpferische Einbildungskraft. In Hans Thomas (ed.): *Die Welt als Medieninszenierung: Wirklichkeit, Information, Simulation. Colloquium Köln 1988, Lindenthal-Institut* (Busse & Seewald, Herford 1989), [1A-579; N° 615]
595. Eccles, John C.: Evolution of consciousness. In *Proceedings of the National Academy of Sciences of the United States of America* 89 (1992), 7320-7324 [1A-590; N° 628]
596. Eccles, John C.: L'evoluzione dell'intenzione. In D. Galbiati (ed.): *Scienza ed etica alle soglie del terzo millennio* (Società Italiana di Fisica, Bologna 1993), 255-277 [1A-595; N° 636]
597. Eccles, John C.: Il futuro della scienza, il futuro della mente. In Italo Valent (ed.): *Finis saeculi, finis mundi? Il passo del duemila* (Grafo, Brescia 1996), 73-78 [1A-600; N° 641]

Historiography MeSH D006663 [K01.400.441]; incl. Nuclear Warfare D009689 [I01.880.735.944.600; N° 0]

598. Eccles, John C.: Sir Charles Sherrington, O.M., F.R.S., 1857-1952. In *Br. J. Philos. Sci.* 3 (1952), 298-301 [1A-106; N° 109]
599. Eccles, John C.: Some aspects of Sherrington's contribution to neurophysiology. In *Notes and records of the Royal Society of London* 12 (1957), 216-225 [1A-151; N° 154]
600. Eccles, John C.: The development of ideas on the synapse. In Chandler McC. Brooks and Paul F. Cranefield (ed.): *The historical development of physiological thought* (Hafner, New York 1959), 39-66 [1A-167; N° 172]
601. Eccles, John C.: Professor Ragnar Granit's contributions in the field of motor control. In *Amer. J. Phys. Med.* 47 (1968), 3-7 [1A-321; N° 335]
602. Eccles, John C.: Two hitherto unrecognized publications by Sir Charles Sherrington, O.M., F.R.S. In *Notes and Records of the Royal Society of London* 23 (1968), 86-100 [1A-327; N° 342]
603. Eccles, John C.: Central cholinergic transmission and its behavioural aspects. Historical introduction. In *Federation Proceedings* 28 (1969), 90-94 [1A-334; N° 350]
604. Eccles, John C.: Alexander Forbes and his achievement in electrophysiology. In *Perspectives in Biology & Medicine* 13 (1970), 388-404 [1A-349; N° 366]
605. Eccles, John C.: Jan-Friedrich Tönnies. In *Journal of Neurophysiology* 34 (1971), 937 [1A-364x; N° 383]

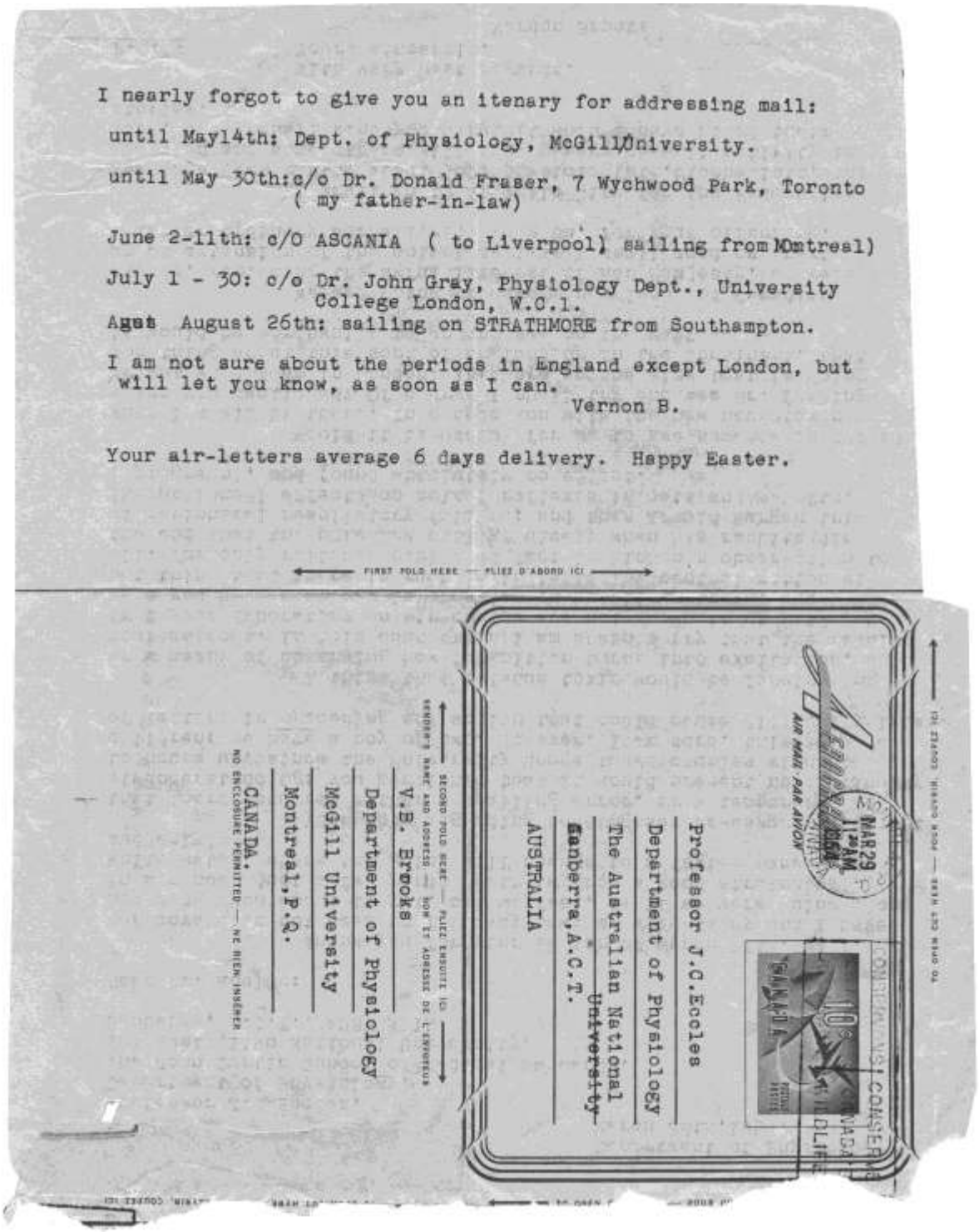
606. Eccles, John C.: British physiology: some highlights 1870-1940. In William C. Gibson (ed.): *British contributions to medical science. The Woodward-Wellcome Symposium, University of British Columbia 1970* (Wellcome Institute of the History of Medicine, London 1971), 173-193 [1A-369; N° 388]
607. Eccles, John C.: Brainwaves. Review of Explorers of the brain by L. A. Stevens. In *Nature* 246 (1973), 363-364 [1A-391x; N° 413]
608. Eccles, John C.: Letters from C. S. Sherrington, F.R.S., to Angelo Ruffini between 1896 and 1903. In *Notes & Records of the Royal Society of London* 30 (1975), 69-88 [1A-415; N° 439]
609. Eccles, John C.: Under the spell of the synapse. In Frederic G. Worden, Judith P. Swarzey and George Adelman (ed.): *The neurosciences: paths of discovery* (MIT, Cambridge, Mass. 1975), 159-179 [1A-417; N° 441]
610. Eccles, John C.: From electrical to chemical transmission in the central nervous system. In *Notes & Records of the Royal Society of London* 30 (1976), 219-230 [1A-420; N° 444]
611. Eccles, John C.: The three joint winners of the 1975 Nobel Prize in Medicine. In *Progr. Sci. Culture* 1 (1976), 93-96 [1A-429; N° 454]
612. Eccles, John C.: My scientific odyssey. In *Annual Review of Physiology* 39 (1977), 1-18 [1A-436]

    Eccles, John C.: My scientific odyssey [reprint from Annual Review of Physiology 39 (1977), 1-18]. In William C. Gibson (ed.): *The excitement and fascination of science: Volume two. Reflections by eminent scientists* (Annual Reviews, Palo Alto 1978), 121-138 [1A-436-2; N° 457]
613. Eccles, John C.: Reflections on a lifetime of experiences in scientific publications. In Konrad F. Springer (ed.): *Semper attentus. Beiträge für Heinz Götze zum 8. August 1977* (Springer, Berlin, Heidelberg, New York 1977), 95-102 [1A-442; N° 463]
614. Buser, Pierrre and John C. Eccles: Paul Dell (1915-1976). In *Experimental Brain Research* 27 (1977), 233-5 [1A-443x; N° 465]
615. Eccles, John C.: Edgar Douglas Adrian 1889-1977. In *Experimental Brain Research* 31 (1978), 153-154 [1A-448; N° 470]
616. Eccles, John C. and William Feindel: Wilder Graves Penfield, 26 January 1891 - 5 April 1976. In *Biographical Memoirs of Fellows of the Royal Society* 24 (1978), 473-513 [1A-460; N° 483]
617. Eccles, John C. and William C. Gibson: *Sherrington, his life and thought* (Springer, Berlin, Heidelberg, New York 1979). [1B-a18]

    Eccles, John C. and William C. Gibson: *Sherrington no shogai to shiso: gendai no kenkyu no paionia* (Sangyotosho, Tokyo 1987). 4782800363 [1B-j18; N° 485]
618. Eccles, John C.: In praise of books. In: *Für Klaus Piper zum 70. Geburtstag* (Piper, Munich 1981), 48-50 [1A-488; N° 512]
619. Eccles, John C.: Obituary: Derek Denny-Brown (1901-1981). In *IBRO News* 9 (1981), 9-10 [1A-491; N° 515]
620. Eccles, John C.: The story of the International Neurobiology Society. In *IBRO News* 9 (1981), 1-3 [1A-497; N° 520]

621. Eccles, John C. (ed.): *A gallery of publishing experiences: Dedicated to Silvio Weidmann on his 60th birthday* (Physiolog. Inst., Bern 1981). [1A-499; N° 522]
622. Eccles, John C.: Life in Sherrington's laboratory, his last decade in Oxford (1925-1935). In *Trends in Neuroscience* 5 (1982), 108-110 [1A-506; N° 528]
623. Eccles, John C.: The synapse: from electrical to chemical transmission. In *Annual Review of Neuroscience* 5 (1982), 325-339 [1A-507; N° 529]
624. Eccles, John C.: The implications of nuclear war on the human being. In E. Etim, S. Stipcich (ed.): *The world-wide implications of nuclear war. International seminar on nuclear war, 2nd seminar, Erice, Sicily 1981* (World Scientific, River Edge NJ 1982), 163-169 [1A-511; N° 533]
625. Eccles, John C.: Review of Chemical transmission – 75 years, by L. Stjärne, P. Hedqvist, H. Lagercrantz & A. Wennmalm. In *Neuroscience* 7 (1982), 2561-2563 [1A-514; N° 536]
626. Eccles, John C.: My living dialogue with Popper. In Paul Levinson (ed.): *In pursuit of truth. Essays in honour of Karl Popper on the occasion of his 80th birthday, with forewords by Isaac Asimov and Helmut Schmidt* (Humanities, Harvester, Atlantic Highlands 1982), 221-236 [1A-518; N° 541]
627. Eccles, John C.: Biographical notes on Janos Szentágothai. In *Trends in Neuroscience* 5 (1982), 418-419 [1A-520; N° 543]
628. Eccles, John C.: The human mystery: a lifelong search for truth. In *Civitas* 38 (1983), 301-305 [1A-526 ; N° 548]
629. Eccles, John C.: A NATO policy of strengthening conventional weapons and forces. In E. Etim and S. Stipcich (ed.): *How to avoid a nuclear war. International seminar on nuclear war, 2nd session, Erice, 1982* (Laboratori Nazionali, Frascati 1983), 61-71 [1A-536 ; N° 560]
630. Eccles, John C.: Address to banquet for Janos Szentágothai. In *Acta morphologica hungarica* 31 (1983), I [1A-540; N° 564]
631. Eccles, John C.: Planning for peace. In W. S. Newman and S. Stipcich (ed.): *The technical basis for peace. International seminar on nuclear war 3rd session, held at the E. Majorana Centre for Scientific Culture, Erice, Aug. 19-24, 1983* (Laboratori Nazionali, Frascati 1984), 335-340 [1A-546; N° 572]
632. Eccles, John C.: Global cooperation. In W. S. Newman and S. Stipcich (ed.): *The nuclear winter and new defense systems: problems and perspectives.International seminar on nuclear war 4th session, held at the E. Majorana Centre for Scientific Culture, Erice, Aug. 19-24, 1984* (Laboratori Nazionali, Frascati 1985), 434-438 [1A-548 ; N° 575]
633. Eccles, John C.: Chemical transmission and Dale's principle. In *Progress in Brain Research* 68 (1986), 3-13 [1A-558 ; N° 585]
634. Eccles, John C.: Global freedom for scientific interchange. In W. S. Newman and S. Stipcich (ed.): *SDI, computer simulations, new proposals to stop the arms race. 5th international seminar on nuclear war* (Laboratori Nazionali, Frascati 1986), 355-357 [1A-559x ; N° 587]

635. Eccles, John C.: Review of: The brain-machine. The development of neurophysiological thought by M. Jeannerod. In *Neuropsychologia* 24 (1986), 601-602 [1A-566; N° 595]
636. Eccles, John C.: Synapses in the central nervous system from Sherrington to the present, In Hugh McLennan (ed.): *Advances of physiological research* [proceedings of the 30th Congress of Physiological Sciences of the International Union of Physiological Sciences, held June 13 - 19, 1986, in Vancouver, Canada] (Plenum, New York 1986) [1A-567; N° 596]
637. Eccles, John C.: East-West, North-South. In M. Dardo (ed.): *The great projects for scientific collaboration east-west-north-south. 7th international seminar on nuclear war* (World Scientific, River Edge NJ 1987), 153-155 [1A-569x ; N° 599]
638. Eccles, John C.: Recollections on the early concepts of the synapse. In *Synapse* 1 (1987), 131-132 [1A-574x ; N° 605]
639. Eccles, John C.: The story of the Renshaw cell. In Nae J. Dun and Robert L. Perlman (ed.): *Neurobiology of acetylcholine. Proceedings of a symposium held in honor of Alexander G. Karczmar, June 5-7, 1985, in Maywood Ill.* (Plenum, New York, London 1987), 189-194 [1A-574y ; N° 606]
640. Eccles, John C.: Closing remarks. In M. Dardo and K. Goebel (ed.): *International seminar on nuclear war. 9th session: The new emergencies* (World Scientific, River Edge NJ 1989), 325 [1A-577y; N° 612]
641. Eccles, John C.: Developing concepts of the synapses. In *Journal of Neuroscience* 10 (1990), 3769-3781 [1A-586; N° 622]
642. Eccles, John C.: Janos Szentágothai. In: *Laudatio Johannis Szentágothai: 80* 1992), 7-9 [1A-594y; N° 635]



I nearly forgot to give you an itenary for addressing mail:

until May14th: Dept. of Physiology, McGill University.

until May 30th:c/o Dr. Donald Fraser, 7 Wychwood Park, Toronto
(my father-in-law)

June 2-11th: c/O ASCANIA (to Liverpool) sailing from Montreal)

July 1 - 30: c/o Dr. John Gray, Physiology Dept., University College London, W.C.1.

August 26th: sailing on STRATHMORE from Southampton.

I am not sure about the periods in England except London, but will let you know, as soon as I can.

Vernon B.

Your air-letters average 6 days delivery. Happy Easter.

FIRST FOLD HERE — PLIEZ D'ABORD ICI

AIR MAIL · PAR AVION

MAR29 11AM 1954

CANADA 10c

Professor J.C.Eccles
Department of Physiology
The Australian National University
Canberra,A.C.T.
AUSTRALIA

SECOND FOLD HERE — PLIEZ ENSUITE ICI
RETURN'S NAME AND ADDRESS — NOM ET ADRESSE DE L'EXPÉDITEUR

V.E. Brooks
Department of Physiology
McGill University
Montreal,P.Q.
CANADA.

NO ENCLOSURE PERMITTED — NE RIEN INSÉRER

Aerogramme 1954

Prospects: The Archives and Kalliope

by Fabio De Sio, Julia Kouzmenko,
Sophia Sotke, Ulrich Koppitz

An archive is a testimony. More so in the case of a personal one. Not only does it guard the vestiges of a life, but it also conveys (often by omission) a certain concept of a life. This applies to all sorts of archives, in that they are always in a sense (auto)biographies, those of individuals as those of institutions.

Yet, in approaching the personal papers of one great man, the archivist and the historian experience with particular intensity both the uneasy feeling of being mislead by a Fata Morgana and the thrill of engaging with a “real” mind, and a remarkable one indeed. The sense of depth provided by the multifarious networks among documents of different sorts, the blending of “the personal”, “the scientific” and the more broadly “cultural”, so easily obliterates the simple and immediate knowedge of facing a topological system, a network of traces. In personal archives, stories seem to emerge autonomously, to just unfold and grow through multiple series of references, or resonances. The personal papers of John Carew Eccles present just this prototypical situation.

Historians have long learned to protect themselves from the charms of personal archives, and the quest for the great personality has long been superseded by more refined and complex approaches to history. This awareness was epitomized by the Foucauldian shift from “the archives” to “the archive”, from the repositories and their contents to the discursive device and its logic. Perhaps more incisively, the technical and procedural development of the archives has affected the way historical research is performed in ways that are still to be fully thematized.

The system Kalliope is a perfect example of the evolution of the archive from an environment to a database, in which the connections grow in different ways, and the research can unfold at many levels at once.

Yet, we are convinced that the Eccles Archive has a great value not only as a repository of information, part of a larger diffused archival system, but exactly as a personal archive, as the individual expression of an individuality. This is not an attempt to return to an outdated approach to history. Rather, what makes the Eccles Archive almost unique is its contingent situation.

John Eccles is recognised as one of the fathers of contemporary neurosciences, but he was also an outspoken believer and a keen philosopher. His strong commitment to the problem of the uniqueness of the individual is a most intriguing key to a set of issues that are nowadays at the core of both the neurosciences and the humanities. The nature of the memory trace, the relation of mind to body, the very foundations of being human are questions that led Eccles' intellectual experience and that were left to the following generations of neuroscientists and humanists alike. We think that the possibility of a conflation of very disparate perspectives (neuroscientific, historical, philosophical) on the same great questions (of individuality and of memory) adds to the value of an archive as a research environment in itself, and not only as a node in an archival system.

This implies accepting the challenge of the archive, especially the risk of losing balance between the concepts of the archive as a heuristic tool and as the testimony of an individuality, a historical entity in itself. We think that at this boundary lie the most fascinating questions of both the sciences and the humanities, and that the heritage of John C. Eccles provides in itself a historical case of the confrontation and conflation of so different views.

For these reasons, in parallel with the cataloguing and indexing of the documents, in 2012 we will also develop an interdisciplinary research project on the cultural history of the neurosciences centred on the archive.

According to John Eccles' last will, his archives shall be made accessible for scholarly use in the best possible way. In order to start with this ambitious project the Institute for the History of Medicine applied for

funding at the German Research Foundation (DFG),[1] who in the 21st century embarked on a promising scheme called Kalliope. Due to German history and federalism, many archives and personal remains are scattered over the country in various institutions. Thus, the DFG has been decided to predominantly support online resources based on digitisation or indexing in the system Kalliope, that is based on three principles developed for typical literary remainders conserved in libraries:

A) Direct connection with the central standard database for authors and institutions provided by the National Library;
B) Categories for literary remainders:
   1. works,
   2. correspondence
   3. life documents
   4. collections;
C) Separation of outgoing and incoming letters.

Thus, Kalliope provides a research opportunity to find archives and labels very quickly looking for letters by the same well-defined author in several literary remainders all over the country. There are a few problems to be solved, e.g. that Kalliope bylaws restrict the use of other languages than German, or import of datasets from overseas if correspondents do not yet occur in the German central database.

In case of the personal correspondence of John Eccles, there are some rather recent letters still under retention period, especially when expert advice of persons or institutions are concerned, and others from earlier periods which can easily be characterised by his country of residence. Uneven numbers of the labels indicate incoming post, even numbers the copies of outgoing letters.

According to the German regulation for literary remainders (RNa), the following systematics has been developed:

[1] For one year, 2012, a full time scientist is granted in addition to the librarian to index and comment the Eccles archive within the framework of the online portal Kalliope www.nachlassdatenbank.de ~ kalliope

Systematics of the Eccles Collection

1. Works

1A- Articles (bound in series etc.)
1B- Books (labels of translations, re-editions analogous to original sequence)
1C- Conference- & edited vols. with contributions by Eccles (labels analogous to 1A)
1D- Manuscripts, notes
1E- Lectures, seminars
1F- Figures, didactic material
1G- Galley Proofs
1H- Films
1J- Diverse

2. Correspondence

2NZ-001 sq. - Private - before 1952 (New Zealand, Sydney, Oxford)
2NZ-1000 sq. - Confidential - before 1952 (New Zealand, Sydney, Oxford)
2NZ-2000 sq. - General Correspondence - vor 1952 (New Zealand, Sydney, Oxford)
2AU-001 sq. - Private - 1952-1966 (Canberra)
2AU-1000 sq. - Confidential - 1952-1966 (Canberra)
2AU-2000 sq. - Private - 1952-1966 (Canberra)
2US-001 sq. - Private - 1966-1975 (Chicago, Buffalo)
2US-1000 sq. - Confidential - 1966-1975 (Chicago, Buffalo)
2US-2000- General Correspondence- 1966-1975 (Chicago, Buffalo)
2CH-001 sq. - Private - 1975-1997 (Switzerland)
2CH-1000 sq. - Confidential - 1975-1997 (Switzerland)
2CH-2000 sq. - General Correspondence- 1975-1997 (Switzerland)

3. Life Documents

3A-001 sq. Private: Documents
3B-001 sq. Private: Financial, Diverse
3C-001 sq. Academic: Public Events, Conferences, Travel
3D-001 sq. Academic: Diplomata
3E-001 sq. Academic: Institute, Financial, Diverse

4. Collections

4A- Offprint collection private library
4B- Books private library (catalogue online)[2]
4C- Journals private library
4D- Photographs etc.
4E- Press-clippings etc.
4F- Cardboxes
4G- Diverse

[2] The catalogue of the privat library is not included in Kalliope but online since 2010 on the Archives' website www.uniklinik-duesseldorf.de/eccles ~ library.

The first systematic indexing of the archives does not include any digitization which might become desirable for several parts of this rather large collection later. The material is stored with regards to possible future digitization as well as best possible conservation of the original.

To use the archival material, an application to the Head of the Institute for the History of Medicine is required including precise topic and period of research. The application form and bylaws for the Eccles-Archive and the Vogt Archive (in German, analogously) are to be found in this volume, they are also provided with further practical information on the website www.uniklinik-duesseldorf.de/eccles. One voucher copy of every publication based on archival material from the Eccles Collection is obligatory and will be added to section 4B-2000 of the Library.

To prepare archival research, the recent state of indexing can easily be investigated via the central online portal www.kalliope-portal.de from all over the world.

In the second half of this book, an unsystematic selection of older correspondence conveys some insight what could be expected: John Eccles and his correspondents, as well as Cécile and Oskar Vogt, belonged to generations living in a letter writing culture, and in their cases life conditions led to even more extensive writing and collecting international letters deepening the academic discourse of their times.

The history of the Neurosciences has still much to offer to historians, trivially enough, but also to philosophers, human scientists and, not last, neuroscientists themselves. It is therefore with enthusiasm that we engage with the Eccles Archive project.

Further readings:

Adelman, G., The Neurosciences Research Program at MIT and the Beginning of the Modern Field of Neuroscience*. Journal of the History of the Neurosciences* 19,1 (2010), 15-23.

Andersen, P. Inhibitory circuits in the thalamus and hippocampus--An appraisal after 40 years. *Progress in Neurobiology* 78 (2006), 264-271.

Bennett, M.R. and P.M.S. Hacker: *Philosophical foundations of neuroscience*. (Wiley-Blackwell: Oxford 2003).

Borck, C.: John C. Eccles (1903-1997): neurophysiologist and neurophilosopher. *Journal for the History of Neuroscience,* 7 (1998), 76-81.

Bui, D.: *Mente, cervello e coscienza: il vicolo cieco del materialismo nel pensiero di Sir John Eccles; con un contributo di Mario Tiengo* (Mattioli: Fidenza 2006).

Burke, R. E. John Eccles' pioneering role in understanding central synaptic transmission. *Progress in Neurobiology* 78, 173-188.

Choudhury, S. and Slaby, J. (eds.), *Critical Neuroscience*, (Wiley: London 2011, forthcoming).

Corsi, P., *The enchanted loom: Chapters in the history of neuroscience,* (Oxford University Press: Oxford 1991).

Curtis, D. and Andersen, P.: John Carew Eccles 1903-1997. *Historical Records of Australian Science* 13 (2001), 439-473.

Eccles, H. and Biersack, H. J.: *Sir John Eccles in memoriam, a tireless warrior for dualism* (ecomed: Landsberg a.L. 2000)

Finger, S., *Origins of neuroscience: a history of explorations into brain function*. (Oxford University Press, Oxford 2001).

Foley, P. B., Storey, C. E. and Michael J. Aminoff: Chapter 48 History of neurology in Australia and New Zealand. In: *Handbook of Clinical Neurology Vol. 95*, (Amsterdam: Elsevier 2009), 781-800..

Grüsser, O.-J., H. Kapp, and U. Grüsser-Cornehls: *Microelectrode Investigations of the Visual System at the Department of Clinical Neurophysiology, Freiburg i.Br.: A Historical Account of the First 10 Years, 1951–1960.* Journal of the History of the Neurosciences, 14,3 (2005), 257-280.

Hagner, M. (ed.): *Ecce cortex. Beiträge zur Geschichte des modernen Gehirns*, (Wallstein: Göttingen 1999).

Hagner, M. and Borck, C. (eds): *Mindful practices. On the neurosciences in the twentieth century*. Special issue of *Science in context* 14,4 (2001).

Hultborn, H.: Spinal reflexes, mechanisms and concepts: From Eccles to Lundberg and beyond. *Progress in Neurobiology* 78 (2006), 215-232.

Ito, M.: Cerebellar circuitry as a neuronal machine. *Progress in Neurobiology* 78 (2006), 272-303.

Libet, B.: Reflections on the interaction of the mind and brain. *Progress in Neurobiology* 78 (2006), 322-326.

Mennis, M. R.: *The Book of Eccles: A portrait of Sir John Eccles, Australian Nobel Laureate and Scientist, 1903-1997*. (Aspley: Lalong 2003).

