

## A BRIEF ACCOUNT OF UCL BIOCHEMISTRY AND ITS LEADERS FROM 1904 TO 1988

### INTRODUCTION

About 15 years ago the late Professor Prakash Datta walked into my office and dropped onto my desk a file entitled "Those Responsible for Biochemistry at UCL". He said something to the effect "I am sure that you will know what to do with this". He had put together a paper archive of those who led the UCL Biochemistry community from its earliest days through to the end of the 1980s. The material was mainly obituaries from the Dictionary of National Biography, entries in Who Was Who, obituary notices of fellows of the Royal Society and obituaries from other sources such as the Biochemical Journal. What follows below in digital form is a severe condensation of the Datta archive with addition of some information from Ancestry and PubMed and some personal recollections. Quite deliberately this account is confined to those who are now deceased. In the early 2000s the late Professor Peter Campbell had put together a draft of a brief and never-completed history of UCL Biochemistry. I have incorporated some of his material into the section on how Biochemistry began at UCL. Maybe staff and students of the present UCL Biochemistry community will find something here of interest.

David Saggerson.  
February 2020.

### HOW BIOCHEMISTRY BEGAN AT UCL.

The establishment at UCL of Biochemistry as a truly independent discipline was a gradual process. What today would be considered to be biochemistry began in 1901 with the establishment of a post of Assistant in Physiological Chemistry within the then *Institute of Physiology*. At the end of the 1914-18 war the College considered itself to be the only college or university in the UK that had instituted definite courses in Biochemistry – although only for medical students. A desire to continue to lead the country in the field of Biochemistry led the College in 1922 to establish a Chair in Biochemistry supported by part of an endowment from the Rockefeller Foundation for a Department of Intermediate Medical Studies. For the next decade or so the UCL Biochemical Laboratory, headed by its newly-established Chair, continued to be part of the *Institute of Physiology* under the general direction of the Jodrell Professor of Physiology. In 1934, during a reorganization of the Medical Faculty, a new *Department of Physiology, Pharmacology and Biochemistry* was created. At the end of 1945 this composite department was dissolved into three separate departments though it is likely that the biochemists had achieved *de facto* independence from the mid-1930s onwards as evidenced by their research publications tending to just carry the address *Department of Biochemistry*. Even after the autonomous *Department of Biochemistry* came into being at the beginning of 1946 it continued to have no degree programmes of its own with its teaching remaining, as it had been for many years, confined to preclinical medical and dental students. According to Peter Campbell there was at that time considerable opposition to the build-up of Biochemistry from the UCL Department of Chemistry. The Chemist's attitude at that time, like other chemists within the UK, was to regard Biochemistry as merely applied Chemistry and not a separate discipline. It was the early 1950s before the department was offering MSc and BSc programmes in Biochemistry and it was the very late 1950s into the early 1960s before the *Department of Biochemistry* escaped from cramped accommodation in the basement of the Physiology/Pharmacology building and moved to occupy newly-built space in what is now the Darwin Building.

### BRIEF BIOGRAPHIES OF THE LEADERS.

#### ROBERT PLIMMER



Although he was never a professor or head of department at UCL Plimmer can certainly be regarded as the 'Founder' UCL biochemist. He was born as Robert Henry Aders in Elberfeld, Germany on 25<sup>th</sup> April 1877, the son of Alfred Aders, a Manchester businessman, and his German wife who was also his first cousin, Bertha Helena Aders. The Aders family settled in Croydon, Surrey. On the death of his father in 1885 his mother married the eminent pathologist and bacteriologist Henry George Plimmer FRS and

subsequently the young Robert Aders adopted the surname of his stepfather. He was educated at Dulwich College and read for a BSc in Chemistry at UCL graduating in 1899 having studied under the future Nobel laureate Sir William Ramsay. Subsequently, on his stepfather's advice he turned his attention to the chemistry of living organisms. A year at the University of Geneva working with the organic chemist Carl Gräbe was followed by two years with the Nobel laureate Emil Fischer in Berlin. He was awarded a DSc by the University of London in 1902. In 1901 a post of Assistant in Physiological Chemistry had been established within the UCL Physiology department and Plimmer was appointed to this in 1904, eventually becoming the first Reader in Physiological Chemistry. He was elected a Fellow of UCL in 1906. In 1912 he married Violet Geraldine Sheffield, a biologist and a talented amateur artist. They had four children, a son and three daughters. During the 1914-18 war Plimmer was attached to the Directorate of Hygiene at the War Office. As Captain Plimmer he made a series of analyses on the commoner foodstuffs for the Army Medical Authorities, many of these performed in his laboratory at UCL. Thereafter his lifelong research interests centered around the chemistry of proteins and of biological phosphorous compounds together with many aspects of nutrition and vitamins – topics on which he wrote many articles for magazines and periodicals, with 49 research papers listed by Pubmed with him as author between 1904 and 1941 contributing to that output. In 1919 he left UCL to become Head of the Biochemical Department at the Rowett Institute in Aberdeen where he foresaw opportunities to conduct large-scale animal feeding experiments. This move also may have been influenced by the fact that John Rowett who had contributed generously to the Aberdeen Institute and had financed the last Antarctic expedition of Sir Ernest Shackleton had, together with Shackleton, been at school with Plimmer at Dulwich College. However Plimmer did not stay long in Aberdeen, returning to London in 1922 to become Professor of Chemistry at St. Thomas's Hospital Medical School where he remained until his retirement in 1942. Thereafter he moved in an emeritus capacity to the Biochemistry Department of the Royal Postgraduate Medical School, Hammersmith where he continued for more than twelve years investigating analytical methods in clinical chemistry. Biochemists of his generation particularly remembered him for being, together with J.A. Gardner, a co-founder in 1911 of the Biochemical Club which became the Biochemical Society in 1913 with Plimmer as its first honorary secretary until 1919. The first official meeting was held in the Physiology department at UCL on 4<sup>th</sup> March 1911 and until 1968 the annual general meetings of the Biochemical Society were always held at UCL. Robert Plimmer died in 1955, his wife having predeceased him in 1949. For many years he has been commemorated through the Plimmer Prize which is one of the two college prizes that are awarded annually to the best second year students in the UCL Biochemistry and Biochemistry-related BSc programmes.