Pickering, A.: *The cybernetic brain: sketches of another future,* (University of Chicago Press: Chicago 2010).

Schmitt, F. O.: *The never ceasing search*. (American Philosophical Society: Philadelphia 1990).

Shepherd, G.M.: *Creating modern neuroscience: the revolutionary 1950s*. (Oxford University Press: Oxford 2009.

Shepherd, G.M., *Foundations of the neuron doctrine*. (Oxford University Press: Oxford 1991).

Smith, C. U. M.: Renatus Renatus: The Cartesian Tradition in British Neuroscience and the Neurophilosophy of John Carew Eccles. *Brain and Cognition* 46 (2001), 364-372.

Squire, Larry S. (ed), *The History of Neuroscience in Autobiography*, (Society for Neuroscience: Washington 1996 sqq.).

Stotz, G.: *Person und Gehirn - historische und neurophysiologische Aspekte zur Theorie des Ich bei Popper/Eccles,* (Olms: Hildesheim 1988).

Stuart, D. G. and Brownstone, R. M. The beginning of intracellular recording in spinal neurons: Facts, reflections, and speculations. *Brain Research* (2011) *In Press*

Stuart, D. G. and Pierce, P. A.: The academic lineage of Sir John Carew Eccles (1903-1997). *Progress in Neurobiology* 78 (2006), 136-155.

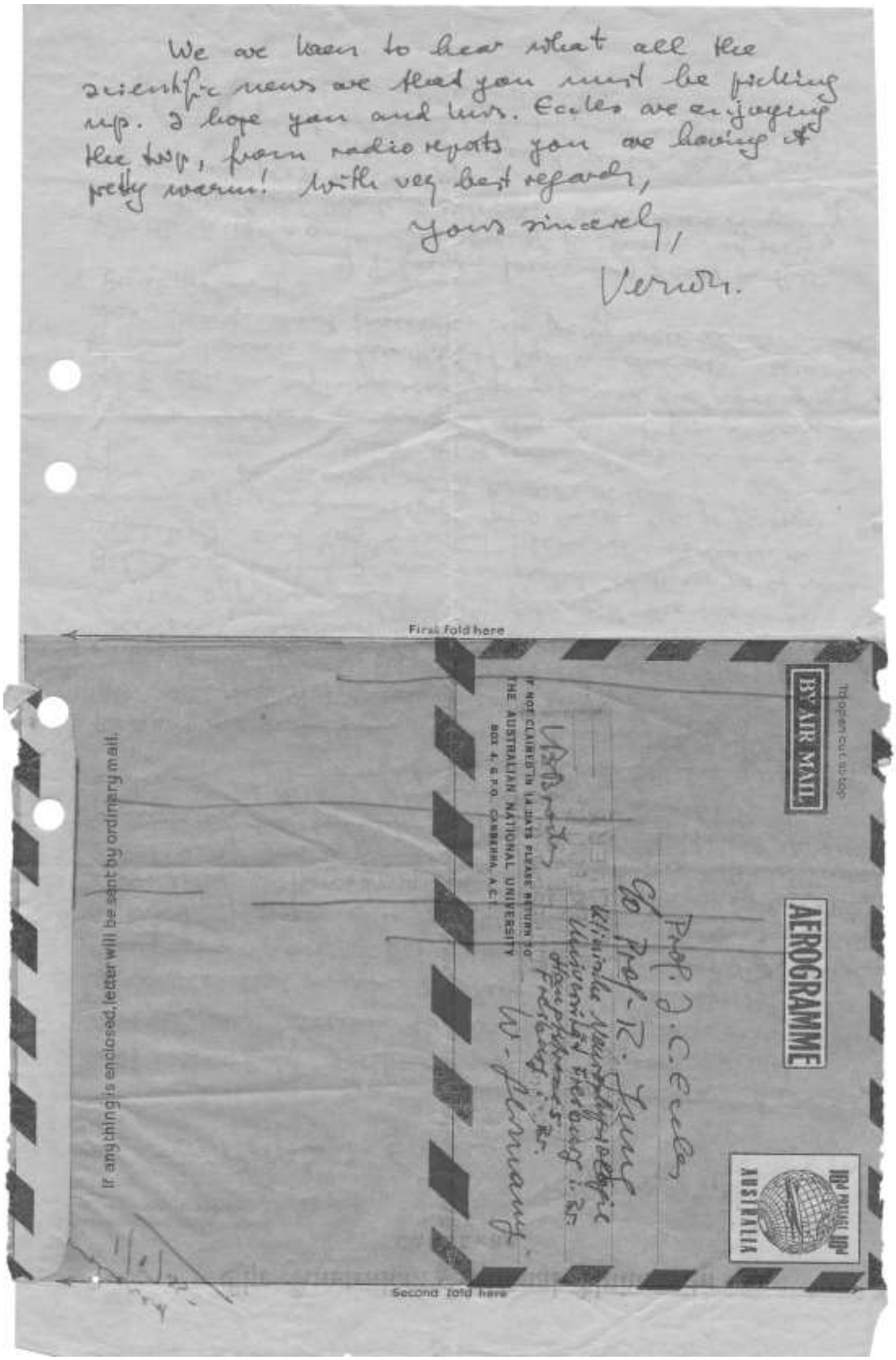
Stuart, D. G. and Zigmond, M. J.: Preface. *Progress in Neurobiology* 78 (2006), 135-135.

Todman, D.: John Eccles (1903-97) and the experiment that proved chemical synaptic transmission in the central nervous system. *Journal of Clinical Neuroscience* 15 (2008), 972-977.

Wiesendanger, M. Eccles' perspective of the forebrain, its role in skilled movements, and the mind-brain problem. *Progress in Neurobiology* 78 (2006), 304-321.

Willis, W. D. John Eccles' studies of spinal cord presynaptic inhibition. *Progress in Neurobiology* 78 (2006), 189-214.

Worden, F.G., et al. (eds), *The neurosciences: Paths of discovery*. (MIT Press: Boston 1975).



Aerogramme 1955

Correspondence 1937-1963 from the John C. Eccles Archive

Overview of numbered letters, correspondents and years[1]

1-3, Dale 1937-39
4, Brown 1938
5, Feng 1940
6-7, Dale 1941
8-9, O'Connor 1940-42
10, Wright 1943
11, Brown 1945
12-16, Popper 1945-47
17, Albert 1946
18, Bullock 1946
19, Feldberg 1946
20-21, Adrian 1947
22-23, Aeschlimann '47
24-25, Feldberg 1947
26-27, Kuffler 1947
28, Katz 1947
29-30, Jung 1947-48
31, Albert 1948
32-33, Fessard 1948
34-35 Hodgkin 1948-49
36, Gasser 1949
37, Brown 1949
38, Feldberg 1949
39, Easton 1949
40-41, Downman 1950
42-43, Young 1949-51
44-48 Albert 1950-51
49, Katz 1950
50-51, Popper 1950-51
52, Customs 1950
53, Feldberg 1950
54, Brown 1951
55, Brock 1952
56, Dale 1953
57, Fenn 1953
58, Jung 1953
59, Whitteridge 1953
60, Albert 1953
61, Campbell 1953
62, Everingham 1953
63, Ewing 1954
64, Florey 1955
65, Fenn 1955
66, Gibson 1956
67, Denny-Brown 1956
68-69, Doty 1957
70, Adrian 1958
71, Granit 1961
72, Kuffler 1961
73-88, Congratulations to Nobel Prize 1963

L01) **1937 - Dale to Eccles**
[2NZ-2023-1937-01-29]

My dear Eccles,

Buchthal has sent me a communication, of which a copy is enclosed, which he asks me to communicate for the Oxford meeting. I understand from Brown that he just mentioned the experiments in discussion at the Royal Society, and that there was no opportunity there for comment on them. My only hesitation in putting forward this Abstract for the Oxford meeting was due to the thought that we shall no longer have

[1] For more information please turn to the index (topics, persons, places) of this book. The definite archival label of each letter is printed in square brackets [2NZ- …].

with us the most doughty critic of the acetylcholine heresy, on the occasion when it is brought forward in the historic home of lost causes. I know you must be horribly busy making final arrangements for your departure. If you have a minute left to think of such things, I should welcome the opportunity of putting before the meeting, on your behalf, any brief comment which you would like to make on Buchthal's findings. There is one point in his observations, namely the failure of a second application of acetylcholine to excite, though the effect of the nerve impulse is undiminished, which looks so much like a 'soft one' put up for your particular benefit, that I should be unhappy if you were not offered the opportunity of trying to smite it to the boundary. One of us will be waiting there to catch it, of course; but I should hate to think that you did not get the chance of a joyous smack at it. I only hope that you have time to use the opportunity. One pithy sentence, thus communicated at second hand, will, as you will realise, be more effective than a more elaborate argument.

Putting all chaff aside, I do want to take the opportunity to say how much I deplore your departure from Physiology in this country. We have, in the last few years, had numerous opportunities of controversy, which on your side, and I hope on ours, has always been fair and good-tempered. Our differences of opinion and interpretation, however, have not in the least weakened my admiration for the splendid work which you have been doing. There are not so many physiological workers of first-rate quality among us, that we can afford to lose one of the best of them. I hope very sincerely that you will find conditions in Sydney such as to enable you to continue the work which you want to do, and which we all want you to do, with the minimum of disturbance, and under the best possible conditions. The best wishes of all your friends will go with you, and I hope that I may count myself as a sincere member of that band. If Sydney does not give you the opportunity that you want, you must come back to us I am sure that there will be an opportunity for you somewhere, if you should want it. The best, however, that could happen is that you should have a long and successful, and undisturbed career in your new post.

With all good wishes

Yours very sincerely

H.H. Dale

L02) **1937 - Eccles to Dale**
[2NZ-2024-1937-09-16]

Letterhead: Kanematsu Memorial Institute of Pathology, Sydney Hospital

Sir Henry Dale,
National Institute for Medical Research,
Hampstead. London, NW3

My dear Dale,

I have now been seven weeks at Sydney and am beginning to feel at home in my new surroundings. The conditions in the laboratory come up to my best expectations, and I am being given every opportunity in developing a research institute along my own lines. The building is very well planned and I am reconstructiong the whole of one floor so that I shall have far better facilities than I had at Oxford.

Naturally my research activities are held up while all this is occurring, so I expect that, by the time my artillery is ready again, you will have constructed new lines of fortifications for one to have a crack at. Of course at this distance we will miss the short range practice that we had at the Physiological meetings, but, if you don't make it too hot for me, I may venture over to England in a few years.

Sydney at present is not very strong scientifically – at least in the biological and medical sciences, but everybody is in a very receptive frame of mind, so I have every hope in the future. Already I have three young medical graduates of first class ability who are anxious to work with me. The raw material here is excellent once one can get it interested in research. Also now there is more money available than in the past. The Commonwealth Government have formed a Council of National Health and Medical Research – rather like the M.R.C. – which has £ 30,000 available for subsidising research. This Institute is getting £ 1300 in the first year, but more will be available if it develops as I hope. You will probably be confronted with an application which I have made to the Wellcome Charities Fund for an annual grant. Any money which would be available from that source would be most valuable here.

In the few days that I was at Melbourne I saw quite a lot of Kellaway and Feldberg. Feldberg is now likely to stay permanently in Australia as he has been appointed to a Senior Fellowship of the National Health and

Medical Research Council at £ 1000 a year. We are actually talking of collaborating in some problems, and he may come to Sydney to work with me for a time.
Please convey my best wishes to Brown.
Yours ever,
J. C. Eccles.

L03) **1939 – Eccles to Dale**
[2NZ-2024-1939-03-01]

Sir Henry Dale,
National Institute for Medical Research,
Hampstead. London, NW3

Sydney, 1st of March 1939

My dear Dale,

I much enjoyed receiving your letter of February 11 th. I fear your hopes of an early rapproachment will have suffered a disappointment ere this reaches you. I can't imagine what John Fulton had in mind, but you know him well enough to realize his weakness of over-enthusiasm. it may have been something I wrote to him about his book – perhaps I said that he shouldn't regard the humoral view as being so far out of the running as his book suggested – you see I try to be unbiased! Perhaps it was that interesting effect of eserine in prolonging the potential which a nerve impulse sets up at the motor end-plate which inspired his letter to you. Anyway the fact is that I have become more antagonistic than ever to the humoral view. O'Connor, too, shares my views, or did so when he left here; but heaven help him now that he has got within the range of Hampstead! You know even I used to feel the persuasive influence that emanated from there. Perhaps I fled across the world to Australia in order to avoid such subtle influences and so save my scientific conscience!

The short notes that we communicated to the University College meeting must be fairly hard to follow; however, I hope to make our views clearer in the papers I am now writing. We have lots of exciting things still coming along. Do tell Brown to give me a full account as soon as he can spare the time. At present I lack a sparring partner here, so I hope that Katz may be able to come. He intends to if he gets the Carnegie Fellowship which I have applied for on his behalf.

Again apologizing for my continued belligerence and with best wishes and kindest regards,
Yours very sincerely

**

L04) **1938 - Brown to Eccles**
[2NZ-2015-1938-07-08]

My dear Eccles,

This is really heaping coals of fire on my head, writing again before I have replied to your last. Now I've got such a head of gossip, I do not know where to start. We had a fine weekend at Oxford last week. The Pharmacological Soc. met on Thursday and Friday and we stayed in New Coll. Papers, as usual, rather dull but socially very pleasant. Your great friend Franklin read a very illuminating paper, he has been sticking pins into pieces of intestine, and seeing which way they rotate when he cuts it out, a great advance in physiology.

On Saturday, Physiol. Soc. as usual. I went into your old room in the morning and found it looking just as if you had only left it the day before, the same bits of wire and old plate boxes lying about. I felt very sad at the horrible waste of good equipment, and almost expected to hear you grumbling faintly inside the tin can. The meeting itself was approximately a replica of last year, the society's time being wasted by our friend Pratt talking with length and pomposity about things which have been done better before. However, all was not loss, Bronk managed to get his paper off. He is doing some very exciting stuff on the ganglion, he gets long lasting facilitation of single volleys produced by short periods of tetanisation, almost exactly the time relations of the post-tetanic decurarisation which Euler and I found in the skeletal muscle. He thinks also that it is due to K ions, and is doing expts. to find out. He is coming to spend a couple of days at Hampstead, so I may have some more to tell you soon.

The muscle work at Hampstead is going fairly sweetly. Harvey and I have got two papers in the press on the fowl muscle. The first on the two volley effect, the preliminary account of which you will have seen in the proceedings. It all worked out better than we had hoped, in fact it is almost too good to be true in parts. I should very much have liked your expert opinion on it before it went to press. However, I have no doubt that the referees will deal with it adequately, though we haven't heard from them yet. The other is more or less hack work on the ACh and eserine

effects. Not very exciting, but the eserine effects fit very well with the Hampstead views.

The other exciting thing we have on at the moment is the eye muscle. You know that these are the only mammalian muscles which react to the ACh by intravenous injection and in other ways they resemble the fowl muscle. We therefore had the hunch that they would show the facilitation with two maximal volleys which we found in the fowl, and as far as preliminary expts. have gone they do. This is particularly exciting as the eye muscle are the first, and often the only muscles affected in myasthenia. We are getting on with this, and are going to have a stab at demonstrating some decent effect of sympathetic stimulation, if we can. The paper with Euler will have reached you by now. As you will see we do not agree entirely with Arturo, and certainly not with many of Feng's claims. However, I am not so sceptical about some of Feng's stuff, as I was after reading your letter. We are all feeling rather flabbergasted by your results. Gasser was in the other day, and I told him that you had been getting this queer stuff. He said, naturally, that you were getting repetitive nerve firing. I said that you were much too careful to be let in by that, I hope you are! What happens if you give your cats a shot of Ca, are they all in mild tetany? If this goes on we shall have to get permission to import some. Now about your arguments.

I don't think variability in an effect of this sort is a very good argument against esterase.

Agreed, eserine has been known for some time to have a distinct curare action, Cowan has been very strong on this, but I can't give you the reference off hand, as his stuff appears in such penny numbers. If spontaneous twitching is like the effects of a single volley, isn't that the evidence that it is result of "random nerve impulses"? Admitted.

I can't discuss this without seeing your evidence for the statement, anyhow I regard it with the gravest suspicion. In any case it is not a very significant argument against chemical transmission, but merely a remarkable example of the rheoscopic muscle <u>in vivo</u>.

It seems completely hopeless to argue by letter like this, but I suppose that it is better than nothing. I can tell you that we've missed you a lot this year, and the first few meetings without you made me go home in a state of deep depression. You would have been in great demand at the Hampstead meeting when Bacq, Coppee and MacIntosh were reading their papers on the ganglion. You may have heard that Granit was over

for the Cambridge meeting. He is just the same as ever, perhaps a little more staid and professorial, but not much.

We have recently formed a small Neurological club, with a membership of about 24, strictly limited to people under 40 years old. We had the first meeting in May at Queen Sq. Rushton, Barron, Matthews and Hodgkin, when he comes back, form the Physiological backbone. With a scattering of clinicians, it makes a very jolly crowd, and we say just what we want. We must arrange a meeting to take place when you next come over. Matthews seems to be out for your blood about cord potentials. I spent an hour with him at the Cambridge meeting, and he produced a very battered and scored copy of your old paper with Sherry on the flexor reflex and tried his arguments out on me. I did my best, but I wanted stronger backing to be able to hold my own on your behalf. Speaking of blood, Arturo seems to be out for yours again. Are you just going to ignore him. If you slay him, Bronk for one will be very pleased.

Now I must tell you the tit-bit. This is Gasser's latest, it is not published anywhere yet, but one of his people is reading a paper on it at Zurich. He finds that an afferent volley in a sensory root produces a discharge of impulses, both ipsilateral and contralateral, antidromically down other posterior roots, and that the fibres carrying these impulses have their cell stations in the posterior roots! The reflex delay is about 4 msec. and consequently there must be some 5 or 6 synaptic relays in their path. The fibres involved are some 30 p.c. of the fastest fibres of the root. What do you think about that? If out – Barron and Matthews with some effect. Gasser does not want to commit himself, but he has the hunch that these are the much discredited trophic impulses. H.H.D. [Dale] says that this is the discovery of the century, if it is true.

MacIntosh has finished his paper on the confutation of Lorente de No, and it is going to the press soon. We are quite convinced that Lorente is wrong, and the only difficulty has been that we have been entirely unable to reproduce his results. Gasser spent some time seeing how things are done here, and he is going to get Lorente to repeat our methods exactly. MacIntosh may manage to get over to the Rockefeller some time if we can't come to an agreement.

I am now completely exhausted and have still masses to talk about, so I'll just give you the family news and stop and save some for a later letter. Stephen arrived shortly after you had sailed and is now a very buxom babe. The others are flourishing and managed to get through the

winter without contracting anything serious. I hope your new arrival makes his advent with due decorum, by this time I suppose all will be safely over. Here are my congratulations in advance.
Jeannie sends love and best wishes to you all,
Yours,
Brown

P.S. Albeit, results not out yet, but would like to see something of O'Connor, if H.H.D. [Dale] approves. The lab will be pretty full next year, but we may be able to fill him in. Brown

P.P.S. King has sent you some of his precious curarine. ½ - 1 mg per cat gives nice partial curarization in English cats!

**

L05) **1939 - Feng to Eccles, 1940, July 25**
[2NZ-2039-1940-07-25]

Letterhead: Peiping Union Medical College, Department of Physiology, P.U.M.C., Peiping, China

Dr. J. C. Eccles
The Kanematsu Memorial Institute of Pathology
Sydney Hospital, Sydney, Australia

Dear Dr. Eccles:

W. O. Fenn asked me to write a review of my studies on N-M junction to be published in a Symposium on Muscle and said he was also asking you to contribute a paper. Enclosed is a copy of the MS which I have just sent to him and which I think you might like to read in advance. I am afraid you will find in the General Discussion part a good deal to disagree with, and for this reason I should be particularly glad to have your criticism.

I am eagerly looking forward to reading your forthcoming papers on mammalian N-M transmission. I hope you have been able to continue your work in Sydney in spite of the war.
Best wishes,
Yours sincerely,
T.P. Feng

P.S. Many thanks for your reprints received a short time ago. For the enclosed MS I have not a complete duplicate set of figures to send along, but most of those not available are reproductions from old papers which you have possibly already seen.

**

L06) **1941 - Dale to Eccles**
[2NZ-2023-1941-03-24]

Letterhead: The Royal Society, Burlington House, London W.1

J.C. Eccles, F.R.S.
Kanematsu Memorial Institute of Pathology
Sydney Hospital, Sydney New South Wales.

My dear Eccles,

it was a very sincere pleasure to me to know that the Council of the Royal Society had decided to nominate you this year to the Fellowship, and a still greater one to be able to participate myself in that decision. With all your friends, I rejoice that this proper recognition has come to your work. I am afraid that it may be a long time, perhaps, many years, before you are able to get to London again, to sign the Charter Book, and be formally admitted. Meanwhile, it will always be a joy to hear of you when you have time to write.
Yours very sincerely
H. H. Dale

L07) **1941 - Eccles to Dale**
[2NZ-2024-1941-03-24]

My dear Sir Henry,

I heard recently from some source that you and Brown were glad that we had at last admitted the full significance of ACh at the neuro-muscular junction! And now I have had the unkindness to reopen the argument by a paper on serine action on the sympathetic ganglion. Presumably Brown will soon be seeing it, as it was sent in to the Journal of Physiology a couple of weeks ago. It seems that the picture is more complicated than we yet realize.

However my main motive in writing lies elsewhere. I have applied for the Physiology chair at the University of Otasgo N.Z., and have given your name as a reference. Doubtless you know of the English Board of advisers (Chairman, the High Commissioner of New Zealand). My present position has become unsatisfactory in Sydney. One of the consolations of the war is the presence of A. M. Harvey here. He is working in his spare time with Stephen Kuffler on nerve injuries and malarial neuritis. Bernhard Katz is temporarily back from RDF work, and I am most occupied in acoustic sensual work.
My very best wishes to yourself and to Brown
Yours sincerely

**

L08) **1940 - O'Connor to Eccles**
[2NZ-2083-1940-08-29]

Letterhead: University of Cambridge, Pharmacological Laboratory, Cambridge

Dear Jack,

Writing letters to Australia always makes me feel far too like a war correspondent these days. Really the war is still a rather remote sort of thing to us in Cambridge and as yet the determined ones at any rate have not stopped doing some sort of academic research. Verney is very determined to keep on until actually ordered to stop, and so up to the present the only effect of war has been to give us rather more demonstrating to do --- otherwise work has gone as before. In any case there is nothing else to do. I suppose that if air-raiding becomes directed with the main objects of causing civilian casualties, then we will all be wanted for some sort of hospital service but at present there has been no appeal for emergency medical people, so that we just go on. It is nevertheless strange to read of all this aerial war-fare going on right over our own heads and to realise that it is only on very odd occasions that we have any more direct proof of its existence that is offered by the papers and the wireless, and you can probably read that just as soon as we can. How the thing will end is beyond all of us --- we just accept that it is not too bad yet and wait for the next thing to happen.

Of people in Cambridge there is very little to tell as most of them are not seen these days. Roughton and Barron have both gone to America, Matthews is away on some hush-hush work, Rushton one sees sometimes, Adrian got bitten by a cat recently and got a badly infected arm as the result but is recovering now, while Feldberg is still here and quite cheerful. That is all the names I can think of at the moment but the Physiology lab. here has quite closed down on research for the duration.

I see Still quite often and at the moment he is indulging in something of a hate at the authorities of the Sydney University, who have apparently offered him a lectureship below the status that they were to give him when he was due to go back. It does one good to hear an Australian having a hate and whenever we get together he always seems to completely ruin the shreds of reputation that are left to the people of our acquaintance in Sydney.

Some time ago I got some reprints of the magnum opus which I look at with awe whenever they work their way to the top layer of my desk and am really astonished to think that there are still several like that to come. Incidentally, during the summer course my main job for three weeks was to demonstrate that ACh stimulates striated muscle. Feldberg was very amused and accused Verney of being cynical. At any rate you can take it that the present Cambridge medical student has been inoculated with the seed of doubt on the subject of the chemical transmission at the mother end plates and in the central nervous system. One man (doubtless more intelligent than most students) took the wind out of my sails completely --- as soon as I suggested that there was such a thing as a chemical theory of neuro-muscular transmission, this fellow remarked with contempt “but no-one believes that tosh now, do they?”
Well that seems about all there is to say. The Eccles family by now must be quite grown up – give them my best wishes and Mrs. Eccles also.
Regards and best wishes.
John O’Connor.

L09) **1942 - Eccles to O’Connor**
[2NZ-2084-1942-08-07]

Dr. W.J. O’Connor
Pharmacology Department
Cambridge, England

Dear John,

I believe I have owed you a letter for about 6 months. However I can always pretend that I have written a letter and it has been sunk. That seems to be getting quite a common technique in England. First of all congratulations on your marriage. Still told me he had his suspicions about you, but you haven't told me who the young lady is, so I won't introduce any unnecessary complications by guessing.

The present letter is partly to ask you to head the proofs of a paper I am sending in to the Journal of Physiology – that is if they accept it. We are getting a bit tired of publishing in the Journal of Neurophysiology, and in any case England seems a lot safer than a couple of years ago.

Out here we have our own share of alarums, but nothing serious as yet. We all have our shelters and actually have used them once – about an hour after the submarine shelling had ceased. Research at the labs. is gradually coming to a standstill. Last year I had about 6 months off setting up the serum manufacturing plant. That now runs by itself with its technical staff. Then for some 6 months I got busy on the stellate ganglion, but now I am off research for good I fear, as I have all sorts of odd jobs to do for the military and air force on hearing and visual problems.

Bernhard Katz has been with the R.A.A.F. for the last 6 months, and is a highly successful radio-location officer. Stephen Kuffler is still here, and is still working on the neuro-muscular junction – particularly the reactions to local applications of drugs.

Our family has just had about 4 months of continued hospitalization. Only Rene went to Hospital, but the others just converted our home into a hospital by a series of minor infections.

I presume you got the appointment in the Pharmacology Department, and that you are something in the nature of a fixture at Cambrigde. Please give my congratulations to your wife, whoever she is!

Best wishes,

Yours sincerely

**

L10) **1943 - Wright to Eccles**
[2NZ-2089-1943-11-17]

Letterhead: Department of Physiology, The University of Melbourne, Melbourne N. 3

17th November, 1943

Dear Eccles,

This letter is to make a very strange request: naturally as I mentioned to you before, the field of people doing medical research in Australia looks like being sparse. From what you said I gathered that in your case this was partly to do with the relationship between yourself and the hospital management. It would be very valuable if at the appropriate moment I knew what the relationship had been which lead you to accept another appointment. I do not know what the moment will be, but if one is waiting for them they often turn up. I do not press you in any way to let me have the information, but I do promise that I will use it with discretion.
Yours sincerely,
R. Douglas Wright

**

L11) **1945 - Eccles to Brown**
[2NZ-2016-1945-04-05]

My Dear Brown,

It is a long time since we corresponded, through whose fault I don't know. I have heard about you at odd times, and I see from the Royal Society List that you have been on war research. I hope to be able to congratulate you on your election soon, but I haven't seen the results this year yet. I must add my name to your list of supporters if it is not too late, and if it can be done from this distance! I see also that your are now the exalted chairman of the Journal of Physiology, so I am humbly forwarding you a paper on Synaptic Potentials of Motoneurones, and hope you won't throw it into the W.P.B.!

Most of the work has been done since arriving here, and we have a few other projects in hand. I have been clear of all war research since I came here, but teaching and organization were a big load for the first year. However, in the vacations one has a pretty free time. Conditions here are good on the whole. The laboratory is adequate, and I have a

pretty good set of research apparatus. Fortunately too, the mechanic is a first class radio man. I also have a couple of other shielded rooms for other research workers – one is fully fitted and is in operation. The other will shortly be ready.

Life here is very pleasant. We live just over a mile from the laboratory, and are virtually in open country with lovely views from the house and garden (one acre) over hills two or three miles away and over 2000 ft. high. I spend a lot of my week-end in the garden, and keep the family supplied with vegetables all year round, and a good deal of its fruit and berries, etc. – a sort of war-time effort – though I dare say I will have to continue post-war at the same job. As we now have 8 children you will realize that it is a large scale market gardening. Rose goes to University next year, and probably will come on to do the science course in Physiology. The others are all ages down to Frances, aged 5 months; in all 5 girls and 3 boys.

You will notice that I still believe in the possibility of electrical transmission, and we are devising fresh attacks on the spinal cord. I would be interested to hear your future plans for research as far as the nature of neuro-muscular transmission is concerned. I would like to be an agnostic, though obviously ACh plays some part. It could explain the whole story provided you are prepared to complicate the hypothesis enough.
Rene joins me in sending our best wishes to you all.
Yours ever,

**

L12) **1945 - Popper to Eccles**
[2NZ-2107-1945-07-04]

July 4th, 1945

Dear Jack,

Yesterday I got your letter of July 2nd. What exciting news! I was extremely happy, and very proud that my silly plaything, methodology, has done a little good, by stimulating you to produce a real theory.

How much I should have liked to go to Dunedin and to become your most enthusiastic pupil! You have no idea how your problems attract me. At the same time I am so painfully aware of the fact that all I say about it is simply cheek – or bluff – or whatever you like: I don't know anything about the matter. (I don't know biochemistry, for example – I have a very vague idea what ACH may be, and no idea whatever in which way it may

resemble curare, so that curare may take its place; and while writing this I am even slightly uncertain whether this is the theory: viz., that curare occupies the place of ACH, or whether I have perhaps misunderstood this in the hurry - although I don't think I have. But I may blunder at any moment, as it were: it was all in such a hurry in Dunedin, and I have never even seen any other book or paper but those you lent me, and these I could only read superficially, and in a hurry; though I went through them twice, I have, unfortunately, forgotten most of the details already.)

I had intended to write a much more detailed letter, but I had not the time to write "papers in hand"; I had just to write from what I remembered of the papers. Also, I found what I wrote so cheeky that I hesitated to go into any detail. I found it sufficiently cheeky to tell you that you have arrived at the deadlock - or that I had this impression – but this I had to write, out of friendship! This is the reason why I did not say anything about the "theory" I had more or less all the time since Dunedin: in fact, it started in Dunedin. I am nearly certain that this theory won`t be any good, and that it will have nothing to do with your theory; the only remark of yours which makes me, slightly, very slightly, doubtful whether it may not perhaps have something to do with your theory is your remark that your theory is so amazingly simple. Mine is so, too. On the other hand, you call your theory an "electrical theory". Mine is, definitely, a combined theory – an electro-chemical.

In fact, the only "idea" of my* theory is: that one must combine the two theories, the electrical and the chemical one. I had this idea in Dunedin, on that last Saturday afternoon (I think it was then) in your unforgottable room in the Medical School. You may remember that I mentioned there the methodological "principle of approximation" (to which Bohr's correspondence principle is closely related) – the principle that one has to seek for such a new theory that the old theories appear, from the point of view of the new one; as approximations. Also, I was struck by the series neuro-heart – neuro-muscle – neuro-ganglion – nerve-nerve; since you said that in the heart case, the mechanism is certainly chemical, and that in the neuro-ganglion case it becomes predominantly electrical, and completely so in the nerve-nerve case, I thought one should try a mixed theory for the neuro muscle case. (I have the feeling that this suggestion was not too well received; any way, I was

* Note (July 5 th:) I found meanwhile that all this is not original: see end of letter.

a bit discouraged; and the main reason why I am bringing it up again is this: I feel that it is one of the possible competitive theories which in a complete discussion ought to be dealt with – and most likely, smashed up – alongside the two main "classical" theories.)

June 5th.

I am really terribly chased and can never finish anything – not even an introduction. I better proceed at once to the theory:

The assumption is: There are two components which together are capable of depolarizing the endplate sufficiently as to pass the threshold membrane break-down: one is the direct electrical result of the oncoming nerve impulse, the other is due to the effect of ACH.

The simplest theory based on this seems to be this:

In the fully curarized muscle we observe the isolated effect of the electrical component. This does not reach the threshold. That additional amount of depolarization needed to pass the threshold is supplied by ACH.

Whether this additional amount is similarly constant as the purely electrical component seems to be, is a comparatively secondary question, since all that is needed is: to pass the threshold level.

A possible auxiliary assumption is this: the ACH is transported to the muscle with the currents in front of the nerve impulse, and partly re-transported as an effect of the spike response (or perhaps, as an after-effect of the spike ~~collapse~~ response – I have not the slightest idea).

Or alternatively: Some of the ACH remains, perhaps sensitizing the endplate for the next electrical response.

Possible falsification of the idea of two additive components: if several endplate potentials are superimposed in a quick succession they should add up and pass the threshold even in muscle.

I don't remember, but I don't think this is the case in muscle, but I remember something of the sort of the Ganglion.

After re-reading the Ganglion paper I see how little there is in my idea: it is practically the Ganglion story, which I only now understand (after having produced such an idea myself). Still, it seems worth while to collect the experimental evidence even for this theory

Yours ever - Karl.

L13) **1945 - Popper to Eccles**
[2NZ-2107-1945-09-27]

Letterhead: P.O. BOX 1026, Canterbury University College, Christchurch, C.1, New Zealand

September 27th, 1945

Dear Jack,

Please excuse my failure to answer your kind airletter at once; but I was in a truly appalling muddle and harrassed from morning til night. In addition to everything else, I had a stiff fight with the College Council (I won) and the normal end-of the-year-rush of papers, terms lists etc.

I was very much touched by your way of taking action at once at the mere hint in my letter that I am again a candidate for the Dunedin chair and but for the fact that I have not written sooner, there would be little need to tell you how very grateful I am for having such a friend.

I have not, however, acted on your advice. I did not write to Findlay, (a) because I could not do any lobbying for myself, (b) because I was not sufficiently certain whether I should not go to London even on a temporary permit. My cable to London that they should let my application for Dunedin stand was sent in order to enable me to consider the matter all over again, rather than because of a definite decision not to go to London.

The decision is very difficult, and I must discuss it with you orally. But before, I have to go to Wellington for a day to see Nash and Fraser. Only after having heard from them how the naturalization problem stands can I see sufficiently clearly to present the matter to you.

I shall be in Wellington this Friday, and back in Christchurch on Saturday. I may then ring you or wire you about coming down to Dunedin, either at once, or early next week.

Very many thanks, and kindest regards to all of you,

Yours ever

Dear Jack,

Karl has written this letter many days ago and he wanted to copy it by hand (he had written it on some old paper!) but he was all the time in such a frightful hurry that he just couldn’t manage. He has left for Wellington to-night, and he asked me to type his letter and apologize for the typing and the missing signature. Unfortunately, it is not at all sure

when he will be back from Wellington. He has not yet got a berth for the return trip. He might have to wait for some days which would be very awkward. Things are rather awful and I like the idea of going to London less than ever.
Love to all of you
Hennie

L14) **1946 - Eccles to Popper**
[2NZ-2108-1946-04-30]

Physiological Department, 30th April, 1946.

Dear Karl,

I write in brief moments snatched in a busy life, but I could not resist sending you the editorial comments on that paper on dorsal root potentials which you had a brief look at in the hectic period before you left New Zealand. It received fairly severe criticism as you can see, which I think was due to it being written after you had stimulated us so much by your lecture here. However, I did not feel like taking the criticism meekly, so I replied as shown in the copy and I have now heard that the paper has been accepted and will appear in the May number of the J. Neurophysiology! So there is some point in sticking up for oneself and putting up a good fight.

Incidentally I also have opened out on the Sydney Hospital Board's action in closing down the Kanematsu Institute, which you may remember that I directed from 1937-1943, being finally driven to leave by their treatment. My successor has had still worse trouble from them and finally they just closed the research part of the Institute, for no reason that I can discover, but their hatred of research. The letter I wrote to the Medical Journal of Australia was actually asked for by the Editor, who is also writing a leading article on it. So you see that we continue our battle for research out here.

Perhaps you have heard that poor Souter died a few days ago – a bad conorary thrombosis gave him no hope of recovery and he lived only a few days. So again we have vacancy in the Arts Faculty. The new appointments have been quite good – especially Raphael, but it cannot compensate for your loss.

However, I hope that you find the atmosphere in London a compensation - giving us what we might call a vicarious compensation!

Rene and I have just had a marvellous holiday – 7 days of lovely weather camping at the Lakes – so we feel fit for the winter!
We send our love to Hennie and yourself.
Yours ever,

L15) **1946 - Eccles to Popper**
[2NZ-2108-1946-11-12]

Physiology Department, 12th November, 1946.

My Dear Karl,

I am having great difficulty in finding the time to write to my friends, but now I have the chance on the train southbound from Christchurch. At the recent meeting of the Academic Board you were much in the thoughts of a small group of us who spent the Sunday together in Wellington – Packer, Parton, the Simpkins and myself. Charles Focken was also with us. Allen of course was in America. Your influence seems even to continue growing in Canterbury which to my mind has more of the University spirit than in the other three Colleges. No doubt you have seen the recent publications from there as well as the Staff Newsletter. The Arts pamphlet on research was also remarkable in the honesty with which it faced up the problem confronting arts research in New Zealand. We hope for an improvement in leadership with the appointment of a full-time academic head, but there is danger that we may even be worse off. I suppose it was pretty meritable that Hunter would be the head at Victoria, but that sort of idea seems to be spreading to other Colleges. After my short experience of administrative affairs I feel that the situation is pretty hopeless. One can spend so much time on it and get nowhere. For example we tried to get a University Grants Committee set up after the English model, but it was defeated by the old gang on the Academic Board and Senate is now to have complete control of University finance with, of course, Beeby on the top of that.

Fortunately I can take refuge from this depressing situation and concentrate on some really exciting research. Since Chandler Brooks has been there, we have been perfecting a method for leading from small groups of nerve cells in the spinal cord and now we are getting results which relate directly to my theory. They show just the predicted sequence of electrical potentials and the effects of anaesthetics and asphyxia show that many of the effects that have hitherto been

attributable to the synapse are really occuring in the fine pre-synaptic nerve terminals. Which reminds me that I have not yet sent you the full account of my theory. I have kept on hoping that I would have the reprints, but they have not yet come. Anyway it is good to find that my theory is still unfalsified.

A very good scientist and friend of mine, Adrien Albert, will be going to London from Sydney next year to direct a new Institute on the physical and chemical principles of Chemotherapy. He was very attracted by your lectures of methodology – I sent him the notes – and I am sure you will have much in common with him. Really we seem to be losing all our talent!

I hope that your publishing affairs continue to prosper and that you and Hennie continue to stand up the trauma of living in London. Your great success must keep you going. While you are in the field of social sciences, London must be the best place and certainly the world needs you as never before. I almoust feel in despair about this post-war world. We have emerged from that war only to find a war still dominated by Nationalism and power politics. Yet I can see no immediate alternative. As Aldous Huxley says wars create more problems than they solve; and he didn't know about atomic bombs then!

I have just been talking to Raphael and he was asking about the availability of your Logik der Forschung. I said that you were expecting to have an English translation soon. I am hoping that it will not be too long delayed. I have just finished revising a short paper by Marianne Fillenz and Mary Hanafin. It is going in to the Journal of Neurophysiol. and has some very interesting findings in it.

Rene joins me in sending our love and Christmas greetings to Hennie and yourself.

L16) **1947 - Eccles to Popper**

[2NZ-2108-1947-03-06]

Physiology Department, 6th March, 1947.

My Dear Karl,

Your two letters of November 10th and 23rd arrived very close together and gave us much joy to hear so much of you.

I have kept off replying to you because I wanted to send you a new theory that I have been developing. Well, here it is, so that you will get it

as soon as the Editor of Nature, and so will not be able to complain of neglect as you did with my last effort!

We really had a thrilling time in December. Our experiments had been going well and we had put some pretty severe tests on the excitatory theory and its predictions were precisely verified. The we (Dr. Chandler Brooks of John Hopkins, who is here for a year on a Guggenheim fellowship, and myself) set off on the problem of inhibition, which is of course the counterpart of excitation.

We had had several good experiments and I kept on telling Chandler that we might expect to develop a satisfactory theory in a few months – there was at least an air of expectancy. Then we had our best experiment on December 18th and worked on till 1.15 the next morning. As I was about to go to sleep I started thinking over some remarks Chandler had made on the way home, when suddenly the theory hit me. I knew at once that it provided the clue for which so many of us have been searching for years. It made sense of so many hitherto unrelatable observations. I remember now that I was tired and over-wrought and feared I would forget it all in the morning. However, I woke up some hours later and went over it in detail in my head. It fitted precisely into everything that I could think of and shed light on a wide field of neurology.

You will see for yourself how simple it is – it looks absurd that it could have been missed for so long, and yet nowhere in the literature is there the slightest suggestion of such a theory. Well Chandler and I discussed it for several days and I read the literature to gather up what I had forgotten and then we had the thrill to receive from America two papers published by Lloyd in November, which gave precisely the results which would be predicted by the theory – in fact I had made the predictions and we were planning the experiments. Lloyd had completely missed the theoretical significance of his results, but had pointed out that they could not be explained by any current theory of inhibition.

I have given you a full account of the origin of the inhibition theory, because it provides such a good illustration of your ideas on the subject. Of course now we have to test predictions and that is going to be a long job. However this theory together with the excitatory theory now mark a stage in the journey I set out on nearly twenty years ago. In 1927 I started work for my D. Phil. on the subject of Excitation and Inhibition – it was my first love in research and has remained so ever since – a pretty

good example of constancy! And now after nearly twenty years there are the two theories sufficiently good to challenge (and invites) falsification.

Well, now Karl, I must return to your letters. It is very good news to hear that, despite your difficult living conditions, you are now doing important research, and enjoying it. I always regard that as a test of environment. Every time I have moved I have never felt satisfied with my new environment until I could not only do research, but write it up! I look forward to reading on “Derivation and Demonstation”, and hope that you will have achieved the clarity and simplicity to make it intelligible even to me. Then your Swiss holiday was good to hear and later to read about. Rene and I much enjoyed Hennie`s “Book” and we found her enthusiasm quite catching. Please tell her of our appreciation. I had two good guide books to Switzerland and we followed every journey you made on the maps – every detail even of your walks could be seen! How marvellous to emerge from England into a county having pre-war conditions – but then you have to return to England war-stricken, impoverished and depressed. Recently we had a visit here from Professor McSwiney of St. Thomas` Hospital, a very good friend of mine. We learnt from him so much about the struggle in post-war Britain. By the way he is hoping to meet you. He is a physiologist of standing-treasurer of the Physiological Society and F.R.S. etc.

Term is now a week off, but I feel equal to it as we have had a fairly good summer, and despite the arrival of Richard in December (our ninth) Rene and I had a good week`s holiday (with him) camping at Lake Ohau in late January. I reread the first volume of our Open Society while there. ~~and have now started on the second volume~~. I was able to read it with much less distraction than before in the middle of term, and enjoyed it very much. I have now started on the second volume and hope to finish it before term starts. I have interested quite a number of my friends also in it, and there are quite a number waiting for my copy! Also at present I am reading a small book “The four-fold Vision” by Sherwood-Taylor. It deals with the Science-Religion controversy and to me seems on the whole very sound in its approach to the Methodology of Science. My own philosophical position is I think, very close to that outlined in the book. Sherwood-Taylor is Curator of the Science Museum at Oxford, and E.T. Whittaker has had a hand in the book.

**

L17) **1946 - Albert to Eccles**
[2NZ-2003-1946-04-08]

Letterhead: University of Sydney, Dept. of Organic Chemistry, Chemotherapy Group

Prof. J. Eccles, F.R.S.
Physiological Department, Medical School, King St.
Dunedin, C.1, New Zealand

Dear Jack,

I was highly delighted to get your two letters as I had the bad luck to miss you on your return from the U.S.A. I was most interested to have your impression especially „that they had too much administration there". There is nothing worse for the research worker. The C.S.I.R. here have gone to great trouble to have administrators parallel to each grade of research worker, and Wark's show at Fishermen's Bend (facetiously called Flexus Piscatorum) is a model in this respect.

I hope that your suitcase turned up. Australian National Airways once got away with a book of mine on „Laboratory Experiments in Colloid Science", so there's no knowing what they will cling to.
It was nice of you to call our 31 page paper „A most impressive scientific study". I shall be interested to have your comments, adverse or otherwise, when you have had an opportunity really to digest it. I don't think I have a London appointment yet; just a London invitation. This is only a technical difference, but Kellaway wants to soften any blow that Sydney may decide to feel. To be perfectly honest, I don't think they'll notice that I've gone. At present I am giving a postgraduate medical course in the Stawell Hall on „The History and Principles of Chemotherapy". Only thirty people are attending and that includes the lantern operator. One prominent Sydney surgeon said that he'd come only he knew I'd only go and make it scientific and what good does that do you anyway? A physician asked: „You boys haven't got a good cure for rheumatism yet? I could use that in my practice."

The demise of the Kanematsu must have been a special blow to you, because of all the pioneering work that you put into the place. Keilin at Cambridge said to W.P. Rogers: „Surely you're not thinking of going to Sydney to work. They let one of the Empire's finest experimental physi-

ologists leave for New Zealand.“ Rogers, who is a West Australian parasitologist has joined the McMaster Lab. staff recently.

I’m not going to England until they have got over another fuel-less winter; that means I leave here about March 1947. So we’ll have plenty of opportunity to correspond at close range. Thanks ever so much fort he vivid pictures that you paint of your colleagues. This has proved very helpful in interpreting their work. I suppose anyone named Smirk is sure to look a little self-righteous? Talking of original names, there is a new tenant in my block of flats called „Mrs Tableporter“. Can you beat that?
That was very good of you to give me the benefit of your knowledge about the Russian work on neuro-muscular transmission. I note that you state that calcium ions are a depressant of muscle, and this is he view which I have always seen expressed in books, e.g. Gaddum’s ”Pharmacology“. However, periodical literature so often seems to testify to the contrary, that I am truly puzzled. What, for instance, do you make of this extract from the British Council’s „Monthly Science News“ for July 1944? „From the work of Dr. Kenneth Bailey at the Low Temperature Station we are enabled to see how this enzymic property may function in the process of muscular contraction. It has been found that the presence of calcium ions is necessary for the elicitation oft he enzymic action of myosin. The hypothesis has been advanced that the nervous impulse sets in motion a train of events leading tot he liberation of calcium ions in the immediate vicinity oft he enzyme substrate complex which immediately springs into action and provides the energy for the act of contraction.“

These ideas are more explicitly stated, although in a less advanced form, by Kenneth Bailey in Biochem. J., 1942, 36, 121, where he shows that calcium is he specific activator for myosin.

Could it be that calcium outside the muscle is depressant, but that it is stimulant when it has penetrated the cell-membrane?

I am keeping very well, apart from a transient cold or two, and I hope that you and Rene and your large and growing family are also well and enjoying New Zealand life.
With every good wish,
yours as ever
Adrien

**

L18) **1946 - Bullock to Eccles**
[2NZ-2017-1946-10-22]

Letterhead: University of California, Department of Zoology, Los Angeles 24, California

Professor J.C. Eccles
Department of Physiology
University of Otago
Dunedin, New Zealand

Dear Doctor Eccles:

I thought you might like to hear of the clear confirmation of your work on synaptic potentials in a new preparation. We have found that the stellate ganglion of the squid offers a beautiful opportunity to record activity from a single synapse or at most a small number very highly synchronized. It is the junction between Young's giant fibre of the second order coming back from the brain and that of the third order, of which there is one in each stellar nerve. It is easy to isolate the ganglion, preganglionic nerve and one post ganglionic nerve. The isolation of units is automatic because the elements are all giant. The synapse is remarkable, as described by Young, in its size and other features. The two giant fibres lie side by side for nearly a millimetre, with many very short collaterals making contact through small holes in the sheets. Local synaptic potentials are easy to obtain by fatigue – at about 30 per sec. stimulation the synaptic delay increases and then transmission fails, leaving a large local response which can then be studied in many ways. Slowing down the stimulation will bring back the post-spike promptly.

We have only begun to use the preparation, and haven't much information on its properties yet. It is polarized and the minimum delay is about 1 ms. By the way, Roeder tells me he finds a delay as short as 0.5 ms in the cercal nerve-giant fibre synapse of the last abdominal ganglion of cockroach (Pumphrey and Rawdon-Smith) – pretty short for a lowly cold-blooded insect, isn't it?

I have another purpose in writing – or two others. One is to ask whether you would be so kind as to send me a set of your reprints, or as many as are available, and to put my name on your mailing list. I would be most grateful.

The other is to ask what the bearing is on your picture of synaptic transmission, of the extremely short delay (0.1 - 0.2 ms) reported by Granit and Skoglund at their artificial synapse (cut end of a nerve). I do not recall your discussing this case in your paper last February in New York, which I was privileged to hear. Does it strain the lower limit you place on the delay which you regard the membrane theory as demanding? I should be very interested in knowing your reaction on this problem.
Sincerely yours,
Theodore H. Bullock
Assistant Professor of Zoology

**

L19) **1946 - Eccles to Feldberg**
[2NZ-2034-1946-09-03]

Letterhead: Physiology Department

My Dear Feldberg,

Your letter of nearly a year ago reached me at busy period just as I was preparing for a hurried American trip, and on my return I have been in a sort of breathless rush ever since. However at least I have a brief spell having just written up a paper and being in the dilemma of not knowing which one next to finish!

It was nice of you to say that I wasn't yet forgotten in England. Out here, as you would realize from your Melbourne experience, one is rather sensitive about being forgotten. At the time of your letter I was particularly sensitive as I had just had a paper turned down for the J. Physiol. I thought it a good paper and it has since been published in the J. Neurophysiol. just as I submitted it to the J. Physiol. (title: Synaptic Potentials of Motoneurones).

I think the chemical vs. electrical hypotheses are just as interesting now as in the thirties. Only now we would not contest the same ground. For example my position is that chemical (ACh.) certainly plays a part in neuro-muscular and ganglionic transmission, and the intriguing problem is to find how much. There are undoubtedly two factors producing the catelectronic potential (synaptic or endplate), as shown in the ganglion paper and more clearly still in our recent muscle experiments. I am unable to see how the rapidly decaying component can be due to ACh., for

it decays just as rapidly after full eserine or prostigmine action – (1 in 50,000), and I think we can exclude the action of any other rapid means of destroying ACh. Yet at the same time in other respects the rapidly decaying component behaves in an exactly similar manner to the slowly decaying – for example in its depression by a background concentration of ACh. So I feel caught in a dilemma.

However as regards synaptic transmission in the spinal cord I am now in no doubt. I think ACh. can be involved to a negligible extent or not at all. At least that is the theme of the paper I have just written. The function of the ACh. mechanism in the C.N.S. is a nice problem for the future, for much of the evidence you accumulated in your review demands an explanation.

Our family flourishes normally, but at present is just recovering from a vicious attack of influenza. We now have eight, so we resemble a hospital on these occasions. Rene joins me in sending our best wishes to Mrs. Feldberg and yourself.
Yours ever,

**

L20) **1947 - Eccles to Adrian**
[2NZ-2002-1947-05-26]

The Foreign Secretary
Burlington House
London, W.1., England

Dear Professor Adrian,

Many thanks for your letter of May 8th, which I received just before I went north for the meeting. I am enclosing a very brief and general account of the Congress, which will be rather of the nature of my impressions as an onlooker, for I did not contribute a paper. None of my work was suitable for such a Congress, at which I was almost the only physiologist present.

I fear that I will not be able to come to the international Congress, coming as it does so soon after my visit to America last year. I would have liked to have presented my new theory of inhibition, which may ere this have appeared in Nature. However, I hope at least to receive some critical comments by mail. It is the isolation from such criticism that is the

worst deprivation out here. My conditions of life leave little to be desired, but of course we are overloaded with teaching because of the difficulty of securing trained staff. I am grateful for adding my name to the Royal Society Certificates and would like it added to Professor Chalklin's certificate as well. I was much impressed by him at the recent Congress.

With regard to your enquiry about views on international Congresses I have little to offer. The one suggestion that I make is that several Symposia be arranged on subjects of immediate interest. Both the subjects and the speakers should be selected beforehand, rather in the way that was done in the Royal Society Symposium of 1938 on Problems of Transmission.

With best wishes,

Yours sincerely,

**

L21) **1947 - Eccles to Adrian**
[2NZ-2002-1947-10-08]

Letterhead: Physiology Department, Medical School, Dunedin

Professor E.D. Adrian, F.R.S.
The Physiological Laboratory
Downing Street, Cambridge, England

8 th October 1947

Dear Adrian,

Many thanks for your letter of July 7th in regard to Dr. Lawrence Malcolm. Owing to a delayed surface mail it only arrived a couple of weeks ago. Since my letter enquiring about the possibility of him going to your laboratory, he has been able to arrange an exchange lectureship with Downman of St. Thomas's Hospital. Such an exchange was first suggested by Brian McSwiney when he was out here in January, but after his death was not followed up for some months. However, it now seems to be satisfactorily fixed up, though there is still the problem of transport, which is acute for the outward journey. Downman has arranged for Malcolm to do his research at Hampstead, as there is little equipment at St. Thomas's.

Hodkin's works interest us very much. I like particularly the way in which his work develops the membrane theory and links it with the

Conway story. I now feel happier about membrane and action potentials than ever before! Bernhard Katz sent me a brief account of the paper Hodgkin and Huxley gave at Oxford.

I recently had a visit to Australia, and had the pleasure of a Neurophysiological conference with Gerard and the Australian physiologists at Canberra under the auspices of the Australian National University. It gave a welcome break from the isolation here, but the possibility of a visit to England seems remote as we are still very short staffed for the work. However, I am gradually building up a good staff.

With best wishes,

Yours sincerely,

**

L22) **1947 - Eccles to Aeschlimann**

[2NZ-2006-1947-03-12]

Dr. J.A. Aeschlimann
Direction of Chemical Research
Scientific Department, Hoffmann-La Roche, Inc.
Nutley, New Jersey, United States of America

Dear Dr. Aeschlimann,

I thank you for your letter of February 12th, which recalled our all too brief meeting at New York. The acetylcholine that you kindly gave me there is still being used in our research, but we now have only about 40 ampules left. I would be grateful for some more because we are still using it in relationship to juctional transmission. Two papers on our work are appearing in the May number of the J. Neurophysiology.

I was also wondering if you could supply us with a variety of potent anti-cholinesterases. We are studying the action of eserine, prostigmine, and diisopropyl fluorophosphate on neuro-muscular and synaptic transmission and it would be good to test out a few other potent anti-cholinesterases. In particular the substance mentioned by Gilman at the New York Symposium last year would be of great interest. It was on the secret list, and I was wondering if it had since been released.

You mention about the Oxford Congress in your letter, but unfortunately I won't be able to get there, though I should very much like to go.

With kind regards,

Yours very sincerely,

L23) **1947 - Aeschlimann to Eccles**
[2NZ-2005-1947-03-26]

Letterhead: Scientific Department, Hoffmann-La Roche, Inc., Nutley, New Jersey

Dr. John Eccles
University of Otago, Medical School
King Street, C. 1, Dunedin, New Zealand

Dear Doctor Eccles:

I am sending you under separate cover, by steamer mail, 100 ampules of 0.1 gram acetyl choline chloride and 1 gram of each of the following preparations:

Preparation Nu-1197
Preparation Nu-1250
Preparation Nu-1317

of which the formulae and brief characteristics are given on the enclosed sheet. These three substances are analogs of Prostigmin and two of them are described in the reprints enclosed with the parcel ampules.

I am sorry you will not be present at the meeting at Oxford which I am hoping to attend.
With kind regards,

Yours sincerely

J.A. Aeschlimann
Director of Chemical Research, Hoffmann-La Roche, Inc.
Enc. – data sheet / JAA:EH

P.S. I have passed on your request for the fluorine compound to Dr. Gilman and asked him to secure some for you. If he does not comply, I suggest you write to Dr. B.C. Saunders, Univ. Chem. Labs., Cambridge, England, mentioning that I suggested he might be able to send you some.

**

L24) **1947 - Feldberg to Eccles**
[2NZ-2033-1947-09-22]

Letterhead: Physiological Laboratory, Cambridge

Professor J. Eccles
Medical School, University of Otago
Dunedin, N.Z.

My dear Eccles,

thank you very much for your friendly words of congratulations. They have done me good and I was so pleased. I was only sorry to hear that you were not coming to our Congress. Many people have asked about you and we missed you all. You must come to the next Congress in 1950 in Kopenhagen.

Your letter arrived just before the Congress; I postponed answering it in order to let you have news about the Congress; but then I had a fortnight extensive teaching and immediately afterwards I went away and stayed away for 4 weeks mainly in Germany, so I apologise for the long delay in my answer. But I did not want to write you just a short note.

I was greatly interested to hear your views about acetylcholine. Our views are no longer so far apart. Concerning the c.n.s. there is certainly no evidence for the acetylcholine metabolism when we consider the synapses formed from the endings of the posterior nerve ending in the c.n.s. On the other hand I think there are central synapses mediated by acetylcholine, otherwise I could not understand the many facts in the c.n.s. about acetylcholine. We must wait.

Our discussions about ACh have always been a pleasure and fruitful; they were always scientific discussions which helped the subject. How different with Nachmansohn. I agree with you, it is a pity that this selfadvertising crank has confused our clean field. I received a letter from O'Loewi, he shares our views and too finds it impossible to argue with him. I think it is a great pity that this man spoils his good biochemical work on acetylcholine metabolism by his silly and megalomanic nonsense. I wonder how long it will take the Americans to find out about this fool.

Recently Brown and I have worked a little together, as in good old times. A short paper on DFP on neuromuscular transmission will appear shortly in the Journal.

Before I went abroad I had just time to look into your last paper in the J. of Neurophysiol. I have now to read it carefully for my lectures this term. Please let me have copies of any reviews you are writing. I shall at least try hard to read them. I find it not always easy, as you know, to follow the electrophysiological approach.

The death of Mac Swiney must have been sad news to you. We were examining together quite frequently and he always spoke so friendly of you and was so interested in your future. In fact you have lost a good friend with him.

We lost Barcroft here in Cambridge. A great loss. But otherwise Cambridge is little changed. Hodkins is working here and doing excellent work. I sometimes see B. Katz in London. He seems happy. Why is it that Australia has not succeeded in keeping you Katz, Kuffler and me, and even Kellaway. I see him from time to time and we always enjoy meeting each other.

I envy you for your 9 children; we have no small ones left; the two we have are 21 and 17. Good luck to all of you and all best wishes, I hope you will come soon to Europe,
Yours ever,
W. Feldberg.

L25) **1947 - Eccles to Feldberg**
[2NZ-2034-1947-12-18]

Dr. W. Feldberg
Physiological Laboratory, Cambrigde, England

My Dear Feldberg,

I was so pleased to have your letter of September 22nd that I thought to reply to it without the year-long delays that are usual in our correspondence. I agree with what you say about the C.N.S. In the spinal cord – or at least in the monosynaptic pathway – I see no evidence of acetylcholine transmission. On the other hand, there are fairly large concentrations of ACh. and cholineacetylase in some brain nucleus. It may have a function, but that will be hard to establish. Personally, I can see no necessity

for such chemical mediation when electrical transmission “seems” to work so well in the spinal cord. I can now even suggest a reason why electrical transmission is so inefficient at the neuro-muscular junction. It is concerned with the necessarily large area of the endplate and hence the relative ineffectiveness of the widely dispersed electrical currents.

I had a pleasant trip to Australia in September to a Neurophysiological Conference at Canberra on the occasion of Ralph Gerard’s appearance as the first Visiting Professor of the Australian National University. It was quite pleasant to revisit the Australian scene, though I find little of promise in the younger generation of Physiologists. They lack leadership. But one, Draper of Adelaide, showed great promise. I tried to get him to come here, but I think he hopes to go to Cambridge. It is so hard to get anybody to come to such an outlandish place as Dunedin. However, I had the pleasure of Chandler Brooks’s visit for over a year, and soon we expect Downman from St. Thomas’s.

My very best wishes to your wife and yourself,

Yours ever,

**

L26) **1947 - Eccles to Kuffler**
[2NZ-2062-1947-06-11]

11th June, 1947.

Dr. S. W. Kuffler,
Wilber Institute, Johns Hopkins Hospital
Baltimore, Md., USA

Dear Stephen,

I am at present busy on the Annual Review article for next year, and find it pretty tough to condense all the work into the short space that I am allotted. I shall have to leave out quite a number of things and I expect I shall be blamed for it. However it is good to be some thousands of miles away from one’s critics. I fear that Nachmansohn won’t like what I have to say, and it looks so thankless after his arrangement of my American trip and the handsome treatment that Grundfest gave to my theory last year. However, Science is like that. It demands criticism where it is due.

Now I have a suggestion about the Movie Camera. Bill Gibson will be coming out to Sydney later this year and may even be coming down here on the way. In any case it would be good if he could bring the cam-

era with him. Of course I realize that it might be impossible to get it to him in Montreal, but he will be writing to you about it, I expect.
I hope that you have now settled at Baltimore, and like the new job.

**

L27) **1947 - Kuffler to Eccles**
[2NZ-2061-1947-06-12]

Letterhead: The Johns Hopkins University, School of Medicine, Wilmer Ophthalmological Institute, Baltimore, Maryland

June 12, 1947

Dr. J. C. Eccles
University of Otago, Medical School
Kings Street, New Zealand

My dear Jack,

First of all I must apologize for the long delay in replying to your last letter, but I was really fully occupied with moving and trying to settle down. I was very glad to see Adrian Albert the other day who gave me a fairly accurate report about all of you. It is so nice to hear, particularly in contrast to Australia, that you are making such fine headway in New Zealand. Your boundless energy is quite admirable.

No about your comments on my small-nerve fiber paper. Some of your ideas were very helpful since they had not occurred to me before. Most of your queries, I think, will be answered in the second paper which deals with myographic recordings and reflex activity of the small-nerve system. Both papers will appear simultaneously in the Journal of Neurophysiology. We are not quite certain now about the widespread dual innervation of the same muscle fibers and I do not believe that s.h.p.'s can sum and set up propagated muscle impulses – or at least I have not satisfied myself that that genuinely occurs.

I have made changes in the paper since you saw it. The possibility of error in our visual observations could not be excluded.

The pharmacology and study, particularly through isolation of individual elements, promises to be interesting. I whish I could discuss these matters in more detail with you.

The May issue of the Journal of Neurophysiology has come out today with the two papers from your laboratory. From a rough glance at

them I believe that I have eliminated the more conspicuous errors which appeared in the proof. I think they are a fine contribution to the synaptic problem. This is particularly in contrast to the other contributions in the same number in which experimentation and all the conclusions are pretty fuzzy. How is your inhibition problem coming on? If possible I want to take that up again.

About a dozen of Eserine reprints arrived and strangely enough I got another 20 sent to me from Sydney, so if you want I can send you some back. Yesterday I met Roughton from Cambridge and also Bateman at a meeting. Your probably heard of the tragic death of Glenn Millikan who was killed while mountain climbing in Tennessee.

Archie is going to stay at Rockefellers for another year and so we are still hanging on to your movie camera. Could you think of somebody else who might get it to you? We have taken one very successful reel when we got the camera but nothing since.

The laboratory here is getting slowly into shape and I think it will be an excellent place for work. I feel quite happy about arrangements and about the personalities around the laboratory. By the way Gerard is going to Australia for three months in September and if he has a chance he wants to visit you. I believe Pansy Wright will get you over to Australia at the same time.

With all our love to Rene and all your nine children

Yours ever

Stephen W. Kuffler

**

L28) **1947 - Eccles to Katz**

[2NZ-2060-1947-08-21]

21st August 1947

Dr. B. Katz
Department of Biophysics, University College
London, W.1, England

Dear Bernhard,

Many thanks for your letter which arrived just after I wrote to you. I am very interested to hear that you are apply[ing] for St. Thomas' and I have sent off a testimonial direct to them as you suggested. I feel sure that you would do very well there and there is no doubt that there is a

sad lack of first class men in teaching positions in England. Congratulations to your wife and yourself on David's arrival.

I did not mention in my letter the other day that we had quite a lot of evidence in support of the inhibitory hypothesis – some of it is rather along the line of your suggestion in your letter of April 19th, but we have not actually tried out your suggestion and I don't think we are technically able to do so. I shall be trying to write it up in the summer.

At present Rudolph Lemberg is here giving a course of lectures and then I return with him to Australia on Aug. 29th. I had a letter from A. V. the other day and as always, he was far too modest about his laboratory. I hope to hear more of your work in the near future.
With best wishes for success in the St. Thomas' position.
Yours ever,

**

L29) **1947 - Jung to Eccles**
[2NZ-2057-1947-08-25]

Letterhead: Dozent Dr. Richard Jung (Freiburg/Br.), c/o Prof. Reuterwall, Danderyd, Strandvägen 3, per Stockholm, Sweden

Prof. J.C. Eccles
University of Otago
Dunedin, New Zealand

Dear Professor Eccles,

A visit to Sweden for work in Zotterdam's laboratory has been the first occasion for me to read anglo-american physiological papers which appeared during and after the war. In Freiburg I have made some experiments with Dr. Tönnies on the spinal cord pursuing and partly confirming your work with Pritchard 1937. But now I see that both Lloyd and you have studied the matter far more completely. Our interpretation however seems to be somewhat different. I should be very grateful to receive reprints of your papers with Malcolm and Brooks in J. Neurophysiology.

Also I should be very glad if you would let me have reprints of your important papers on neuromuscular transmission with O'Connor, J. Physiol. 97, 44 (1939), 100, 318 (1941) and with Katz and Kuffler J. Neu-

rophysiol. 4, 362, 402, 5, 211 (1941 and 1942) and those on synaptic potentials in ganglions J. Physiol. 101, 465 (1943), 103, 27 (1944).

My wishes may seem immodest. But there will be no access to the Journals in Germany for a long time. If you could spare any papers please send them to the address above. For reprints sent directly to Freiburg do not arrive as a rule.

My interest has gone to human and applied Neurophysiology during the last ten years and most of the papers may not be of interest to you. But I am sending a list of our publications from 1939-1944 and a reprint on muscle potentials in periodic paralysis which may interest you for the marced Wedensky inhibition and slowing of potentials with changes of potassiumcontent in blood and muscle occurring in the attack.

I don't know if you have got Eichlers last papers on nerve potentials in Pflügers Archiv 1939. If not I shall send them to you. Eichler was killed in the war near Stalingrad 1942. I think that his two papers are important for the question of local excitation. The third paper on rhythmic nerve potentials did not appear because of his military service and his early death.

Professor Hoffmanns 2 other assistants Dr. Sommer and Dr. Riotte have also been killed during the war. So he was quite alone when in 1944 his physiological institute was entirely destroyed by bombing. My own laboratory in the clinic has had little damage. In 1945 we started again to work with many difficulties. At that time Dr. Tönnies came to help building up Paul Hoffmanns laboratory until Tönnies was sent to prison by the French last year for defending the American car of his brother.

I am afraid this has become a very long letter. In the hope that scientific connection may become possible again after these years of distress.

I remain sincerely yours
Richard Jung

L30) **1948 – Eccles to Jung**
[2NZ-2058-1948-07-13]

Letterhead: Physiology Department, Medical School, King. St., Dunedin, New Zealand

Prof. R. Jung
Universitäts-Nervenklinik
Freiburg, Br., Germany

Dear Professor Jung,

Many thanks for your letter of February 28th and for the reprints which arrived some weeks ago. I hope that you have received my re-prints ere this. Do let me know if they have not arrived, because if they have been lost, I could send an other set to your Basel address. I have recently had a short note from Karl Matthes and must write to him. My correspondence has been held up while I have been writing a paper on anti-cholinesterases and the endplate potential.

I was interested to hear that Tönnies had gone to the Argentine. There is as you say some chance that the Southern Hemisphere will provide a peaceful place in which to do work, and certainly here in New Zealand we do not want for the material things of life. But the isolation is a grave problem. I have not been to England or Europe since I left there in 1937, and there seems little prospect that I will get there for some time. I was hopeful of coming to the Neurophysiological Conference that Fessard and Monnier were organizing for December this year, but now it has been postponed till April, 1949 and I cannot go, as it is during term time and I have no staff that can carry on in my absence.

I was very interested in the reprints that you sent. Eichler's work has been completely overlooked by the English speaking physiologists. For myself I can at least claim that the Library here has still not secured Pflueger's Arch. since August, 1939, but Lorente de No should have mentioned his work in his monograph and Pflueger's Arch was of course distributed to U.S.A. until the end of 1941. Also Bernhard Katz should have quoted Eichler's work in his papers of J. Physiol. 106, 66. Your work on Familial Period Paralysis presumably indicates that there is a great slowing of conduction velocity in nerve and muscle in conditions just short of paralysis, i.e. that the paralysis is due to failure of propagation rather than to failure of neuro-muscular transmission. I look forward to seeing your paper on repetitive discharges of motoneurones, a subject on which I am at present engaged.

Again many thanks for your reprints and letter,
yours sincerely,

**

L31) **1948 - Eccles to Albert**
[2NZ-2004-1948-11-30]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Dr. A. Albert
90, The White house
Regent's Park, London N.W. 1

Dear Adrien,

Congratulations on your Canberra appointment. That at least is a justification for the National University if it can attract people like you back. But I gather that you will not be returning for some years.

We have Wright here at present and so have had several arguments about the pros and cons of the National University. On the whole I think it is an experiment worth trying in Australia, where some of the Universities have grown so large that they must be „killing" the staff with hack-teaching. Here even I find it hard enough to get enough time for research. The last five weeks have been filled up with the examinations for example.
I am so sorry about Charles Kellaway.
Christmas greeting from Rene and me,
Yours ever,

**

L32) **1948 - Fessard to Eccles**
[2NZ-2035-1948-03-15]

Letterhead: Centre d'Etudes de Physiologie Nerveuse, 4 Aveneu Gordon-bennet, Paris XVI°, France

My dear Eccles,

Under the expected support of the Rockefeller Foundation, I am preparing with MONNIER a Paris Symposium in Electrophysiology in order to offer some leading specialists the opportunity to meet there and discuss about problems of actuality in their field.

Such a meeting without you is hardly conceivable. LORENTE DE NO, BREMER, HODGKIN, B. KATZ, G. BROWN and those of the Swedish school have already accepted. Would you let me know as soon

as possible if you could join us, the date being in Nov. or Dec. 1948, during one week, and 3 week expenses paid for the far visitors.

We need your answer before making further plans. We firmly hope it can be affirmative, and that the money available from the R.F. will permit to cover all expenses. As I have no idea of how much it may cost to come over from New-Zealand by air, can you give me some information about this point?

In order to tempt you, be it known to you that one of the main topics to be discussed could be “Synaptic potentials”. Any other suggestion (concerning persons to be invited, subjects to be discussed, and the date of the Meeting) you could make us would be greatly appreciated. Don’t forget to tell me in advance on what subject you would give one or more communications (or even demonstrations).

Do come, don’t give your friends a big disappointment,

Yours sincerely,

A. Fessard

L33) **1948 - Eccles to Fessard**

[2NZ-2036-1948-04-05]

Letterhead: 84, Cannington Road, Dunedin

Dr. A Fessard
Centre d’Études de Physiologie Nerveuse
4, Avenue Gordon-Bennett, Paris XVI°

My Dear Fessard,

It was very thrilling to have your letter conveying the invitation to the neuro-physiological conference that you and Monnier are organizing in Paris at the end of the year. I would love to come and hope that I may be able to do so, but I cannot yet be sure. In a few days I should know for certain and will write again then. I sent a cable off yesterday to the effect that the second week in December would be the best time. On account of examinations I would be unable to leave Dunedin until about November 27th.

I have not yet the information about the Air travel costs from New Zealand, but it is possible that I can get some contribution towards these costs from a lecture fund that Prof. Huggett of St. Mary’s Hospital Medical School controls. He has recently informed me that, if I should come to

England, he would like me to give a course of lectures at University College London and there would consequently be a considerable financial contribution towards the cost of travel. I will write to him as soon as I know for sure that I can come and he could communicate the financial arrangements to you.

Now, as regards subjects for discussion, I would suggest:

Synaptic excitatory action.

Central inhibition.

Neuro-muscular transmission.

You will see brief mention of our work here in the 1948 Annual Review of Physiology, but there will be in addition four papers on excitation and inhibition in the July number of the Journal of Neurophysiology and I am in the throes of writing up two papers on neuro-muscular transmission. There is also quite a lot of additional work on synaptic transmission not yet written up. It would seem that of the people you have mentioned we would have strong groups on each of these three subjects. Another subject could be “Rythmic Activity of Neurones”. Please regard these suggestions as just tentative proposals. Naturally Monnier and you are the organisers and I would be happy to fit in with any suggestions you may make.

The question about personnel is a difficult one, but I would suggest that Llyod should be attracted if possible, and, if neuro-muscular transmission is on the agenda, then Kuffler has some good recent work on the isolated junction. Bullock’s work on the isolated squid synapse would also be of great interest, but I don’t know how far he has got with it. Renshaw has also I gather work in progress on inhibition. But these names are of course merely suggestions and it is difficult to select from many good investigators in neurophysiology. Those you have given are certainly outstanding and with the other eminent workers from France and Belgium should make an excellent and stimulating conference by themselves.

Please convey my best wishes to Monnier and I do so hope I will be able to come and renew our friendship. It would be a great occasion for me.

With my very best wishes,

Yours sincerely,

**

L34) 1948 - **Eccles to Hodgkin**
[2NZ-2052 -1948-03-19]

Dr. A. Hodgkin
Physiological Laboratory, Cambridge University
Cambridge, England

Dear Hodgkin,

I heard the news of your election to the Royal Society to-day and send warmest congratulations. I have been meaning for some time to write and tell you how much I have appreciated your work – particularly those papers in the J. Physiol. of last year. They filled me with enthusiasm and I gave lectures on them to scientific groups in Christchurch and Dunedin. I had previously attempted to survey the subject for the Annual Review. It will be out shortly – but had only your Nature article to go on. However, though deficient in many points, that section of my review still seems to be correct in its main features. In particular I have been impressed by the way in which your work assimilates the Conway story, and the sodium-potassium theory of the nerve impulse is most attractive.

I feel the contrast as I struggle hopelessly through the 1000 pages of Lorente de Nó. I am unable to accept much of his arguing, and it would appear that he has done less than justice to much contemporary work. For example he appeasrs to have misunderstuood the local response. But it would be tedious to continue with this criticism, and I have neither the time nor the inclination to read the whole 1000 pages with close attention.

Bernhard Katz wrote with enthusiasm of your conjoint work at Plymouth this summer, and it made me wonder if I might be able to spend a few weeks‘ working with you at Plymouth when I come to England perhaps in two years‘ time. My ideas of synaptic transmission and inhibition need testing at the level of single junctions such as the squid and Bullock’s work so far has not utilized such a preparation at all exhaustively. Meanwhile I am exploring the synapse in other regions at present and hope to try some invertebrates soon. I wish I could come to England before 1950, but staffing problems in the department make that impossible. I would be grateful for your post-war reprints.
My best wishes, Yours sincerely

L35) **1949 - Eccles to Hodgkin**
[2NZ-2052AN-1949-06-10]

Dr. A. Hodgkin, F.R.S.
17, Bentley Road,
Cambridge, England

My dear Hodgkin,

I have just finished reading and re-reading your paper with Bernhard [sc. Katz] on Sodium and the nerve impulse, and I would like to say how much I have appreciated it. It appears to me to be the most significant paper I have known in Neurophysiology. I liked particularly the concentration and potential gradient theory and the simple mathematical developments therefrom. I had often felt the need for such a theory of the membrane, but had not the mathematical equipment to make any progress. I had of course been familiar and had accepted the sodium hypothesis ever since I first heard of it from Bernhard, but your wide range predictions was new to me.

I was at first worried by the concept of a special lipoid soluble carrier mechanism for sodium, and attempted to formulate alternative ideas based on purely physical concepts. For example sodium would preponderate in the space charge on the outside of the membrane, while there would be a deficiency of potassium in the negative internal space charge. However calculation soon showed that such concentration effects would have a negligible action on the movement of ions if there were a sudden great increase in membrane permeability allowing Na to penetrate as readily as K. Nor did I fare any better in an attempt to introduce a dynamic concept due to ion mobilities in the space charge zones.

The brief note of Keynes on Na24 flux has also just arrived, so it has been fun applying his values to your observations, assuming that sepia and squid axons are identical. He certainly finds a Na flux per impulse many times (about 10) greater than is needed for the spike, and the K flux is also several times (about 5) too large. I presume that indicates that the inward Na flux is balanced by an outward cation flux (Na + K) during the rising phase and perhaps that Cl also has a higher permeability then. Apart from such minor discrepancies there seems to me to be remarkable agreement between Keynes‘ values and yours. I presume that during the falling phase of the spike PK must increase to at least 10

times the resting value in order to give the observed rate of spike decline.

I have heard from several sources of the resounding defeat that Lorente sustained in Paris. I am almost beginning to feel sorry for him, but I hope that he will not be so discouraged that he leaves axonology for synaptology! I was sorry not to be at the conference, but with my chronic staff shortage it was quite impossible for me to get away. I think it will be some years now before I can hope to go abroad. I have so many new experiments that I want to try that I would be reluctant to travel, even if I could get away.

In compensation I am lucky enough to be bulding up quite a local team. With Archie McIntyre, and Rall from Cole's laboratory I have a nucleus to which I am adding Dun (from China – you will remember him at Cambridge) and now I hope also Chang who was at the Rockefeller and is now at Yale. Besides that I have some very good local people. So life here is quite interesting.

Best wishes,

Yours sincerely

**

L36) **1949 - Eccles to Gasser**

[2NZ-2042-1949-09-14]

Letterhead: Medical School, King Street, Dunedin, New Zealand

Dr. H. S. Gasser
The Rockefeller Institute for Medical Research
66th Street and York Avenue, New York 21, N.Y., U.S.A.

My Dear Gasser,

Again your letter has had to wait for months before a reply! But I have been snowed under by work and it seems to be getting worse. However I have had all the news from the Rockefeller from Archie, whom I am delighted to have here. He enjoyed his time with you and Dave and I greatly admire the work they did together – though of course I don't agree with their interpretation of the focally recorded synaptic potentials!

However their criticism is the only one that I have to take seriously. I am glad to have it hope for more, because it does make one get down to

it and do better experiments! I share with you a great admiration for the careful and skilful work of Dave, and wish I could have some long talks with him. However it will I think be a long time before I go abroad again. I certainly will not be over for the Congress next year. Now why don't you come out to see these parts of the world? Archie and I would give you a warm welcome here! I would look forward to hearing all about the C fibres, which strike me as a most difficult technical field, and also of the greatest interest because all nerve fibres turn into fine non-medullated structures at their business ends and we are so apt to go on treating there as if they were just like the large parent fibre which they branched off from.

It was nice of you to remember the family that you once saw – the eldest, Rosamond, is just about to graduate in Physiology and is coming on to do research with me – we expect great things from her!
My very best wishes,
Yours as ever,

**

L37) **1949 - Eccles to Brown**
[2NZ-2014-1949-09-14]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Dr. G.L. Brown,
National Institute for Medical Research,
Hampstead, London N.W.3.

My Dear Brown,

I think you have done excellently to get Bernhard into your Department, and I think it very important for him to have some teaching responsibilities and so make more contacts with the rising generation. Here I have quiet a number of good young people coming on and somehow one manages to get quite a lot of research done in addition to all the various responsibilities. I expect that Lawrence is pleased at his new appointment. I now have to look out for a successor. Have you any suggestions? I have none in reply to your request about Biochemists. Edson –

our professor is really first class – but he would not leave New Zealand. He is at present in England and feeling very homesick. I won't be over for the Congress next year. I can't afford the time!

We are all pleased at the prospect of having Sir Henry Dale here for a couple of weeks next year. I must write to him.

Best wishes to you all,

Yours ever,

**

L38) 1949 - Feldberg to Eccles

[2NZ-2033-1949-12-06]

Letterhead: Medical Research Council, National Institute for Medical Research, Hampstead, London, N.W.3

Professor Eccles, F.R.S.
Department of Physiology, University of Otago Medical School
Dunedin, New Zealand

Dear Eccles,

As you probably know, the irony of fate has made both of us co-examiners for Lippay's degree, which gives me at last the opportunity to reply to your charming letter of some years ago, in which you were not yet convinced that acetylcholine played a role as central synaptic transmitter! I wonder if I shall get a letter from you one day, in which you will give evidence in favour of acetylcholine as central transmitter in the same way as your letter tried to convince me that acetylcholine played a role in neuro-muscular transmission.

I have written to Tiegs and enclose a copy of my letter to him. You will see from it that, after having really read Lippay's papers, I am favourably impressed by his work, and see no reason why he should not be given the degree. But I want to hear your opinion and also to know the procedure which should be adopted.

I hope you and your numerous family (some people say there are eight and some people say there are now ten children of yours) are all well and I am looking forward to seeing you again after all these years at the Copenhagen Congress.

You will be surprized to receive this letter from London, but I have left Cambridge and followed Brown, who has taken the chair at University College. As the lab. is moving at the end of this month, please write to our new address: The Ridgeway, Mill Hill, London, N.W. 7, unless you reply at once.
With kind regards,
yours very sincerely,
W. Feldberg

**

L39) **1949 - Eccles to Easton**
[2NZ-2030-1949-12-14]

Dr. D. M. Easton
University of Washington, Department of Zoology
Seattle 5, Washington, United States of America

Dear Dr. Easton,

I was most interested to hear of your desire to come here and work on invertebrate neurophysiology, and I am most anxious that you may be able to come for at least a year. So please tell me how I may be able to support your application for a Fulbright Fellowship.

I should now explain the position in regard to the Portobello Marine Biological Station. I have been struggling for years to have the old Fish Hatchery taken over by the University and converted into a modest Marine Biological Station. It is ideally situated, and is fairly well provided with facilities for biological work. At last my efforts have been successful and the University is immediately to advertise for a Director and rehabilitate the Station. However you must realize it is all on a very modest scale. But there is ample supply of excellent sea water at the Station and a considerable number of inside tanks and also some large outdoor tanks in which large animals can be kept. From my laboratory I can supply all the research equipment for work that members of my staff will be doing. So it looks as if it would be possible for you to work there. It is 15 miles away from Dunedin down Otago Harbour, but there is a house at the station that could be made available (or partly so) for you and your wife.

Alternatively all crustacean work could be done in Physiology Department, for a small marine aquarium is being constructed now in the

basement and we have made arrangements for a supply of sea-water etc. As you know crustacean are easy to keep in those conditions and crabs and crayfish are available most of the year from the fishing industry here. There are also large fresh water crayfish in all the streams here.

I myself have for some time contemplated work on synaptic transmission in the stellate ganglion of the squid, but that work would have to be done at Portobello as squids could only be kept there. I am told that the fishing trawlers could provide an adequate supply of squids as soon as we need them, and they show the characteristic giant fibres to and from the stellate ganglion.

You ask about any invertebrate work I have done. Alas, there is only one small paper and I have no reprints. However I send reprints of those recent papers that are still available.

You may be interested to know that Dr. A.K. McIntyre is a Senior Lecturer here. He is known to my old friend Ted Ruch at Washington and also to Patton there. Also I have here a Biophysicist, Wilfrid Rall, who has worked with Cole and Marmont at Woods Hole on the squid giant fibres, and Prof. F.T. Dun of Peiping, who was trained Neurophysiology by Adrian and Matthews in Cambridge.

We are pretty well provided with equipment (even on American standards) and skilled technical assistance, but if possible I would suggest that you bring your equipment as well, because I have a number of junior research workers, and the five sets of electronic recording apparatus will be in fairly full operation.

I should add that I am most interested in crustacean Neurophysiology and will be anxious to learn from you the techniques of investigation of the creatures. There are most intriguing problems in the neuromuscular transmission alone and the work of Wiersma and Katz and Kuffler really only opens up the attack on the problems. I am, for example, interested in the possibility that the electrical theories of excitation and inhibition may obtain at the crustacean n-m junction, whereas in the vertebrate the transmission is exclusively due to acetyl-choline.

Let me know if there is any other information that you can think of. You will be interested to hear that in the Physiology and Biochemistry departments we have two American families in your age group not only Mr. Rall and his wife but also Dr. Ploeser (of Stanford) and his wife and two children.

As regards time of arrival I would suggest that earlier than March 1951 would be advisable. Would September or October 1950 be possible. The reason is that in August 1951 I am scheduled to go to England for some months and moreover that time would bring you to Dunedin at a lovely time of year and at a time when most of the University teaching will be over. It resumes in March.

I look forward to hearing more from you and I will get in touch with the local Fulbright people.
Yours sincerely,

**

L40) 1949 - Eccles to Downman
[2NZ-2028-1949-04-26]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Dr. C.B.B. Downman
St. Thomas' Hospital
London S.E.1, England

Dear Charles,

I have your two letters of March 30th and April 18th before me. In particular I am grateful for the comments on the paper. I agree with them all expect that on page 17 line 6. Surely that is our point that diphasic distortion of the subtracted potential is consequent on the shortening of latent period. Most of the other corrections were due to misprints. I am sorry about Thais' name. Please apologise to her for me. But you must share the blame, as you did not respond to my request for the correct spelling. So I tried Griesbach and Kennedy and they were sure it was Barkan and not Barakan, as I had written it! Anyway it will go in all right!
The kink in the zero line in fig. 13 is simply explained. The line is constructed from the potentials of the different points on the needle tracks at the chosen time. An attempt was made to draw the potential lines so that they conformed with the various records lying adjacently. Of course there is no particular significance in the kink, but that is how it worked out. You can see the same type of kinks in some of Campbell's maps.

The paper has been accepted for publication, but only if we shorten it considerably. I have put much of it into small print and simplified some

headings, but more is needed so I suggest cutting out the rhythmic wave section. It does not particularly fit in with the rest of the paper, and we have no adequate explanation to offer for the rhythmic waves. Furthermore we now have some new ideas on the subject, so it is wise to hold up publication in order to see how the new ideas work out.

I think that it would be a good idea if you gave a paper to the Physiol.Soc. on this antidromic potential story. Do go right ahead with the project and show just what you like. The paper will not be out in the J.Neurophysiol. till next year, so there is plenty of time to forestall publication.

So glad to hear all your other news and that Thais and Gillian are flourishing. Sorry that you did not get the Newcastle appointment. I do not know yet who was appointed, but I heard that you were not in the short list. You will have to appoint Thais as your publicity manager!
Best wishes from all here, Yours sincerely

L41) **1950 - Eccles to Downmann**
[2NZ-2028-1950-05-24]

Letterhead: Physiology Department, Medical School, King St., Dunedin, New Zealand

Dr. C.B.B. Downman
Physiology Department, St. Thomas' Hospital
London, S.E., England

Dear Charles,

Many thanks for your letters of 9th January and 19th April, both of which are unanswered. But I have been very busy with research and all the departmental chores and in addition have had this Canberra business on my hands. Well mercifully that is all settled and I am to go there, but not for two or 3 years. They have to build the place yet. But I was sufficiently impressed when I was there in February to realize that I should accept the excellent proposition that was put up to me. So it is all now going forward. Rene and I are going over there again in August.

Now as regards to reprints. These 60 that you get of the first paper are only for your special friends, and private usage. We have a lot here

for general distribution. If you could send me a list of those to whom you are sending reprints, it will save me duplicating. I am holding the distribution of mine until the March reprints also arrive and then send out a budget.

Your splanchnic nerve work sounds interesting and it is good that you are presenting it to the Copenhagen Congress. Schlapp wrote to me about his strychnine work and I think they have really got something there, but it will need better recording. Can you tell me anything about Bradley? I wrote to Schlapp asking if Bradley would like to come out for a year or two and if he would be suitable for a sort of part-time teaching and research position such as you filled here. Actually we had only one applicant for our Senior Lectureship – a Chinese, Lim, who was recently with Feldberg.

By the way do let me know if you receive reprints for the 2nd and 3rd papers – if not I will send you some. There was some confusion over them, particularly the last, which I did not see in proof because it was inadvertently sent to me by surface instead of Air Mail.

Rene joins me in sending our best wishes to Thais and yourself. It is encouraging to have Readerships dangled in front of one.
Yours sincerely,

**

L42) **1949 - Eccles to Young**
[2NZ-2092-1949-10-07]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Professor J. Z. Young
Department of Anatomy, University College London
Gower Street, W.C.1, London

Dear John,

Alas it will be some time before I will appear in England again. it would be fun to see you in your full pontifical state at University College. Here life is very simple, but I hope effective. I am now immersed in problems relating to the “plasticity” of the synapse, which will be of interest to

you. It is a bit early yet to forecast their significance, but I was rash enough to just mention them in an article they got me to write for the British Medical Bulletin. I have read Konorski's book in part and liked it at the beginning. But I think he failed to put up a sufficiently precise physiological hypothesis for the conditioned reflex and it seemed to me that the involved theoretical structure that he developed in the later parts was too insecure in its foundations to be interesting. I wish people would move a little slower in elaborating theories. We have to achieve a careful balance between theoretical developments and critical experimental testings.

Can you send me references to morphological literature on "plasticity" that would be of interest? I have your papers on which you mention regression with disuse.

Best wishes,

Yours sincerely,

L43) **1951 - Young to Eccles**

[2NZ-2091-1951-01-11]

Letterhead: University College London, Department of Anatomy Prof. J. Z. Young, M.A., F.R.S.

January 11th, 1951

Dear Jack,

Thank you very much indeed for the MS of the paper which has been one of the greatest excitements I have had for a long time. So far as I can judge you have really broken through for the first time this block in our study of the plasticity of the nervous system. I do indeed congratulate you on what seemed to be a most carefully designed and convincing experiment.

I should be very interested to hear what picture you yourself have of the changes that take place at the synapse. I of course should like to think of them as growth changes, enlargements either of the end of the fibre or of the dendrite. From the point of view of growth studies, there is every reason to think that such changes would occur. Have you any reason to think that size change is involved, rather than some change in the properties of the membrane or other feature?

It seems to me the most difficult of your observations to fit with the growth theory is that the condition in tetanus produces potentiation. I suppose it would be difficult, though not impossible, to imagine this as a growth process. Would you mind if I took a clue from you and tried to do some size determinations on the boutons and dendrites involved? We have been playing a good deal with the problem of measuring dendrites in the cortex and I think I can see how, following your lead, it might be possible to find actual visible changes in the cord. Incidentally, the more I think about it the more I feel that the plasticity must depend on a combination of cyclical activity immediately after the stimulus and producing a 'growth' change lasting much longer.
Again many thanks, and very best wishes,
Yours

**

L44) **1950 - Albert to Eccles**
[2NZ-2003-1950-04-28]

Letterhead: 90 White House, Regent's Park, London, N.W. 1

Prof. J.C. Eccles, F.R.S.
84 Cannington Rd.
Dunedin, New Zealand

Dear Jack,

It was wonderful news that you are seriously thinking of taking the physiology chair in our University. It would be such a pleasure (and may I add, an honour?) for me to be one of your colleagues. I rather fear that the other two colleagues are a little young for my taste. Fenner will ripen with the years but Ennor, although a very decent and capable chap, seems to have some permanent Peter Pan in him. However, what with you and Florey, the balance of age and experience and mature good sense and judgement will be very nicely maintained.

Florey has just asked me to go out to Melbourne with him in August. Perhaps you will be visiting at the same time and we shall have a really all-round conference and reunion. It is very important to have plans for the school that will suit us all.

Your suggestion that Biophysics should be made a full Professional post is a very interesting one. However, that would be a matter of securing a larger appropriation, because the present appropriation, divided

between the existing five Departments is little enough. Florey is keen rather to start with few Departments, but to blow each sub-department up into a full Department as soon as it is obviously making the grade.

Would it not be possible, then, to recommend your man for a readership in Bio-physics (under Biochemistry, regrettably perhaps) and then let him work for the promotion of his section as well as his own? I agree that Katz is the nicest chap. Only you can judge his merits, of course. Are you sure he will handle the electrophoresis and ultracentrifugation that the school requires? I ask this, because we shall be so isolated in Canberra that each Department must do its share of the general chores and offer some of the most demanded services free to all other Departments. For example, my Department is supplying analysis for all and I hope to put the analytical section in charge of a graduate who will do researches into analytical methods for other Departments, to meet their problems. I imagine also that I shall be doing a good deal of preparative syntheses for other Departments, deadly dull as this sort of thing always is. That, then, is the question that I want to put to you: Can Katz be dependent upon to do his share in servicing other Departments with the biophysical investigations in which they are interested (i.e. not necessarily his own pet techniques)? I ask this with a perfectly open mind, as I have simply no other way of finding out. It is a question that I ask every time the name of a potential colleague is raised. Because, as I see “Canberra”, we shall be a lonely nucleus of inter-dependent people; we shall not succeed if we are an unintegrated collection of individualists.

Your large research class sounds most interesting. Some very good results should come from these people when you have had a chance to train them further. I am glad that you are at last thinking of writing your book. It will be eagerly awaited, I know. Are you going to have any chemical bits in it? I expect so.

I am enclosing a cutting about the mechanical tortoises that appear to have “free will”. This will amuse you. Oh, I have just noticed that enclosures are forbidden, but it will go along to you by ordinary post.

I have not seen Fastier for some months, but he was doing well when least I did see him. Burn took an interest in him from the beginning and set out to polish him up to an altogether higher degree of accuracy. In turn, I think the new Fastier has proved quite a source of inspiration in the Department, although always with reference to amidines. When last

seen, he still had that eager diffidence that is peculiarly his own. I must look him up again when next in Oxford.

I wonder if you know the C.H.K. position? The Board wanted him to go, but Dale stepped in and wouldn't hear of it. Hence he is remaining on at his fine salary (£5000 somebody in the firm told me), but Trevan is head of research. This must be a great relief to C.H.K. who really has little to do now but entertain visitors, at which he is uncommonly good. He has proved to be a man who cannot stand stress nor protect his people from it. As a (paying) tenant in the building, I hardly ever have need to see him.

I see a great deal of Neil Fairley who suffered a coronary two years ago and had to relinquish his chair as a result. However, he is working harder than ever for the M.R.C. and has a new angle on bilharzia and one on sprue that he is testing clinically. He is a fine fellow and a greatly admired adventurer in one of the most difficult fields of medical research (human material), don't you think?

Here's wishing you and Rene all the best. I wonder what Richard looks like now; quite a young man of three or four summers, I'm sure!
With every good wish,
from Adrien

PS: I was quite ill during the recent snowstorms. Fancy heavy snow in April! It took me quite by surprise with abdominal, diarrhoea and vomiting. I'm O.K. again now. A.

L45) **1950 - Eccles to Albert**
[2NZ-2004-1950-05-13]

Letterhead: Medical School, King Street, Dunedin, New Zealand

Dear Adrien,

It was so nice to have your letter of April 28th and it will be fine seeing you in August. It looks as if the Biophysics position will be an important topic of conversation, and I am adding a few comments at this early stage.

1. The subject Biophysics has been variously described. Some writers of text books seem to think that it is merely technology, but I would argue that it includes any investigation of living processes conducted by refined physical or physical-chemical methods. It is thus the eventual heir of the physiological field.

2. Katz is a top-rank thinker and investigator in the subject as defined, and has displayed great creative ability and initiative. He is skilled in every aspect of electrical and electronic works, and also has had research experience with A.V. Hill on mechanical problems.
3. The electrophoresis and ultracentrifuge should be put in the Biophysics department under an expert technologist much as you are doing for micro-chemistry. Parkinson would be a possible man. Katz himself is an excellent technologist. For I watched him in Sydney learn Warburg technique by himself so effectively that in a few weeks the accuracy of his work rivalled that of the best investigators. Also in Radar he excelled in technical performance.
4. Katz will bring that maturity to the University that you and I are keen on, and he has a keenly critical intelligence of great value in discussion. I would maintain that there is no better man for the position in the British Commonwealth, and I do hope that the delay till August will not lose him for Canberra. As regards budget I would be prepared to scale down Physiology in order to allow for a Chair of Biophysics, because I am convinced of the great importance of Katz for the School.

I was interested to hear of the C.H.K. position. It is good that he is at last relieved from the strain. Many thanks for the recent reprints. They give an excellent review of the fascinating field.
With the best wishes,
Yours ever,

L46) **1950 - Albert to Eccles**
[2NZ-2003-1950-05-22]

Letterhead: The Australian National University, Canberra, Department of Medical Chemistry, 183 Euston Road, London

Professor J. Eccles, F.R.S.
Physiology Department, University of Otago
Dunedin, C.1. New Zealand

Dear Jack,

It was nice to hear from you again. There is no doubt from what you say that Bernard Katz is a first-rate scientist and that he would make a valuable addition to the staff of our Medical School. I am glad that you are so forward-looking in these matters because we need to be advised

what types of medical learning are eventually going to be as important as physiology, pathology, microbiology and chemistry are today. Indeed there is little doubt from what you say that the Medical School must sooner or later contemplate the creation of a Chair in Biophysics.

However, I am of the opinion that before this happens it is important that we should have a Chair of Pharmacology established. I believe that there is a good deal of work which will be done in the other Departments of our School which will fall on a very barren soil if the stimulus of the presence of a competent pharmacologist is not assured. Such a man should be a biologist with a highly developed power of abstract thought, one who can see the fundamental principles underlying the masses of fact.

As you probably know, provision has been made for a Reader in Pharmacology but there is no doubt that the subject merits a full Chair as soon as the time is considered ripe for any new Chairs to be created. Important as Biophysics is going to be, “the fundamental heir for the physiological field”, as you say, the time is already here when a Department of Pharmacology is needed. Cannot we have pharmacology first and biophysics next?

I agree with you that this will probably prove an important topic of conversation when we meet shortly, so I am taking the liberty of showing your letter and my reply to Florey so that he can be up-to-date on this matter.

With greetings to you and the family, from,

Adrien

L47) **1951 - Albert to Eccles**

[2NZ-2003-1951-07-02]

Letterhead: The Australian National University, Canberra, Department of Medical Chemistry, 183 Euston Road, London

Professor J. Eccles, F.R.S.
Physiology Department, Medical School
King Street, Dunedin, C.1. New Zealand

Dear Jack,

I am enclosing in a cutting which I had from America recently, which I think will amuse you.

No doubt you have heard from Bernard that he has his London Chair which will give him the stability he has been seeking. Just the same, I am sure his wife will still be pining for Australia and perhaps we shall see him out there in the long run.

I am looking forward very much to your visit here next year.

With the best wishes to you and your family,

Yours,

Adrien

L48) 1951 - Eccles to Albert

[2NZ-2004-1951-10-02]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Dr. Adrien Albert
Department of Medical Chemistry, Australian National University
183 Euston Road, London N.W.1, England

Dear Adrien,

Thank you so much for sending me a copy of your valuable book on “Selective Toxicity”. I have already in the course of a busy morning had a brief look at it, and was amazed at how much you had packed in it, and of course I found the care and precision as well as the felicity of style that I had expected. I am beginning to think that chemical specificity plays a more important role in the central nervous system than I would have admitted hitherto, but that can await our discussions when I come to England.

I returned from Canberra a few weeks ago. Howard was in fine form. I have never known him so boyish. However I haven’t heard yet the decisions on the Budget as regards the John Curtin School, but I have hopes that it will be all right and that you will also be coming to Canberra in the not too distant future.

Again many thanks,

Yours sincerely,

**

L49) **1950 - Eccles to Katz**
[2NZ-2060-1950-05-24]

24th May 1950

Dr. B. Katz
Department of Biophysics, University College
London, W.1 England

My dear Bernhard,

The Canberra situation is still not sure so far as the Biophysics chair is concerned. I have Florey's O.K. in regard to offering you the position of Director of the Biophysics Department at the level of a Readership. I replied stating that you could only be attracted at the level of a Professorship.

Florey is quite sympathetic to that proposal and Wright supports it strongly, but Florey wants to have it discussed when we are in Canberra in August. Wright and I are pretty confident that we will succeed then in getting the Chair, so I hope that you will not mind the delay. The position should be finally settled by the end of August. Of course it is asking quite a lot right at the inception of the School of Medical Science to have such a basic change, and Biophysics is not one of Howard Florey's vital interests, so his reluctance to come to an immediate decision is pretty understandable. However the situation will be very different when we are able to have a personal discussion at Canberra. Adrien Albert will be there also in August and he will be a good supporter for Biophysics.

Meanwhile I have agreed to accept the Physiology position, I finally came to the conclusion that I would build up more good will that way, than by holding off in the hope of forcing a favourable decision in Biophysics. Government have now approved the expenditure of £ 1,010,000 for the building and equipment of the Medical Sciences School and its annual budget will be at least £ 110,000. In addition there has been approval for a large housing project for staff and all is at the highest priority level. However it will of course by 2 to 3 years before the place is ready for occupation.

Well Bernhard I do hope that you will not feel the delay too long. I very much hope that I may look forward to renewal of our association, which for me was very valuable. Together we could I think make Canberra a world centre of Neurophysiology. By the way if you could send

me a list of your publications it will be useful at Canberra. I remember I once tried to make out one when you were being invited to the Kanematsu Institute, but it was incomplete.
With best wishes,
Yours ever,

**

L50) **1950 - Eccles to Popper**
[2NZ-2108-1950-03-12]

P.O.BOX 913
University of Otago, Medical School
King Street, Dunedin, c.1, N.Z.

12th March 1950

My dear Karl and Hennie,

You have given us some great joys – firstly your lovely letters which are so personal and so intensely interesting, and then your lovely present “The Story of Art”. It arrived just over a week ago and even at the beginning of term I have managed to look carefully through it and to read quite a large part. I cannot imagine anything better for the growing family. Our problem always is with these young lives to see that they appreciate the world into which they are born with the heritage of all the good things that man has done. That book by Gombrich is ideal for that purpose, but it is also written with such insight that it is fascinating for adults as well. I thought his preface was a model in the way it set out the aims of the work and the self imposed rules. Am I right in seing your tough in that? If not directly, then I suppose indirectly in your influence on his thought!

Now I have some news for you that I can’t withhold any longer. You will have heard I suppose of the Australian National University that is being established in Canberra. You can read an official statement about it in the Times Educational Supplement of May 6th and 13th 1949, where Douglas Copland, the Vice-Chancellor, gives a brief survey of the project. I have been invited to be Professor of Physiology there, and in a recent visit I was so impressed by what I saw and heard that it is now virtually certain that I will go there, though of course a formal appointment has not yet been made. Since the School of Medical Research is only in the blue-print stage, it will be about 3 years before we would leave Dunedin. This of course has its difficulties, but also

advantages, as it gives me time to to accumulate and build equipment here and also a house in Canberra. And then I will be able to see all my research students here through their courses.

So much for that. When I was interviewed by the Interim Council at Canberra, I was asked for my comments on the whole concept of the research university as it is outlined for example in Douglas Copland's articles. You may imagine that I stressed the need for Philosophy, stating that was as essential in the training of the scientists (Physical or Medical) as in the other two humanities schools. The danger being that there would be four institutes of technology instead of one university. When further asked if I knew of a philosopher who could do such a job, I mentioned your name and was elated by the excitement it produced in some of the council. In particular Coombs, who is Governor of the Commonwealth Bank and an ex-Professor of Economics, said that he thought that the "Open Society" [is] the most stimulating book that he had ever read, and the others present who had also read it hastened to add their praise! Those who had not read it got out their diaries and solemnly wrote down Author and title and generally indicated that they would quickly repair their disgraceful ignorance! Well the upshop is that I am writing unofficially to enquire if you would favourably consider an invitation to the Chair of Social Philosophy in the School of Social Science. Appointments have already been made to the Chairs of Economics and Law in that School, and I think that there are others to come. The Director has yet to be appointed. Temporarily an old friend of mine, Ken Wheare, Professor of International Relations at Oxford, is acting as Director.

I have been thoroughly into the conditions of the professorial appointments – salary, study and travel leave, academic freedom, superannuation – and have concluded that they are on the whole better than any other conditions in the British Commonwealth. I also approve of the experimental outlook of the Council. They are attempting to adapt the concept of the University so that it will best be of value in the years ahead, but realize that continual modification will be necessary as experience is gained. When I experience the way in which the standards of the undergraduate teaching university are being dragged down by the continued accession of low grade professional and technological courses, I get enthusiastic for an attempt such as is being made in

Canberra to make the centre of University activity creative work at a high level and the training of research students for that work.

The salary is £2000, but may be raised, and has full FSSU benefits exactly as in England. In addition one year in every four is allowed off on full pay (or six months in every two years) with in addition up to £1000 for travel expenses. The retiring age is at the 31st Dec. in the year during which the age of 65 is attained. Full removal expenses are paid, and while in England pending the setting up of the University of Canberra the salary is £2000 sterling. The University will be building houses for staff on the University site, which covers 300 acres close to the centre of Canberra. Alternatively one can build one's own house, and we possibly will chose the latter alternative.

Other features are of course the ideal climate and surroundings. I have looked up temperatures and they correspond with Vienna in summer and are warmer than Trieste in winter. There is ample sun all the year round (2400 hours per year), and the wind velocities are very low. It only rains on 96 days a year on the average, but there is an average total of 23 inches and an excellent supply of water from the Cotter River. There are fine gardens everywhere and every street is an avenue. I am sure Hennie that you would like it. In fact one hardly notices the houses so numerous are the trees. The nearby hills are thickly wooded, and the distant mountains – snow-covered through the winter – are also an attraction. Some 15 miles away they rise to over 5000 ft. and further away up to over 6000. The town is as yet small – some 14,000 population – but a tremendous building programme is in operation as all Federal Government departments are being moved there, and there will be about 30,000 in 10 years time. It is very much a capital city in the making. Air transport links it in a few hours with all the main cities of Australia, and there are at least a dozen flights a day coming and going to Melbourne, Sydney and Adelaide.

You may find it attractive, too, Karl, to be at the centre of affairs of a country that is making a great effort within the Western democratic way of life. I have been impressed, too, by their generous immigration policy – particularly in regard to the unfortunate displaced persons. You find them everywhere in Australia contributing by their work to their adopted country.

Well, what I have told, together with the articles by Copland, may cause you, Karl, to give favourable consideration to an invitation to

Canberra, which I hope may be forthcoming. Of course my letter is quite informal, but I write it at the suggestion of Copland, and of course my own position is still not settled. I will let you know as soon as that is sure.

I look forward very much to seeing a copy of the article – "Indeterminism in Classical Physics and in Quantum Physics". As you know, the freedom of human action interests me enormously, and in fact the mind-brain problem first drew me into neurophysiology. By the way did you see the ridiculous articles by Ayer and Gilbert Ryle in the Listener last year? They are ignorant of the very elements of the scientific approach to problems. Your William James' Lectures on "The Study of Nature and of Society" suggest to me by their title that your interest, Karl, is coming to centre in a field that makes a chair in Social Philosophy very appropriate, and in any case you would have a free hand in Canberra to range over the whole field of your interests from quantum physics to society! I presume that you know that Oliphant is to direct the School of Nuclear Physics there.

Marianne did not give you the full story on chemical transmission. It is only at the vertebrate neuro-muscular junction that the electrical theory is falsified. In the much more important synaptic transmission it is the only one that has been developed sufficiently to give a theory of inhibition, and the electrical hypotheses of synaptic excitation are still very much alive after some pretty rigorous experimental testing. But besides that we are now on to the most interesting experiments concerning the slow changes that occur in the simplest reflex arcs during under-activity (disuse) and overactivity. For the first time it is possible to put up hypotheses of such plastic changes that are testable experimentally in the simplest possible system – reflexes with only one synaptic relay. It may be that at last we are bridging the gap between the classical neurophysiology, and the problems of learning and forgetting, or if you like the conditioned reflexes.

Pavlov's work was never assimilated into neurophysiology, though there has been at times an illusion that it had been, which is attributable to the confusing terminology that he adopted.

Rose is now starting research with me, and is also demonstrating to the Physiology III class. She is really first class. Peter's abilities lie in Maths., though he wants to be a Physicist. And now we also have Alice doing a Philosophy, Maths and Latin course for B.A.

Passmore arrived just before term started, and we have all been so rushed that we haven't had him to the house yet. Rene also has been very sick with infected sinuses for nearly three months and is only now on the way to full recovery. I look very much to a close association with him.

Well dear Karl and Hennie this is a very long letter, and Rene and I have typed it out in our slow way because it is confidential. Also I thought it best to send a copy to Harvard as well as to the London address, because I do not know the dates of our own return, and there is always a danger of delay in readdressed letters.
Rene joins me in sending our love and thanks for your lovely present.

L50) **1951 - Eccles to Popper**
[2NZ-2108-1951-05-02]

2nd May, 1951.

Dr. K.R. Popper,
"Fallowfield", Manor Rd.,
Penn, Bucks. England.

My Dear Karl,

Your letter of December 18th did not call for an immediate reply, so it has lain unanswered till now. But now I have the text of a lecture to send you on the Brain-Mind problem. I was asked by the local philosophers to give a lecture, so that stimulated me to write up a theme that has been in my head for some years. Actually I spoke on much the same theme at Christchurch last year. Another reason for writing on this theme is that my Waynflete Lectures next year are to be on the general topic of the "Neurophysiological Basis of Mind", and this gave me a chance to get my ideas on the subject in order.

Anyway here is the lecture, which was received with mixed feelings - at least, I could claim that the feelings on both sides were strong. The behaviourists and positivists were naturally antagonistic, but the scientists were favourable. I expect as much for the philosophers are too much under Ryle's influence, which I think is almost wholly bad. Maybe he has a certain cathartic value. But I find his book simply irritating and I find so much in it that I can't accept, and nowhere any attempt at reason – rather argument by derision. The result is that I have given up reading it and Bernadelli likewise regards it as unreadable. Of course I have had

several arguments with Passmore about it. Curiously enough he does not think that Ryle has established his behaviourist explanation of mind, though he defends the book for its brilliant exposition. Maybe it has some philosophic virtuosity, but I do not like the "deliberate abusiveness" of the style, nor the bias of so much of the illustration from verbal usage. Anyway as a Cartesian I find Ryle's attack of little significance, and am prepared to go on with the development of my hypothesis of interaction. I would value your comments on this initial essay in the field. I have sent it into Nature for publication because I hope thereby to see what critical attack it will draw. The neurophysiology can be defended against all attack and actually is a synthesis of the thought of leaders in various aspects of the field. I will of course be developing this much more in the Waynflete Lectures, where I shall lead up from the known properties of the neurone and the synapse to a full treatment of the cerebral cortex. Well so much for that.

I have just read your "Indeterminism" papers and liked them, and agreed with them though the Godelian section was a bit over my head – at least in the time I had at my disposal to read it.

I would value reprints – as also of any other of your recent papers. I would also like to hear your views on the psi-capacity work. From all our different viewpoints we are accumulating evidence against the naive monist materialist view.

Here the family flourish. Rose has a Research Scholarship of the Australian National University and is off to Cambridge in November. I hope to be in England by January and will be staying for some months. We must get together! Our projected move to Canberra will be in June next year. Work is just about to begin on our house there. As regards Social Philosophy at Canberra I have no information on recent developments. Presumably you will be seeing Copland during his projected visit to England. Rene joins me in sending love to Hennie and yourself.

Yours ever,

**

L52) **1950 - Eccles to the Collector of Customs**
[2NZ-2022-1950-09-14]

To the Collector of Customs,
Box 495, Dunedin

Dear Sir,

Further to our telephone conversation today I am giving you particulars of the problem of import of scientific apparatus on behalf of the Australian National University. I have been appointed Professor of Physiology at that University and will be leaving New Zealand in 2 years time (or a little longer) to take up my duties at Canberra. Meanwhile I will be remaining here as Professor of Physiology in the Medical School, and will be building up equipment for eventual removal to Australia. This equipment will be paid for by the Australian National University, but will be used in research here for the next 2 years or so. The position is further complicated by the circumstance that some equipment that has already been delivered was ordered on behalf of the University of Otago but will be transferred to the Australian National University and will be paid for by them.

I write to ask if it will be possible for me to pay a deposit so that the goods be admitted and put “on sight” and be available for inspection when I leave eventually for Australia.
Yours faithfully,

**

L53) **1950 - Eccles to Feldberg**
[2NZ-2034-1950-11-17]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Dr. W. Feldberg, F.R.S.
National Institute for Medical Research
The Ridgeway, Mill Hill, London, N.W.7. England

My Dear Feldberg,

I have no doubt that you would like to help me in my endeavours to save Neurophysiology from the menace of Lorente de No! I presume that

you have seen the April number of the J. cell. comp. Physiology where he attacks Hodgkin, Huxley and Rushton in those terms! Anyway in his recent gargantuan effort in the J. cell. comp. Physiol. (supplement 2, vol. 35) he gets some very curious results on the action of tubocurarine on the turtle ganglia. They certainly differed from my results some years ago. I suspect that the various alkaloids isolated from curare may have different actions. Now many years ago Dr. H. King of the National Institute, Hampstead kindly gave me a small quantity of curarine which was labelled Strychnos toxifera. It was at least 50 times more potent as a muscle and ganglion blocker that tubocurarine as supplied by Squibbs or Burroughs Wellcome. I wonder if King has any of his curarine left, or alternatively if there are any other alkaloids extracted from curare that would be worth trying.

Now that I am on the question of drugs, I would be grateful for some C5 and C10. Sir Henry when he was out here said that Paton would be able to give me some, but not knowing him I did not write. Could you please ask him for me.

Best wishes,

Yours sincerely,

**

L54) **1951 - Eccles to Brown**

[2NZ-2014-1951-11-21]

Letterhead: Physiology Department, Medical School, King Street, Dunedin, New Zealand

Prof. G.L. Brown, F.R.S.
Department of Physiology, University College
Gower Street, London, W.C.1. England

My dear Brown,

Your letter of November 12th arrived yesterday having just caught me before departing for America.

That sounds a very good idea to have a Royal Society Discussion Meeting, and I feel very honoured to be asked to open such a Discussion. As regards the title, I would like to broaden it a bit, and my own feeling is that Bernard Katz and Hodgkin should be brought in. Suppose

that we call it something like “The Nature of Excitation and Inhibition” then Hodgkin could talk on the excitatory process in the giant fibre and Bernard Katz has been doing fundamental work on the neuro-muscular junction both in frogs and crabs. In the latter I think he has something on inhibition also. Lloyd of course would have much to offer, if he could be prevailed on to come. I would like to ask Granit, for he has contributed much both in retinal work and in the spinal cord, and Feldberg and ourselves could complete the team. If we so restrict it, then I don’t suppose that too much anguish will be occasioned to others. Alternative people would be as you suggest: Fassard, Bremer & Bernard of Stockholm. I don’t think Matthews is in the running, but you would know the courtesy rules on these occasions. I don’t think J.Z. Young would have much to offer on this particular aspect, but maybe you would like a colleague.

My particular contribution would be on potentials recorded from nerve cells with an intra-cellular electrode. We have cleaned up quite a few problems there. Amongst other things the Golgi-cell hypothesis of inhibition has been falsified quite definitely, and now we are thinking of all sorts of chemical transmitters. It looks as if Feldberg and I will be falling on each others necks.

Well I must dash off to do the final chores before leaving.

A letter to me C/o Mr. Floyd Lyle, Fellowship & Travel, Rockefeller Foundation, New York will catch me till the end of the year. I am due to arrive by plane in London at 9 a.m. on January 4th.

Very best wishes,

Yours ever,

**

L55) **1952 - Brock to Eccles**

2AU-2009-1952-11-13

Letterhead: Pembroke College, Cambridge

Prof. J.C. Eccles
Physiology Dept., National University
Canberra, Australia

Dear Prof and Mrs Eccles,

I have intended for a long time to write to let you know how I am settling in here, but find that I am really very bad at getting letters off. My

rooms in College are very comfortable, and it couldn't be more handy for the Lab. --- only about 3 minutes walk. Since Rosamond's ganglia appear to have yielded all that they are prepared to give up at present, Hodgkin suggested that we should work together on mammalian muscle. (He is also keen for me to do some tracer work later.) At present we are using one of the lumbricals from the rabbit's hind paw as an isolated preparation, and have achieved a survival time of some hours. Resting potentials are doubtful because of unstable baseline, but seem 80-90 mV. Action potentials are up to 110, and we have been able to record several action potentials in a single fibre, though they all decrease successively. Deeper fibres are better for repeated work than surface ones, as might be expected. At present we are engaged in dismantling and refitting the apparatus in light of experience, but hope to get it together to do another rabbit tomorrow.

Rose has been very good to me since I came. I thought that I was old and hardboiled enough not be touched by such things, and have been very surprised to find myself quite homesick; it is to be hoped it will soon pass. She is rather distressed at present through not having heard from Canberra, Auckland or Dunedin for over six weeks, and is hoping that all is well. I am trying to persuade her to go away from Cambridge for at least a few days over Xmas, but so far without success. I shall not give up trying, however. Trevor Shaw and I are having a certain amount of success in making her forsake her sandwiches and have a decent meal occasionally. Hugh Templeton and I are going to Scotland for about a week, but are not sure exactly where, yet. I must admit that the weather doesn't beckon particularly in the Scottish direction.

It is surprising how many people we know here in one way or another, and we'll no doubt encounter a few more next week at the meeting of the Hei Tiki (N.Z.) Club. You will be charmed to hear that the Club President is none other than our old friend Heinz Seigfried Koplowitz Kent – over here doing a Ph.D. on the history of Anglo-Danish Relations in the ---? Century. We'll have the pleasure of meeting next Wednesday evening.

I am looking forward to hearing how things are going in Canberra, and about the first job you tackle. Will it be inhibition? The book too is eagerly awaited; I think I'll have to buy two, one for current consumption and one to be posted out for an autograph. If you don't present one to the Library (Departmental) here, Rose and I will have to as I am sure

they won't buy a copy. The Library is good for Journals, but bad beyond belief in respect on monographs. It makes me wish that some of the £400 or so which it will cost to have Adrian in oils hanging from the tea-room wall could go into the Library fund.

Please tell Jack that I shall write during the weekend.

With best wishes,

Lawrence

**

L56) **1953 - Eccles to Dale**

[2AU-2030-1953-09-11]

My dear Sir Henry,

I saw in the "Endeavour" that arrived yesterday a very nice article on our mutual problem of chemical transmission. In my role as a recent convert to the idea of chemical transmission in the central nervous system I have some nice experimental data to tell you about. Feldberg has already been told about it by Paul Fatt, and may be Feldberg has passed the news on to you. Anyway, he was sufficiently pleased about it to send a cable to Paul Fatt. A preliminary account of the work has been written up and will appear in the October number of the Australian Journal of Science. I enclose a copy of the manuscript which of course you may pass on to anybody you please. I think it could be claimed that this is the first time that a specific synapse in the central nervous system has been allocated a chemical transmitter substance, because, so far as I am familiar with the literature, it seems that previous investigations had only indicated the possibility that acetylcholine was somewhere along a polysynaptic pathway.

I should say that this investigation was started off because a study of Renshaw's and Lloyd's work caused Paul Fatt to make a brilliant guess, which in fact proved completely justified by our later experiments, and which is substantially the story as it appears in this preliminary paper. I had known of the background for several years, but there remained a series of disconnected observations until Paul showed how they could be linked together.

Of course, this is only the first, we hope, of the investigations on chemical transmitter substances in the central nervous system, and now that we know the pharmacological peculiarities of one central cholinergic synapse we are in a good position to discover others. Earlier this year we were able to show that the inhibitory synapse worked by greatly increasing the chloride permeability of the post-synaptic membrane, and also that all inhibitory synapses we investigated were extremely sensitive to the depressant action of strychnine. In fact, we think that strychnine deserves to be called the “curare” of the central inhibitory synapse.

I hope that these modest offerings to the theme of chemical transmission will be held in some measure to atone for my long delay in conversion. It is a well known phenomenon that the neophyte often causes embarrassment by his enthusiasm, but I cannot imagine that you would be embarrassed by anything I could say or do in support of chemical transmission!

Our work is going very well in our new temporary laboratories here in Canberra, and we have some really fine equipment for the job: in fact, all that we could desire, but as yet space is limited and it will be perhaps two years before we move into the fine new building that will, I think, bear comparison with anything in the world.

Very best wishes to Lady Dale and yourself.

Yours very sincerely

**

L57) **1953 - Eccles to Fenn**
[2AU-2032-1953-10-19]

Letterhead: The John Curtin School of Medical Research, Department of Physiology

Professor W.O. Fenn
School of Medicine and Dentistry,
The University of Rochester, Rochester 20, N.Y., U.S.A.

My dear Fenn,

As you perhaps know, Dr Dunham of the Department of Medicine at the University of Rochester is contemplating coming to Canberra as Reader in Optics in the Department of Astronomy. However, he also

wishes to work here in the John Curtin School of Medical Sciences continuing his optical investigations in the biological field. Naturally we are enthusiastic to have him here, and the University would pay for transportation costs of his equipment if the University of Rochester would generously make a long term loan on it.

Dr Dunham suggested that I write to you because you would be familiar with the sort of work we are trying to do here. The electrical investigations that we are doing on synapses and neuromuscular junctions lead on to problems that require new techniques for investigating the actual structural changes of membranes, and naturally the optical methods of investigation are particularly relevant. Furthermore, in the biochemical and microbiological departments in the John Curtin School there is work on the detailed mechanisms of cells that again make optical investigations particularly relevant. Altogether I am sure that if Dr Dunham comes here with his equipment he would find that there is a suitable background atmosphere in which to carry out his investigations.

Just in passing I think you would be very interested in our recent investigations on the movements of ions across the nerve cell membrane. It appears that the inhibitory transmitter acts by greatly increasing the permeability to chloride ions, and by varying the membrane potential we are thus able to determine the equilibrium potential of chloride ions across the membrane. On the other hand the positive after potential is due to the development of specific permeability to potassium ions and hence one can determine also the equilibrium potential of potassium across the membrane. So far our most reliable values for chloride potential are about 80 mV and for potassium about 90 mV. If the external values for chloride and potassium are respectively 110 mM and 5 mM the internal concentrations (or rather activities) can be calculated to be 5.6 and 140 mM respectively.

We are also able to alter these internal values by appropriate current flow through the micro-electrode and observe the expected changes. It is all rather an exciting new field and we have yet a lot more to do.

Very best wishes,

Yours sincerely,

**

L58) **1953 - Eccles to Jung**
[2AU-2070-1953-10-28]

Letterhead: The John Curtis School of Medical Research, Department of Physiology

Professor Dr. R. Jung
Direktor, Abteilung für Klinische Neurophysiologie
der Universität Freiburg i. Br. Hauptstrasse 5, West Germany

Dear Professor Jung,

I was very nice to have your letter of August 31st. Quite clearly you were having a good party from all the comments and greetings added by our friends, the synaptologists. I see from your postscript that you would be inclined to believe in collaterals if the high frequency interneurons were in the central and medial part of the grey matter. We do find by far the greatest number there. I would estimate it at least 90%. They occur in a small focus just around the site where the motor axons leave the grey matter. I looked carefully through Balthazar's pictures, and in some of his figures I think small cells are visible in that region. However, the most likely assemblage of such interneurons can be seen in a figure of Sprague's in the Journal of Comparative Neurology. Actually Sprague thinks that these cells are possibly small motoneurones, but that is certainly not the case. Small motoneurones are scattered throughout the whole ventral horn and lie in the immediate vicinity of the large motoneurones of any particular muscle.

A preliminary paper from here appears soon in the Australian Journal of Science, but it will be some time before you will see this so I enclose a manuscript copy. It is a rather abbreviated account of our work, and at times rather slides over the difficulties of the experiment. For example, the intra-arterial acetylcholine does not stimulate all Renshaw cells, though all are similary affected by erythroidine and eserine. We suspect that there are diffusional barriers greatly limiting the movement of acetylcholine to and from the sites of its action on the Renshaw cells (as we call them).

I quite agree that you should press the claims of the dendritic arborisations for consideration by neurophysiologists. Such an event as the dorsal root potential has not yet been adequately explained. However, I

do not think that the dendrites play any appreciable role in stimulating Renshaw cell discharges.

Many thanks for the reprints from Balthazar. I found his paper very interesting. Please congratulate him on my behalf. We need very much more work along the same lines before we can adequately explain a great many neurophysiological findings. Please also give best wishes to Toennis. I would be very grateful for a reprint of your article in the Handbook. It is very generous of you to suggest sending me one.
With kind regards and very best wishes,
Yours sincerely,
(J.C. Eccles)
Professor of Physiology

**

L59) **1953 - Eccles to Whitteridge**
[2AU-2136-1953-04-01]

Letterhead: The John Curtin School of Medical Research, Department of Physiology

1st April, 1953

Professor D. Whitteridge, F.R.S.
Physiology Department, University New Buildings
Teviot Place, Edinburgh 8, Scotland

Dear David,

Heartiest congratulations on your election to the Royal Society. May I say it was a very well deserved honour? It made me think back to 1934-35 when I gave you that frightful problem on the ciliary ganglion to investigate which you solved so successfully. I am afraid that the little that you may have learnt from me at that time is all that I can claim to have helped you with but, nevertheless, I am proud that one whom I like to call an old pupil has been so honoured.

Here, we struggle on with experiments and, although suffering the usual vicissitudes, have made some real progress. In fact, we think we are on the verge of some rather exciting (or inhibiting) ideas. We have now one room working effectively but still have problems with our micro-

manipulator. We have attempted to copy the Matthews' oil driven model and have been rather unsuccessful with it. I am considering going back to a micrometer type such as you have developed. Also you will be amused to hear that we are having cat frames constructed which are based essentially on the one you left at Oxford and which Winsbury drew in detail.
Very best wishes to Gwynneth and the tree charming doughters
Yours ever,

**

L60) **1953 - Albert to Eccles**
[2AU-2003-1953-12-01]

Letterhead: The Australian National University, Canberra, Department of Medical Chemistry, 183 Euston Road, London

Professor J. Eccles, F.R.S.
Department of Physiology, John Curtin School of Medical Sciences,
The Australian National University, Box 4, G.P.O. Canberra, Australia

Dear Jack,

I was very pleased, on opening the "Times" this morning, to see what a lot E.D. Adrian had to say about your work, in his Presidential Address to the Royal Society last night. I was lunching today with Wolstenholme of the Ciba Foundation and he told us what a very brilliant and well-attended evening it had been.

Since we were last talking, I have had the opportunity to read your book and also loaned it to several other people, all of whom have expressed great interest.

I hope you and Rene are now completely settled in your new home and enjoying life in Canberra.
With very best wishes,
Yours,
Adrien

**

L61) 1953 - Eccles to Campbell
[2AU-2020-1953-04-08]

Letterhead: The John Curtin School of Medical Research, Department of Physiology

Professor C.A. Campbell
Department of Philosophy, The University of Glasgow
Glasgow, Scotland

Dear Professor Campbell,

I have read in the Philosophical Quarterly your criticisms of Professor Young's book "Doubt and Certainty in Science", and I am writing to say how much I appreciated them. You very skilfully demolished all the pompous nonsense that he mixed up in that book with fragments of science. I personally think that you were far too kind to him! A book like that does great harm. The young and inexperienced are misled into thinking that neurophysiologists believe that in principle physiological investigations on man's brain will be able to offer complete and satisfactory explanations of man. Very few neurophysiologists would make that claim and some of us believe it to be demonstrably false. Sherrington's "Man on his Nature" argues this thesis and it is also implicit in my recent book "The Neurophysiological Basis of the Mind", particularly the last chapter. It is perhaps relevant that Professor Young is a neuro-anatomist, and has made no important contributions to neurophysiology. In fact he has a rather naïve outlook on the physiology of the cerebral cortex.

In particular I am grateful for your criticism of one of the most banal features of the book, namely the psychological language that Young uses about the brain when ostensibly describing it as a neurophysiologist. Scientifically this is just as reprehensible as it is philosophically, but then Young has very queer ideas about science, as you note, "science consists in exact descriptions of one's observations to others"!

Many years ago I was very impressed by the lucidity and cogency of your inaugural lecture "In defence of free will". I have been unable to secure a copy, but have a photostat. Have you written anything further on this topic, which is of special interest to me as a neurophysiologist? I also would be grateful for an offprint of your article "Philosophy and brain physiology".

Yours sincerely,

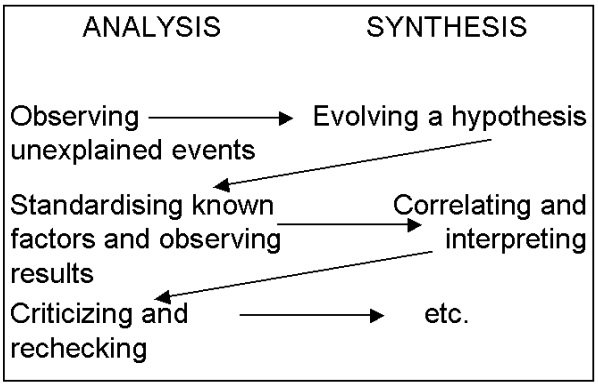
**

L62) **1953 - Everingham to Eccles**
[2AU-2041-1953-09-11]

Letterhead: Mental Hospital, Kenmore, 2.S., N.S.W.

Dear Prof. Eccles,

Thank you for your patience and consideration. I think there is a lot in what you say about my interests being synthetic rather than analytic, and I did not realize that the work you are concerned in is so exclusively analytic. However, it seems still a little obscure to me how one is to attain a job which uses the results of the analysts for that synthesis which is the main or at least a necessary step in scientific work. I picture it something like this:



It seems to me that the synthesist must be a man with considerable analytic powers and vice versa, and that perhaps the more laborious analytic procedures are a good apprenticeship for the higher intellectual flights of synthesis (imagination exceeding technical accuracy in this particular function).

However, all this is so much academic speculation and on the whole I must agree with you that my field of interest lies primarily in the psychological sphere. I am happy to abide by your decision and think on second thoughts I have a good idea of your notion of synthesis – something of a combined approach from the psychological and physiological sides to the problem of brain and mind? Thank you once again for your interest and courtesy and I will not expect a reply. I feel you have given me good advice and sound reasons why your work would not be suited to me.

Your sincerely,
Douglas N. Everingham.

**

L63) **1954 - Eccles to Ewing**
[2AU-2040-1954-07-05]

Dr. A.C. Ewing,
Trinity Hall, Cambridge

Dear Dr. Ewing,

I was very interested to read your article in “Philosophy” on the relation between mind and body as a problem for the philosopher. I found myself in agreement with all your main points which gave me a great deal of pleasure because usually I find that philosophers speak a quite different language from the scientific methods of discourse to which I am accustomed. As a neurophysiologist I found that your approach to the problem of mind and body was one that I could appreciate very well and, in fact, I have attempted, in a book which you may have seen, “The Neurophysiological Basis of Mind”, to develop Cartesian dualism and interactionism so that it becomes acceptable to modern neurophysiology.
I believe that your independence and critical approach to this problem provides a very necessary corrective to the superficial and naïve solutions that characterize, for example, the writings of Professor Ryle in “concept of mind”. His approach in that book completely rejected the whole of our scientific understanding that arises from modern neurology and modern neurophysiology. I count myself as a pupil of Sherrington who so ably wrote on the nature of man and espoused a dualistic interpretation. I am sure that he too would very much have appreciated your lecture.

I would be grateful if you could send me reprints of any other articles you have on the same subject.
Yours very sincerely,

**

L64) **1955 - Eccles to Florey**
[2AU-2046-1955-04-05]

Dr. E. Florey
Department of Neurology and Neurosurgery.
Montreal Neurological Institute, McGill University
3801 University Street, Montreal 2, Canada

Dear Dr. Florey,

It was very kind of you to write to us about the problems of the extraction of the inhibitory substance from the mammalian nervous system. We have actually had three unsuccessful attempts with your precipitation method, so it was encouraging to find that you too have found it unreliable. Meanwhile David Curtis is going to attempt the new method that you have so kindly sent us, and we will let you know in due course about the results. Actually I shall be leaving Canberra in about six weeks on an overseas visit and hope to see you in Montreal if you are still there in September.

In view of the very short period remaining me here, I would be very grateful if you could air-mail or air-freight to me a small quantity of your substance so that we could test it with our intra-arterial injection technique. We have had this technique working quite well for some time, and it has proved an extremely severe test for some of the “inhibitory” substances that we have extracted. In particular, we have used as a criterion the action of strychnine in blocking the effectiveness of the true inhibitory transmitter. It has unfortunately failed to block the depressive action of any extract that we have so far made. In our opinion, this provides conclusive evidence against their identification as the “inhibitory” substances.

Please give my kind regards to Dr. Elliott, and again many thanks for your letter and your reprint.

Yours sincerely,
J.C. Eccles, Professor of Physiology.

**

L65) **1955 - Fenn to Eccles**
[2AU-2043-1955-10-03]

Letterhead: The University of Rochester, School of Medicine and Dentistry, 260 Chrittenden Boulevard, Rochester 20, New York

Dr. John C. Eccles
c/o Dr. S. W. Kuffler
Department of Physiological Optics, Johns Hopkins Medical School
Baltimore 5, Maryland

Dear Dr. Eccles:

A special lectureship has recently been made available to the Department of Physiology and it has occurred to us that it might be possible for you to spend a few days with us before you return home as the first Lecturer in this series.

We could pay all your expenses and give you an honorarium of $200.00 for the main lecture and an additional daily honorarium of $100.00 if you can spend one or two more days with us and perhaps give a seminar and talk with especially interested members of this Department and other departments.

We are looking for highly distinguished physiologists who have interesting new work of their own to present and who will likewise be a source of inspiration and assistance to others interested in similar fields. In our opinion you would be highly qualified on all of these counts and we should be most pleased if you could accept our invitation. We have in the Department a good group of persons working on problems of electrolytes and have also a small electro-physiology unit under Ernest Wright. There are also others throughout the institution who would be very pleased to make your acquaintance and to listen to your lectures.

This lectureship is supported by a gift made by Dr. Whipple at the time of his retirement and is in honor of the first three members of the Advisory board to retire. The lectureship in Physiology is in honor of Dr. John R. Murlin who retired in 1944.

I realize that this invitation gives you very little notice and probably involves serious conflicts in your previously made plans. We hope, nevertheless, that it may be possible for you to accept and we shall all feel greatly honoured if you can do so. Since time is short, I should be

very glad if you wished to call me collect if you feel that you can accept and wish to make definite arrangements. We will try to arrange the lectureship at almost any time which suits your convenience but there are certain times which would be almost prohibitory for us. If you will let me know what the possible dates for you may be, we can determine whether there is any possibility of concluding the plan.

Whether you can come or not, I should like to tell you how much I enjoyed meeting you in Boston and Woods Hole and how much I enjoyed and admired the work which you presented at that time. I should like to hear more details concerning it.

Sincerely yours,
Wallace O. Fenn
Chairman
Department of Physiology

**

L66) **1956 - Gibson to Eccles**
[2AU-2057-1956-06-19]

Letterhead: Department of Neurological Research, University of British Columbia, Vancouver 8, B.C., Canada

Professor J.C. Eccles
Laboratory of Physiology
National University Canberra, Australia

Dear Jack:

I am just back from a trip to Quebec and New York and in the latter city had a chance to discuss our problem of sabbatical leave for professors with Bob Morison at the Rockefeller Foundation. He tells me that the National University of Australia has a very good plan and I wonder if you could have the official in charge and send me details by air in order that we may have the benefit of your thinking and experience out there.

We are getting on very well on the biochemical aspects of schizophrenia and have a Japanese professor, Dr. Juhn Wada, from Hokkaido University coming to help with some of the neurophysiological correlates. We are now fixing our experimental animal brains in formaldehyde and acetylcholine and find that it clears up the picture as far as background

goes and that we get much better staining of the nerve cell processes. In the rat at least we have not been able to demonstrate more boutons than usual, and as you know they are extremely hard to demonstrate in this animal. We have still not been able to find out if J.Z. Young is staining boutons or mitochondria. If it is the latter he will be sadly disappointed in doing degeneration experiments.
With kind personal regards to all,
Yours sincerely,
Bill
William C. Gibson, M.D.,
Kinsmen Professor of Neurological Research.

**

L67) **1956 - Eccles to Denny-Brown**
[2AU-2036-1956-09-25]

Letterhead: Department of Physiology

Dr. D. Denny-Brown
3 Mercer Circle, Cambridge 38, Mass., U.S.A.

My dear Denny,

Many thanks for your letter of September 16th which arrived today. I am sorry that there was no time for Canberra and Australia, but of course I will be seeing you in Dunedin in January, and my daughter, Rose, will also be there. Actually I hope to be going to the Neurological Congress in Belgium next year because I gather that there is going to be some commemoration of Sir Charles' centenary. In fact I hope that there will also be an Oxford commemoration. I am glad that Sylvia is accompanying you and I hope to meet you in Europe. Actually my trip is not yet certain; it does rather depend on the arrangements about Sir Charles' centenary.

We seem to have repeated occasion to refer to your papers these days. Ander Lundberg is here and we have done a fairly intensive survey of the distribution of monosynaptic endings from the main muscle nerves onto motoneurones belonging to the various muscles of the hind limb. One point that concerned us was that when looking back in the literature, Sherrie in 1910 classed rectus femoris as a hip flexor muscle, but in

1924 Liddell and Sherrington certainly gave it knee extensor function and that is also implicit in your papers. My own memory of the Oxford tradition in those days was that rectus femoris, like gastrocnemius, was a double joint extensor muscle having as a consequence properties rather distinct from the rest of quadriceps. I was just interested to find out when Sherrie changed his mind between 1910 and 1924, but have not been able to find the reference. I must say, Denny, that I have found your compilation from his works of the greatest value in studying his thought on all these neurological problems.
Very best wishes to Sylvia and yourself.
Yours ever,

**

L68) **1956 - Doty to Eccles**
[2AU-2029-1956-02-11]

Letterhead: University of Utah, College of Medicine, Department of Physiology, Salt Lake City 1

Dr. John C. Eccles
Department of Physiology,
Australian National University, Canberra, Australia

Dear Dr. Eccles:

I don't know as I shall ever get around to putting electrodes into neurones, but I hope soon to at least get close to them in attempting a single unit analysis of our deglutition problem. I would like to use this as an excuse for getting on your reprint mailing list.

I haven't gotten around yet to reading your Journal of Physiology papers in detail. However, I am certainly looking forward to it after the splendid preview we got at the Seattle conference. I hope your microelectrodes will some day be able to see the dendritic changes which must underlie many of the integrative neural functions. It was astonishing to have Kuffler and Bishop emphasizing the graded excitability of the dendrites from such disparate ends of the animal kingdom. Some such phenomenon must underlie the protracted latencies in the medial geniculate system that Bob Galambos mentioned in Seattle. We have similarly "lost" evoked potentials for some 20 msec. between the appearance

of photically elicited responses in the monkey's lateral geniculate body and their detection at optic cortex. And of course I hope some such phenomenon may ultimately explain the temporal organization of deglutition.

I believe people in Magoun's laboratory have been finding effects on dorsal relay excitability lasting 10-15 seconds after stimulation of the (presumably unanesthetized) reticular formation. I wonder if your microelectrodes might not detect a concomitant change in membrane potential.

Please forgive me my philosophizing: I suspect I am simply trying to earn my way in asking for your famous reprints.
You have my thanks and admiration.
Most sincerely,
Robert W. Doty

L69) **1957 - Doty to Eccles**
[2AU-2029-1957-05-28]

Letterhead: University of Michigan, Ann Arbor, Physiological Laboratory

Dr. J.C. Eccles
Department of Physiology
Australian National University, Canberra, Australia

Dear Doctor Eccles:

I am extremely grateful for the many reprints of yours and of your colleagues which you recently sent. I certainly find them an integral part of my thinking and performance as a physiologist these days. We enjoyed the superlative summary of your work given in your most recent book and find your point of view most compelling and wonderfully documented.

I will hope that in the future I can partially repay you in kind; though never, I fear, to your edification on synaptology! We continue to struggle with the nearly intangible correlation of the nervous system with behaviour.
Again, my many thanks.
Most sincerely,
Robert W. Doty

P.S. Could you please have your secretary note our change of address – a now more appropriate place to send news of integration at the axon hillock! Such dreamy experimentation is now but a matter of history here. We have discarded galvanometers and spirometers by the room-full and Gesell's collaterals circulate no more; until they turn up in Australian cats. RWD

**

L70) **1958 - Adrian to Eccles**
[2AU-2001-1957-03-06]

Letterhead: The Master's Lodge, Trinity College, Cambridge

Professor J.C. Eccles, F.R.S.
Department of Physiology, Australian National University
Canberra, A.C.T. Australia

Dear Eccles,

I was delighted to have your book, but reading it made me rather sad to think how much Keith Lucas would have enjoyed learning about the experiments which are now possible with your technique. At all events it makes one grateful to the wise men who founded special courses of lectures and to the managers of the Herter Lectures for getting you to give them now when your work is going ahead so splendidly.

Writing such a clear and also such a comprehensive account must have been a severe tax on your time and an interruption of your experiments but it is a great thing for all of us to be able to see how and where they are going. I hope you will be over here some time to tell us more.

I wish I were able to come out to Canberra to see your lab., but the Vice-Chancellorship isn't likely to give time for unofficial visits, or for keeping up with neuro-physiology by reading the journals. I am the more grateful for having your book to help me.

I was very glad to hear from Hartley that you will write something about Sherrington. My own article is too much like an obituary notice and it would be a great pity to miss the opportunity of having something from one who knew him really well. I wish I had managed to be at Oxford for a

time to work in his laboratory. I shall look forward to reading what you say about him.
Please give my kind regards to your daughter.
Yours very sincerely,
Adrian

**

L71) **1961 - Eccles to Granit**
[2AU-2058-1961-03-20]

Letterhead: Department of Physiology, Box 4, G.P.O., Canberra

Professor Ragnar Granit
The Nobel Institute for Neurophysiology
Karolinska Institutet, Stockholm, Sweden

My dear Ragnar,

Further to my letter of 18th February which I wrote in long-hand to you as soon as I had reached a definite decision. I now want to add something more. Firstly, last night I read right through your two papers in the Journal of Physiology with Rutledge and Haase. It certainly is amazing the precision that you can secure from repetitively firing neurones. The pictures show an extremely accurate adjustment of frequency in most records. I also think that your methods of investigating the Renshaw feed-back mechanism a most valuable and interesting one. As one who has spent a lot of time on the in-put side of this system I am amazed that it gives such a nice adjustment. However, I have come to the conclusion that it is all the more necessary that you should come here and get a good “dose” of presynaptic inhibition. When it comes to the operation of these units in the animal with intact muscles, I have no doubt that the feedback from the stretch receptors of flexor muscles in particular extensor digitorum longus, tibialis anticus and semitendinosus is of the greatest significance in controlling the frequency of the tonically discharged neurones. For example, on p. 298 you mention the effect of a steady pull on an antagonist flexor in reducing frequency of discharge of extensor neurones. There can be no doubt that the greater part of this is

presynaptic inhibition rather than 1a or 1b post-synaptic inhibition. You could, for example, test this out by trying to pull instead of an antagonist flexor, a semitendinosus. You will, I think, be surprised by the effectiveness when you pull hard enough to bring a Golgi tendon organ discharge.

There are two minor points that I wanted to mention. So far as I know the tonic motoneurones are not especially potent in producing the current inhibition; it is only in receiving that they are pre-eminent. On p. 325 I just wanted to mention as a criticism that the after-hyperpolarization generated in the some is, of course, fully impressed upon the initial segment by electrotonic currents and exercises its full depressant action there just as, of course, occurs for the synaptic depolarization.

I hope very much that it will be possible for you and Daisy to make this journey early next year. For us here, it would be an extremely pleasant and valuable association, and after our very early work on the interaction of extensor reflexes and the potentials of giant fibres of earth worms, it would be nice to have some conjoint work in this half century together.

I am enclosing the part of my Ergebnisse Review which concerns presynaptic inhibition. I do not want to bother you with the whole of this review, but if you would like it I can send you a copy by air. It would be much easier for you to read it in print eventually.

Meanwhile, my very best wishes to daisy and yourself,

Yours ever,

(John C. Eccles)

Professor of Physiology

**

L72) **1961 - Kuffler to Eccles**

[2AU-2081-1961-11-13]

Letterhead: Harvard Medical School, Neurophysiology Laboratory Department of Pharmacology, 25 Shattuck St., Boston 15, Mass

November 13, 1961

Professor Sir John Eccles
The Australian National University
Box 4 G.P.O. Canberra, Australia

Dear Jack:

As usual it was most refreshing to have you here both in the lab and at home. I know of no one of similar stature and achievements who can take criticism and even heckling in such a good natured and positive fashion. This is particularly good for the younger people to witness and I had many favorable comments. I hope that the rest of your trip went successfully and you got home in good form. I was extremely sorry that there was nothing of consequence that we could do for Peter and one can only wish that he will get over this traumatic experience in short order.

I have now decided to go for the long trip and will be leaving Boston on the 15th of December, going via England and one or two other places to India, where I will be leaving on the 16th of January for Sydney. Of course I do not want to miss seeing you all in Canberra and would like to come there sometime around the 20th of January. Please let me know if such an arrangement fits in with your activities. If I have a chance I would very much like to sit down and talk with several of your people. I also hope to see a good number of the family who are in town. At the moment we are toying with the idea of getting Phyllis to Sydney at the same time that I am there. She would just go for about a week because it would be difficult to leave the family for a more prolonged period. We are not at all certain yet that we can carry this plan through.

With best regards to all of you, Yours

Stephen W. Kuffler

[handwritten PS:] It will be wonderful to be back in Australia, after such a long sketch. I wonder what my reaction will be. I feel so fortunate that I got ‘down under’ in the first place. If not for you I might now be a pathologist. SK m enclosure.

**

L73) **Tiselius to Eccles**
[2AU-2221-1963-10-21a]

Professor Sir John Eccles
Department of Physiology, Australian National University
Canberra. Australia

Washington, D.C., October 21, 1963

Dear Sir John Eccles,

It gives me a very great pleasure to extend to you my warmest congratulations on the award of this year's Nobel Prize for "Medicine and Physiology".

Looking forward very much to greeting you in Stockholm, I am,
Yours sincerely,

Arne Tiselius
President of
The Nobel Foundation
Stockholm

**

L74) **1963 - Freeth to Eccles**
[2AU-2221-1963-10-21b]

Letterhead: Office of the Minister for Science
2 Richmond Terrace, Whitehall, London S.W.1
From the Parliamentary Secretary

Sir John Eccles, M.B., B.S., D.Phil., F.R.S.N.Z., F.R.A.C.P., F.R.S.
Australian National University, Box 4, G.P.O.
Canberra, Australia

Dear Sir John,

I should like to congratulate you on award of this year's Nobel Prize for Medicine. I was pleased to hear of your achievement.
Yours sincerely
Denzil Freeth

L75) **1963 - Eccles to Freeth**
[2AU-2222-1963-11-08]

Denzil Freeth, Esq., M.P.
Office of the Minister for Science
2, Richmond Terrace, Whitehall, London S.W.1, England

Dear Mr Freeth,

I thank you very much for your kind letter of congratulations on the Nobel Award. It was very nice to have it all within the British family with my very good friends, Hodgkin and Huxley.

Yours sincerely,
(John C. Eccles)
Professor of Physiology

**

L76) **1963 - Hayward to Eccles**
[2AU-2221-1963-10-21b]

Letterhead: University of Otago, Dunedin, N.Z.

24 October, 1963

Sir John Eccles
Australian National University,
Box 4, G.P.O., Canberra, A.C.T., Australia

Dear Sir John,

At a meeting of the University Council held this week I was asked to convey to you our heartiest congratulations on the great honour you have achieved in the award of the Nobel Prize. We do not know of any previous occasion on which a member, or a former member, of this University has achieved such a rare distinction and we are naturally very proud to think that it has come to one who was so closely associated with this University for some years. Indeed, as the Dean pointed out, at the Council meeting, it is quite possible that some of the work which has earned this distinction for you, may have had its beginning in our Physiology Department.

Your many friends at this University would like to be associated with this message of warmest congratulations to you, and all the kindest regards to both you and Lady Eccles.
Yours sincerely,
J. W. Hayward,
Registrar

L77) **1963 - Eccles to Hayward**
[2AU-2222-1963-11-20a]

20th November, 1963

J. W. Hayward, Esq.,
Registrar, University of Otago,
P.O. Box 56, Dunedin. New Zealand

My dear Hayward,

Many thanks for your letter of 24th October in which you convey the congratulations of the University Council on my recent honour.

Actually, the Dean is quite correct that we started this work in the Physiology Department in Dunedin in 1951 and since that time New Zealanders who have come to Canberra with me have contributed very effectively to its further development.

My wife and I have very pleasant memories of the eight years we spent in Dunedin and we wish every success to the University.
With many thanks,
Yours sincerely,
(John C. Eccles)

**

L78) **1963 - Wells to Eccles**
[2AU-2221-1963-10-19a]

Letterhead: Melbourne High School, Forrest Hill, South Yarra, BJ4522

25 th October, 1963

Sir John Eccles
Professor of Physiology
John Curtin School of Medical Research
National University, Canberra, A.C.T.

Dear Sir John,

I wish to congratulate you on behalf of the staff, students and Advisory Council of Melbourne High School for the recent high honour bestowed upon you by the award of the Nobel Prize for Medicine 1963.
The school is proud to have had some association with you as a student and has followed your distinguished career with close interest.

You may be interested to know that your achievements first as a Leaving Honours Exhibitioner in 1919 and as a Rhodes Scholar later have already been inscribed on our honour board. With your permission I should like to record your Nobel Prize achievement in a similar manner.

We are looking forward with great pleasure to having you speak to us at Speech Night on December 9th, 1964 if circumstances permit and of which I shall write to you early in 1964.
With every good wish,
Yours sincerely
F. N. Wells
(Principal)

L79) **1963 - Eccles to Wells**
[2AU-2222-1963-11-6a]

6th November, 1963

Mr. F. N. Wells
Principal,
Melbourne High School,
Forrest Hill, South Yarra, S.E.1. VIC

Dear Mr. Wells,

It was very nice to have your letter of 25th October in which you conveyed the congratulations from Melbourne High School on my Nobel award. I have very happy memories of the year I spent at the school. My last appearance there was in 1925 when I received a travelling rug inscribed with my initials, just before I went to Oxford. I still have the rug in wonderfully good condition.

You will now realise why I was doubtful about attending a Speech Night early in December this year, but next year seems more hopeful.
With best wishes, Yours sincerely,

**

L80) **1963 - Shealy to Eccles**
[2AU-2221-1963-10-17a]

Letterhead: Western Reserve University, Cleveland, Ohio, School of Medicine

October 17, 1963, 3:30 pm

Dear Prof. –

Congratulations!!! We just heard the great news – Charly phoned, quite excited. It is, of course, what we knew would occur some year and are delighted that this is the year.

I had been planning to write you of our progress and will include a few words. I went to Philadelphia to discuss Nerve Growth Factor with Dr. Scott and learned that it is so expensive – 8,000.00 per dose, that it is out for the moment. Thus I am concentrating on the thalamus and central projections of sensory pathways.

Looking forward to Per's arrival and hope to see you soon.

Congrats again
Norman Shealy

**

L81) **1963 - Sprague to Eccles**
[2AU-2221-1963-10-22a]

Letterhead: University of Pennsylvania, Philadelphia 4, School of Medicine, Dept. of Anatomy

October 22, 1963

Dear Jack,

I want to add my congratulations to the many which you must be receiving on the recent wonderful recognition of your work. It was very obvious to all of us who attended the Amsterdam conference on the spinal cord what an outstanding achievement you have made not only in terms of understanding the nervous system but in the training of young investigators. I remember an incident many years ago, which you have probably forgotten, when I came from Philadelphia to New York in a blizzard to hear you give a paper before Chandler Brooks' group. This was the first demonstration of the IPSP in motoneurons. I remember remarking to you afterwards that in my opinion this work deserved the Nobel Prize. Obviously I am a person of real insight!

I will look forward to seeing the results of the Amsterdam conference in press and I hope that we will have the opportunity of your visiting us on one of your many trips to this country.

I hope this finds you in the best of health as always. With very kindest regards.
Sincerely yours,
James M. Sprague

**

L82) **1963 - Eccles to Sinclair**
[2AU-2222-1963-10-17a]

November 8, 1963

Dr. H. M. Sinclair,
Magdalen College,
Oxford, England

Dear Hugh,

How very nice to have your letter about the Nobel award. In the celebrations here they had me figured as “St. George and the Dragon” who was appropriately armed with a microelectrode and the dragon looked rather like a convulsive nerve cell.

I am very happy as you mentioned to belong to the galaxy of Nobel laureates from the College and hope to pay a short visit in the first week of December as I mentioned to the President in a letter a couple of days ago.
Very best wishes to you all at the College,
Yours ever,
John C. Eccles

**

L83) **1963 - Eccles to de Beer**
[2AU-2222-1963-11-07a]

7th November, 1963

Sir Gavin de Beer, F.R.S., F.S.A., Director,
Thomas Nelson & Sons Ltd., Publishers,
36 Park Street, Park Lane. London W.1. England

Dear Gavin,

It was so very nice to have your letter of 19th October expressing in such a delightful way your congratulations. You mentioned about Granit's book on Sherrington and I agree with your praise of it having read it in manuscripts in August of this year when holidaying with Ragnar Granit at his Finnish island home.

I look forward to seeing your biography of Darwin. Your letter recalls memories of our good Oxford days together.
With very best wishes,
Yours sincerely,
(John C. Eccles)

**

L84) **1963 - Eccles to Fulton**
[2AU-2222-1963-12-24a]

24th December, 1963

Mrs. John Fulton
100 Deepwood Drive,
Hamden 17, Connecticut

My dear Lucia,

How very nice of you to write and send your congratulations. I was always disappointed that your John was not linked with Hess and Moniz when they were so honoured. Rene and I had a wonderful time in Stockholm and have now been back only a few days.
We send our Christmas greetings and our love.
Yours ever,
John C. Eccles

**

L85) **1963 - Ritter to Eccles**
[2AU-2221-1963-11-01a]

Letterhead: The Ambassador of the Federal Republic of Germany, Canberra

November 1st, 1963

Sir John Eccles,
Professor of Physiology
28, Monaro Crescent, Canberra, A.C.T.

Dear Sir John,

Upon your return from your trip to Europe and to my own country, I should like to extend to you my sincerest congratulations on the high distinction which has been bestowed upon you two weeks ago. It must give you great satisfaction to see your manifold scientific researches recognized by the conferment upon you of this year's Nobel Prize for Medicine.

The Australian people will be very proud of having one of their fellow-citizens among those few who have been honoured in this way.

I would be very happy one day to call on you, since I had heard so much about you from a relative of yours, Mr. E. D. Howells, Redmond Street, Kew, whom my wife and I met on Lindeman island about two months ago.

I remain, dear Sir John,
sincerely yours
Joachim-Friedrich Ritter

L86) **1963 - Eccles to Ritter**
[2AU-2222-1963-11-14a]

14th November, 1963

His Excellency Herr Joachim Friedrich Ritter, K.C.V.O.
Embassy of the Federal Republic of Germany
Empire Circuit, Yarralumla, A.C.T.

Dear Dr. Ritter,

Thank you for your letter of 1st November with your kind message of congratulations. I also had the pleasure of hearing about you from my brother-in-law that you met on Lindeman Island.

My wife and I look forward to meeting you in the not too distant future but I fear that in about two weeks time we have to got to Sweden for the ceremonies there.

I might mention that I had a most interesting experience in October when I was at a meeting of the Deutche Akademie der Naturforscher Leopoldina. It was the first time since the Berlin Wall that a meeting was possible between German scientists on each side of the Iron Curtain. My wife and I learnt to respect enormously the scientists of the Soviet Zone and their wonderful efforts in the struggle for academic freedom.

Yours sincerely,
John C. Eccles
Professor of Physiology.

**

L87) **1963 - Robb to Eccles**
[2AU-2221-1963-10-21c]

21 st October, 1963

Dear Jack,

I was delighted to read of your Nobel award, another handsome crown on your most deserving head. Good for Australia and even New Zealand also. Please accept warm congratulations and best wishes.

I was in the Department of Neurophysiology briefly in Pisa recently and met a man whose name I omitted to record who had been with you for a year – the second in command I think.

Your pupil Liley has been doing good work on intra-peritoneal blood transfusion to the foetus in utero. He is a great asset to the National Women's Hospital, and to Auckland medical life in general, and we hope he will help in due course when we start a medical school. This may be authorised some day soon but opinion in New Zealand is divided as to the degree of urgency.

How does one, these days, succeed in marrying the sort of things you and the molecular biologists do, with the simple compassion of the Samaritan whose sphere of action is still often a dusty roadside going down from Jerusalem to Jericho, or something like it.

Without the compassion and the close contact with ordinary human beings, medical practice loses its raison d'être and without molecular biology and the like it would rapidly tail off into terrible superficialities. You and your party have a raison d'être which will propel you along indefinitely, but this has nothing necessarily to do with medical practice. Please help me --

With kind regards to Lady Eccles and yourself,
Sincerely
Douglas

L88) **1963 - Eccles to Robb**
[2AU-2222-1963-10-21c]

14th November, 1963

Sir Douglas Robb, F.R.C.S.
41 Symonds Street,
Auckland, C.1, New Zealand

Dear Douglas,

Our many thanks for your letter of 21st October and for your kind comments as well as your further remarks on the moral and philosophical problems. I could agree that there are great problems in the future of medical science. However, I do hope that as we learn more about man scientifically we begin to appreciate the humanistic side of life; particularly, as the more we know the more the mystery of being comes to be appreciated.

With best wishes,
Yours sincerely,

John C. Eccles.

International Symposium 2011, Sept. 10-11

The Legacy of Sir John C. Eccles

Venue: North-Rhine-Westfalian Academy of Sciences and Arts, Duesseldorf, Germany

Programme

Saturday, Sept. 10th, 2011

09:00 **Opening**

Opening, on Behalf of the Academy
Prof. Dr. Karl **Zilles**, Duesseldorf
Securing the Eccles Archive
Prof. Dr. Hans-Joachim **Freund**, Duesseldorf

09:15 **Overview of Eccles' work**

One Man's Odyssey
Prof. Dr. Thomas A. **Sears**, London
(The Physiological Society Lecture)

10:00 **Working with 'Prof': Scholars reflect**

Canberra legacy – pre-synaptic inhibition
Prof. Dr. Robert F. **Schmidt**, Wuerzburg
Canberra legacy: John C. Eccles and hippocampal synapses: Reminiscences of a wonderful apprenticeship
Prof. Dr. Per **Andersen**, Oslo
Buffalo legacy – cerebellum
Prof. Dr. Donald **Faber**, New York

12:00 **Influence of Eccles' work - directly or indirectly - on other schools**

Motoneurones: Coming alive in the unanaesthetized preparation – Danish School
Prof. Dr. Hans **Hultborn**, Copenhagen
From Single interneurons to neuronal networks – Swedish School
Prof. Dr. Elzbieta **Jankowska**, Goeteborg
The Cerebellum in a nutshell – Japanese School
Prof. Dr. Masao **Ito**, Tokyo

14:30 **Contemporary research in fields of interest to Eccles**

Spatial distribution of electrical excitability
Prof. Dr. Michael **Hausser**, London
Molecular dissection of synaptic transmission
Prof. Dr. Roger **Nicoll**, San Francisco
Structure and function at a giant synapse: Approaching the biophysical limits of information transmission
Prof. Dr. Ian **Forsythe**, Leicester

16:30 **Central processing in relation to neural networks**

Sir John C. Eccles and the early days of LTP
Prof. Dr. Timothy **Bliss**, London
Synchronized oscillations: A basic mechanism for dynamic coordination of cortical functions
Prof. Dr. Wolf **Singer**, Frankfurt
Dynamics of cortical network activity
Prof. Dr. David A. **McCormick**, Yale

After-dinner address: *Our debt to Sir John C. Eccles*
Prof. Dr. Douglas **Stuart**, Tucson

Sunday, Sept. 11th, 2011

09:00 **Cerebral cortex and higher level function**

Oscillatory activity
Prof. Dr. Gyorgy **Buzsaki**, Newark
The emotional cerebellum
Prof. Dr. Piergiorgio **Strata**, Torino
From colour to paintings – the objectivity of subjective experiences
Prof. Dr. Semir **Zeki**, London
The Self and Its Brain revisited: Neurophilosophy today
Prof. Dr. Dr. Henrik **Walter**, Berlin
12:00 **Historical perspectives**
Sir John and the Charles Medal
Prof. MUDr. Richard **Rokyta**, Prague
Research opportunities with the Eccles Collection in Duesseldorf
Prof. Dr. Dr. Alfons **Labisch**, Duesseldorf
13:00 Conclusion of the Meeting

Indices:
Topics, Persons and Places

Sophia Sotke, Isabell Pieper-Scholz

Topics

Acetylcholine 41, 49, 54, 83, 94, 97, 98, 101, 103, 106-108, 118-124, 138, 162, 165, 173
Airways 115, 160
Anatomy 10, 13, 69, 143, 144, 168, 185
Animal models 10, 11, 34, 36, 47-50, 54, 60, 62, 65, 98, 100, 103, 117, 133-135, 140, 159-161, 167, 174, 176-179
Applications 3, 5, 19, 23, 27, 89, 95, 109, 139
Appointment 12, 104, 105, 110, 111, 115, 131, 142, 152, 153
Board 6, 19, 23, 24, 111, 147, 172, 184
Books 5-8, 25-33, 88, 89, 98, 101, 107, 114-116, 144-147, 150-153, 156, 157, 161, 166, 168, 170, 176, 177
Brain 6-17, 68, 85, 90, 91, 117, 124, 155, 156, 168, 169, 173
Calcium 75, 98, 116
Camera 19, 125, 127
Catalogue 3, 5, 26, 29, 32, 33, 88
central nervous system 34-36, 46, 52, 83, 91, 103, 119, 123, 124, 150, 162, 163
cerebellum 58-64, 71, 90, 191-193
chair 14, 109, 139, 145-155
children 106, 124, 127, 138, 141
collections 5-10, 13-15, 24-29, 87-89
conferences 37, 44, 45, 50, 60, 73, 77, 83, 88, 119-123, 125, 130, 132, 133, 136-139, 143, 145, 174, 175, 185, 186
congratulations 93, 100, 104, 123, 128, 131, 134, 166, 181-189
cortex 11, 58-63, 145, 157, 168, 176, 193
congratulations 93, 100, 104, 123, 128, 131, 134, 166, 181-189
costs 132, 133, 162, 164
criticism 100, 110, 119, 125, 137, 168, 179, 180
dualism 15, 29, 70, 77, 90, 170
elite brains
equipment 24, 97, 120, 135, 139, 140, 151, 153, 158, 163, 164
eserine 39-41, 96-98, 119, 120, 127, 165
eugenics 9, 13, 14
evolution 10, 33, 77-80
examinations 20, 131, 132, 138
excitability 61, 63, 113, 129, 133, 140, 155, 160, 175, 176, 192
experiments65, 91, 93, 108, 113, 115, 118, 127, 131, 136, 137, 144, 153, 155, 162, 165, 166, 173, 174, 177
family 99, 103-106, 116, 119, 137, 138, 149, 150, 152, 157, 180, 182
fellowships, grants 18, 95, 96, 101, 111, 113, 139, 160, 184
foundations 69, 71, 73, 78, 87, 95, 131, 160, 167, 173, 181
ganglia 12, 33, 53-54, 97, 98, 101, 107, 108, 117, 118, 129, 140, 159, 161, 166
garden 106, 154
hippocampus 8, 33, 57-58, 89, 191
history 5-9, 12, 15, 77-83, 85-91, 115, 161, 177
homesickness 138, 161
honour 68, 82, 145, 159, 166, 172, 182-188
housing 106, 151
hypnotherapy 10, 17
inhibition 34-59, 61, 89, 91, 113, 119, 127-129, 133, 134, 140, 155, 160, 161
invitation 5, 9, 115, 132, 153, 154, 172

isolation 118-121, 125, 130
journals [passim]
kalliope 5, 6, 19, 25, 31, 85, 87-89
laboratory 10, 17, 95, 105, 115, 120, 126-129, 136, 139, 163, 176, 178
lectures 35, 57, 65, 68, 69, 110, 132, 156, 168, 170, 172
mail 119-122, 143, 171
marine biology 139, 140, 173
membrane 116, 118, 120, 121, 135, 145, 164, 176
methodology 10, 13-15, 70, 99, 106, 107, 111-114, 146, 148, 171, 178
mind-brain relationship 68-77, 155-157, 168-170, 193
motoneurone 42-51, 55, 60, 105, 118, 130, 165, 174, 179, 185, 192
muscle 7, 33, 35, 39-42, 55, 60, 97-100, 103, 107, 108, 116, 118, 126, 129, 130, 159, 161, 165, 174, 175, 178
neuro-muscular junction 48, 101-106, 116, 118, 121, 125, 130, 133, 138, 140, 155, 160
neurology [passim]
neurons 33-64 [passim]
Nobel Prize 91,93, 181-189
Pharmacology 12, 34,-38, 40, 49, 52, 55, 56, 97, 104, 126, 149, 163
philosophy 8, 33, 64-80, 91, 153-157, 168, 170, 193
physiology [passim]
position102, 128, 139, 143, 147, 148, 151, 155, 158
potassium 46, 129, 134, 135, 164
potential 39-49, 53-60, 64, 96, 99, 105, 108-111, 117, 118, 121, 129-136, 141, 142, 146, 160, 161, 164, 165, 175, 179
Purkinje cells 58-64
Reflex 39-42, 49-51, 54, 56, 99, 126, 144, 155
Religion 65, 74, 76, 78, 86, 114
Repository 19, 86 [cf. Kalliope]
Reprints 27-29, 88, 101, 103, 112, 117, 122, 127-130, 130, 140, 143, 148, 157, 166, 168, 170, 176
Reviews 82, 83, 100, 119, 124, 134, 148, 179
Schizophrenia 15, 173
Societies, scholarly 6, 7, 11, 14, 18, 81, 91, 93, 97, 101, 114, 120, 134, 142, 159, 166, 167, 191
spinal cord 7, 33-57, 60, 90, 91, 106, 111, 119, 124, 125, 128, 160, 185
synapse 8, 28, 33, 35, 42-59, 61, 64, 69, 80-83, 91, 99, 105, 112, 117-119, 121-124, 127, 129, 132-134, 136, 138, 140, 144, 155, 157, 162-165, 175-179
teaching 105, 120, 123, 128, 137, 141, 143, 153
thalamus 8, 11, 14, 33, 57-58
theory 10, 12, 15, 64, 70, 71, 103, 106-113, 118-120, 125, 134, 135, 145, 155
transmission 8, 35, 41, 48, 54, 57, 80-82, 90, 91, 98, 100, 103, 106, 116-121, 124, 125, 128, 130, 133, 134, 138, 140, 155, 162, 163, 192
War 9, 11, 14, 82, 83, 100, 102, 105, 106, 112, 114, 128, 129
World Wide Web, online 6, 19, 26, 27, 29-31, 87, 88

— Persons —

Abrams, A. 69
Adelman, George81, 89
Adrian, Edgar D. 8, 93, 103, 119, 120, 140, 162, 167, 177, 178
Aeschlimann, J.A. 93, 121, 122
Agin, D.P. 53
Albert, Adrien 93, 112, 115, 126, 131, 145, 147-151, 167
Alkon, D.L. 76
Allen 58, 111
Andersen, Per 27, 29, 30, 35, 46, 51, 52, 56-58, 61, 89, 90, 191
Araki, Tatsunosuke 35, 45

Armstrong, David M. 36
Asimov, Isaac 82
Augros, Robert M. 79
Ayala, Francisco J. 71
Bacq 98
Bailey, Kenneth 116
Balthazar 165, 166
Barakan, Thais H. 42, 141
Barcroft 124
Bargmann, W. 57
Barker, David 45
Barron 99, 103
Bateman 127
Beck, Friedrich 77
Becker, Werner 71
Bernadelli 156
Biersack, H. 29, 90
Bishop 27, 175
Blakemore, Colin 76
Bliss, Tim 192
Bloom, F.E. 58
Bogoch, Samuel 78
Bohnet-v. d. Thüsen, H. 75, 77, 79
Bohr, Nils 107
Borck, Cornelius 90
Bouman, H.D. 41
Boyd, Ian A. 46
Bradley, K. 34, 41, 143
Bremer 131, 160
Brock, Lawrence G. 42, 43, 49, 55, 93, 160
Brodmann, Korbinian 11, 15, 16
Bronk 97, 99
Brooks, Chandler McC. 49, 54, 55, 57, 80, 111, 113, 125, 128, 185
Brooks, Vernon B. 34, 43, 48, 102, 103
Brown, George L. 101, 102, 105, 124, 131, 137, 139
Brown, Jeannie 100
Buller, A.J. 41, 45, 54
Bullock, Theodor H. 93, 117, 118, 133
Bunge, Mario 68
Burn 146
Buser, Pierre A. 63, 72, 73, 81
Buzsaki, Gyorgy 193
Campbell, C. A. 93, 141, 168
Chagas, Carlos 50
Chan-Palay, Victoria 64
Chang 136
Colby, K.M. 65
Coombs, Jack S. 30, 34, 42-44, 49, 55, 153
Cooper, Sybil 39
Copland 152-157
Coppee 98
Cori, C.F. 35
Cowan 98
Cranefield, Paul F. 80
Creed, Richard S. 39, 54
Creutzfeld, Otto 38, 53, 76
Cuenod, M. 58
Culbertson, James T. 34
Curtis, David R. 29, 30, 34, 43, 44, 50, 55, 90, 165, 171
Dale, Henry H. 8, 93-96, 99-101, 138, 147, 162, 163
Dardo, Mauro 83
Darwin, Charles 187
Deecke, Lüder 48
Delafresnaye, Jean F. 50
Delwaide, Paul J. 38
Dennes, W.R. 65
Denny-Brown, Derek E. 54, 58, 61, 81, 93, 174
Desmedt, J.E. 27
Dewan, E.M. 71
Dimitrijevic, Milan R. 38, 48
Ditfurth, Hoimar von 72
Dobzhansky, Theodosius 71
Doherty, Michael E. 67
Doty, Robert W. 27, 93, 175, 176
Downman, Charles B.B. 42, 43, 55, 63, 93, 120, 125, 141, 142
Draper 125
Dürr, Hans-Peter 80
Dun, Nae J. 83, 136, 140
Dunham 163, 164
Duyff, J.W. 35
Easton, Dexter M. 34, 93, 139
Eccles, Helena née Tabořiková 29, 90
Eccles, John C. [passim]

Eccles, Rene 104, 106, 111-116, 119, 127, 131, 142, 143, 147, 156, 157, 167, 187
Eccles, Rose [Rosamond] 30, 34, 35, 41-46, 49, 50, 54, 55, 106, 137, 155, 157, 161, 174
Eichler 129
Elders, Fons 65
Elliott 171
Ennor 145
Etim, E. 82
Euler, Curt von 52, 97, 98
Everingham, Douglas N. 93, 169
Ewing, Alfred C. 93, 170
Faber, Donald S. 61, 62, 191
Fairly, Neil 147
Fastier 146
Fatt, Paul 30, 34, 41, 43, 44, 49, 55, 162
Fedrowitz, Jutta 29, 77
Feindel, William 81
Feldberg, W. 93, 95, 103, 118, 119, 123, 124, 138, 139, 143, 158, 160, 162
Feng, T.P. 93, 100
Fenn, W.O. 93, 100, 163, 172, 173
Fenner 145
Ferrabino, Aldo 53, 74
Fessard, Alfred E. 56, 93, 130-132
Field, John 45
Fields, William S. 61
Fillenz, Marianne 112, 155
Findlay 109
Flechsig, Paul 11, 17
Florey, Ernst 45, 50, 93, 145, 146, 149, 151, 171
Flynn, A. James 34
Focken, Charles 111
Foley, P. 90
Foglia, V.G. 35
Forsythe, Ian 192
Franklin 97
Fraser 109
Freund, Hans-Joachim 3, 5-7, 191
Gaddum 116
Galambos, Bob 175
Galbiati, D. 80
Garner, H.H. 80
Gasser, Herbert F. 93, 98, 99, 136
Gauer, Otto H. 47, 52
Gerard, Ralph 35, 125, 127
Gerin, Guido 77
Gibson, William C. 6, 81, 93, 125, 173, 174
Giorello, Giulio 29, 77
Globus, Gordon G. 66, 71
Goebel, K. 83
Götze, Heinz 28, 81
Gorio, A. 38
Granit, Ragnar 34, 39, 59, 73, 80, 93, 98, 118, 160, 178, 187
Gregoire, Herman 68
Grell, Ursula 3, 5, 9, 15, 16
Grenell, Robert G. 46
Grundfest 125
Gulyas, B. 76
Gunderson, Keith 71
Gutmann, Ernest 41, 51
Haase 178
Haber, B. 37
Hagner, M. 90
Haken, Hermann 75
Halafin, Mary 112
Hall, Victor E. 45
Hamori, J. 37
Hartley 177
Harvey, Robin J. 36, 97
Haslim, G.A. 37
Hausser, Michael 192
Hayaishi, Osamu 67
Hill, A.V. 148
Hnik, Pavel 41, 51
Hodgkin, A.L. 18, 93, 121, 131, 134, 135, 159-161, 182
Hoff, H.E. 39, 40, 42
Hoffmann, Paul 129
Hopf, Adolf 9, 14, 16
Hubbard, John I. 55
Hübner, Kurt 71
Huggett 132
Hultborn, Hans 90, 192
Hunter 111

Huxley, A.F. 18, 121, 159, 182
Huxley, Aldous 112
Iggo, Ainsby 34, 45
Issekutz, Bela 35
Ito, Masao 27, 30, 35, 45, 46, 60, 64, 79, 90, 192
Jaeger, J.C. 49
Jankowska, Elzbieta 192
Jansen, Jan K.S. 61
Jasper, Herbert H. 36, 56
Jones, Edward G. 27, 64, 74
Jordan, Helene J. 78
Jung, Richard 27, 47, 52, 93, 128-130, 165
Kaiser, Gert 29, 77
Kakulas, B.A. 38, 48
Kandel 27
Karczmar, Alexander G. 27, 70, 83
Katz, Bernhard 27, 41, 48, 93, 96, 102, 104, 121, 124, 127-131, 134, 135, 137, 140, 146, 148, 151, 159, 160
Keilin 115
Kellaway 95, 115, 124, 131
Kennard, Christopher 76
Kennedy, Donald 52, 141
Kent Koplowitz, Heinz 161
Kimble, Daniel P. 69
King, H. 100, 159
Kitai, Stephen T. 61
Klee, Manfred R. 37
Knight, Julie 69
Koketsu, Kuzo 49
Kone, Eugene H. 78
Korn, H. 61
Kornhuber, H.H. 27, 63
Kostyuk, Platon G. 45, 50, 56
Kozak, Wlodzimierz 35, 46
Kramer, K. 47, 52
Krebs, Hans A. 65
Kreutzberg, G.W. 58
Krnjevic, Kresimir 27, 45, 50, 55
Krupp 10, 14
Kruta, V. 62
Kuffler, Stephen W. 27, 41, 48, 48, 93, 102, 104, 124-128, 133, 140, 172, 175, 179, 180
Labisch, Alfons 6, 7, 193
Landgren, Sven 41, 43, 55
Leibovic, K. Nicholas 36
Leloir, L.F. 35
Lemberg, Rudolph 128
Lenin 12, 17
Levi-Montalcini, Rita 64
Levinson, Paul 82
Libet, Benjamin 27, 44, 75, 90
Liddell, Edward G.T. 54, 58, 175
Liley, A. William 41, 189
Lippay 138
Llinas, Rodolfo 30, 58, 59
Lloyd 113, 128, 160, 162
Locke, Simeon 61
Loyning, Yngvve 35
Luban-Plozza, Boris 75
Lucas, Keith 177
Lundberg, Anders 27, 35, 43-45, 49, 55, 90, 174
Lux, H.Dieter 37
MacFarlane, Walter V. 49
Magladery, John W. 40
Magni, F. 35, 41, 45, 50, 55
Magoun, H.W. 178
Malcolm, J. Lawrence 42, 43, 49, 54, 128
Margenau, Henry 68, 76
Massion, J. 64
Matejovski, Dirk 29, 77
Matthes, Karl 130
Matthews, Peter B. 36, 99, 103, 140, 160, 167
Maxwell, Grover 66, 71
McCormick 192
McGaugh, J.L. 76
McGeer, Edith G. 30, 37, 53
McGeer, Patrick L. 30, 37, 53
McIntyre, Archie K. 42, 43, 49, 55, 57, 136, 140
McLennan, Hugh 83
McSwiney, Brian 114, 120, 124
Melnechuk, Theodore 52
Mennis, M. 91
Miledi, Ricardo 27, 50
Milhorat, Ade T. 41

Millikan, Glen 127
Mintz, Stephan L. 71
Molden, Otto 67, 73, 75
Monnier 67, 130-133
Morison, Bob 173
Moruzzi, Giuseppe 56
Mott, Nevil 76
Mountcastle, Vernon B. 27, 48
Mudd, Stuart 77
Mugnier, Cécile (cf. Vogt, C.) 9, 10, 17
Murlin, John R. 172
Murphy, J.T. 61, 62
Mynatt, Clifford R. 67
Nachmansohn 123, 125
Nash 109
Newman, W.S. 82
Nicoll, Roger A. 47, 48, 57, 58, 192
Nó, Lorente de 99, 130, 131, 134, 136, 158
Ochoa, S. 35
O'Connor, Maeve 36
O'Connor, W.J. 40, 41, 44, 48, 68, 93, 96, 100, 102, 103, 128
O'Loewi 123
Oscarsson, Olov 27, 50, 55
Oshima, Tomakazu 52, 58
Packer 111
Paes-de-Carvalho, Antonio 50
Palay, Sanford L. 64
Palkovits, M.37
Parton 111
Passmore 156, 157
Paton, William D.M. 56, 159
Patton 140
Penfield, Wilder F. 81
Perez Polo, J.R. 37
Perlman, Robert L. 83
Peters, Alan 64
Pezzimenti, Rocco 68
Piper, Klaus 26, 28, 79
Ploeser 14
Polten, Eric P. 70
Pope, Alfred 36
Popper, Hennie 110-114, 152-157
Popper, Karl R. 72, 82, 91, 93, 106-114, 152-157
Porter, R. 27, 57
Poynter, F.N.L. 64
Pratt 97
Pribram, Karl H. 77
Pritchard, J.J. 42, 128
Provini, Luciano 60
Pumphrey 117
Purkyně 62, 64
Purpura, Dominick P. 57, 60
Purš, Jaroslav 64
Quarton, Gardner C. 52
Radnitzky, Gerard 76
Rall, Wilfrid 42, 49, 136, 140
Rantucci, T. 47, 48, 57, 63
Raphael 110, 112
Rawdon-Smith 117
Renshaw 83, 133, 165, 178
Reuck, A.V.S. de 69
Riotte 129
Robinson, Daniel N. 75
Robinson, Timothy C.L. 71
Rockstein, Morris 36
Rodahl, Kaare 35
Roeder 117
Rogers, W.P. 115, 116
Rokyta, Richard 193
Rose, F. Clifford 63
Rosén, Ingmar 47, 63
Roslansky, John D. 70, 78
Rougeul-Buser, Arlette 63, 72, 73
Roughton 103, 127
Rubia, Francisco J. 58
Ruch 140
Ruffini 81
Rushton 99, 103, 159
Rutledge 178
Ryle 155-157, 170
Sabah, Nassir H. 30, 46, 47, 61-63
Sasaki, Kazuo 30, 36, 58, 59, 64
Saunders, B.C. 122
Savodnik, Irwin 66, 71
Schadé, Johannes P. 34, 46, 56, 57
Scheid, Peter 36, 47, 57, 63, 71
Schilpp, Paul A. 65
Schmidt, Helmut 82
Schmidt, Robert F. 56, 61-63, 191

Schmitt, Francis O. 52, 91
Schwarz, Dietrich W.F. 47, 57
Sears, Thomas A. 6, 7, 51, 56, 57, 191
Seifert, Wilfried 58
Seiffert, Helmut 76
Shaw, Trevor 161
Shea, William R. 68
Shealy, C. Norman 45, 46, 185
Shelley, Julian H. 65
Shepherd 91
Sherrington, Charles S. 8, 18, 27, 28, 30, 34, 36, 39, 44, 54, 80, 81, 83, 170, 175, 177, 187
Sherwood-Taylor 114
Shimono, Toshio 61
Simpkin 111
Singer, Wolf 192
Skoglund, S. 52, 118
Smirk 116
Söderberg, U. 118
Sommer 129
Souter 110
Spadafora, Antonio 68
Speckmann, Erwin-J. 37
Sperry, Roger 27, 75
Sprague 165, 185, 186
Springer, Konrad F. 81
Stadler, Klaus 70, 75
Stanciu, George N. 79
Stella, A.M.G. 37
Still 103, 104
Stipcich, Stanislao 82
Storey, C. 90
Strand, Fleur L. 37
Strata, Piergiorgio 27, 29, 36, 59, 60, 77, 193
Struppler, Albrecht 38
Stuart, Douglas 91, 193
Swarzey, Judith P. 81
Swash, Michael 76
Szentágothai, Janos 27, 30, 37, 52, 60, 82, 83
Tábořík ová, Helena (cf. Eccles, H.) 30, 36, 46-48, 57, 60-63
Thomas, Hans 80
Thompson, J.H.C. 34
Thompson, Richard F. 52
Tiegs 138
Tiengo, Mario 90
Todman 91
Toman, J.E.P. 69
Tönnies 80, 128, 129
Tower, D.B. 34
Trevan 147
Tsukahara, Nakaakira 38, 53, 60, 61
Tweney, Ryan D. 67
Valent, Italo 80
VanBogaert, Ludo 44
Varghese, Roy Abraham 68
Vogt, Cécile née Mugnier 3, 5, 7, 9-17, 20-23, 89
Vogt, Marthe 17
Vogt, Oskar 3, 5, 7, 9-17, 20-23, 89
Voorhoeve, Paul E. 35, 58
Vrbova, G. 38, 48
Walter, Henrik 193
Ward, Arthur A. 36
Wark 115
Weidmann, S. 28, 82
Weindl, Adolf 38
Weiss, Paul A. 27, 78
Wheare, Ken 153
Whipple 172
Whittaker, E.T. 114
Whitteridge, David 93, 166
Widmayer, Susan M. 71
Willey, T.J. 47, 48
Willis, William D. 27, 29, 35, 45, 46, 51, 53, 55, 56, 61, 91
Winsbury, G.J. 55, 167
Wolff, Étienne 37, 67
Wolstenholme, Gordon 36, 44, 68, 167
Woody, C.D. 76
Woolf, A.L. 41
Worden, Frederic G. 28, 81, 91
Wortis, Joseph 69
Wright, Ernest 172
Wright, Pansy 127
Wright, R. Douglas 93, 105, 131, 151
Yahr, Melvin D. 58, 60
Young, John Z. 34, 74, 93, 117, 143-145, 160, 168

Young, Robert R. 44
Zaunick, Rudolf 35
Zeier, Hans 73
Zeki, Semir 193
Zilles, Karl 7, 9, 20, 191
Zimmerli, Walther Ch. 80
Zotterdam 128

— Places —

Adelaide 125, 154
Annécy 17
Ann Arbor 176
Baltimore 125, 126, 172
Basel 7, 14, 72, 130
Berlin 7, 10, 13, 16, 17, 189
Boston 156, 173, 179, 180
Buffalo 18, 88, 191
Cambridge 17, 99, 102, 103, 115, 120, 122-127, 134-136, 139, 140, 157, 160, 161, 170, 174, 177
Canberra 4, 18, 25, 88, 121, 125, 131, 142, 146-191
Christchurch 8, 109, 111, 134, 156
Copenhagen 123, 138, 143, 192
Düsseldorf 3-9, 14-29, 88
Dunedin 4, 8, 18, 25, 88, 105-161, 182, 183
Freiburg 14, 17, 90, 128-130, 165
Glasgow 168
Hampstead 95-98, 120, 137, 138, 159
Hokkaido 173
Husum 17
Kenmore 169
London 6, 18, 95, 96, 101, 109-112, 115, 119, 124, 127, 131, 133, 137-145, 148-151, 156-160, 167, 181, 182, 187, 191-193
Melbourne 18, 95, 105, 118, 145, 154, 183, 184
Montreal 126, 171
Moscow 12, 13, 17
Neustadt i. Schwarzwald 14
New York 118, 121, 136, 160, 172, 173, 185
Newcastle 142
Otago Harbour 139
Oxford 7, 18, 27, 82, 88, 93-97, 114, 121, 122, 147, 153, 167, 174-177, 184, 187
Paris 17, 131, 132
Peiping 100, 140
Plymouth 134
Portobello 139, 140
Prague 62, 64, 193
Quebec 173
Rochester 163, 164, 172
Salt Lake City 175
Seattle 139, 175
Stalingrad 129
Stanford 141
Stockholm 128, 160, 178, 181
Sydney 101-103, 110-115. 125-127, 148, 154, 180
Victoria 111
Wellington 109-111
Woods Hole 140, 173
Zurich 14, 17