### **SIR JACK DRUMMOND**



Jack Cecil Drummond was born in Leicester into a military family on 12<sup>th</sup> January 1891. He was the only child of Norah Gertrude Drummond (née McQuie) and John Drummond, a retired major of the Royal Horse Artillery. His father died just five months later and his mother died in July 1893. Subsequently he was adopted and brought up by his aunt Maria Spinks (née Drummond) and her husband George Spinks who was a retired army captain quartermaster and a veteran of the Crimean war. For some years he took the Spinks surname of his adoptive parents, reverting to Drummond subsequent to the death of Captain Spinks in 1908 and about the time that he completed his schooling at the Strand School and entered East London College (now Queen Mary University London) to read for a BSc in Chemistry. He graduated with Class I honours in 1912. Whilst a student he was a member of the University of London Cadet Corps in which he became a corporal and trained with the 1<sup>st</sup> Battalion of the Queen's Royal West Surrey Regiment. In spite of that and his family's army connections he did not see military service during the 1914-18 war. Between 1913 and 1919 he worked at King's College London and at the Cancer Hospital Research Institute (which subsequently became the Chester Beatty Institute). At that time Biochemistry was still considered to be an adjunct of physiology and with no formal training available in the discipline Drummond and others like him had to acquire their biochemical knowledge and expertise piecemeal. He was fortunate in those early years to come into contact with and to be greatly influenced at King's College by Professor William Halliburton (a graduate of UCL) and Dr. Otto Rosenheim and at the Cancer Hospital by Dr. Casimir Funk who is widely credited with discovering vitamins and by Dr.

Alexander Paine who helped Drummond to master experimental dietary feeding experiments which were so central to his subsequent research. In 1917, under the direction of Halliburton who was a member of the food (war) committee of the Royal society, Drummond contributed to the war effort through experimental work on substitutes for butter and margarine which introduced him to fat-soluble vitamins, one of his major fields of later experimental work. By 1918 Drummond was becoming an acknowledged expert in nutrition and was awarded a DSc by the University of London. In 1919, following the resignation of Plimmer, he was invited by Professor Ernest Starling to move to UCL, initially as a research assistant, becoming Reader in Physiological Chemistry in 1920 and in 1922 at the early age of thirty one he was appointed to the newly-created Chair of Biochemistry at the college where until the outbreak of war in 1939 he investigated the chemistry and action of vitamins – in particular the fat-soluble vitamins A and D – together with many other aspects of human nutrition, his scientific output comprising 183 publications between 1914 and 1948. His 'department' was small and never fully autonomous but his energy and enthusiasm inspired both colleagues and students with the 'department' becoming among the most important in the UK for training biochemists. At the time of his death no fewer than nine of his colleagues or students were holding or had held chairs. He was much in demand as a lecturer and as a consultant to industry, to which he devoted much time. 1939 saw the publication, jointly with Anne Wilbraham (see below), of the unique survey entitled *The Englishman's Food*. Without doubt this book was influential in him being consulted informally by the Ministry of Food following the outbreak of the 1939-45 war, leading in 1940 to his official appointment as Scientific Adviser to the Ministry of Food. Throughout the war years Drummond and his eminent colleagues at the ministry seized the opportunity to combat nutritional ignorance and to improve, rather than simply maintain, the nutriture of the British population. These efforts were recognized through a citation by the Lasker Awards Committee of the American Public Health Association as being "one of the greatest demonstrations in public health administration that the world has ever seen". In 1944 Drummond became an adviser on nutrition to S.H.A.E.F. and was instrumental in the formulation of nutritional advice to relief workers entering the newly-liberated countries. In 1945 Drummond resigned his UCL professorship on appointment as Director of Research to the Boots Company in Nottingham although he remained seconded to the ministry until 1946. Drummond was elected FRS and knighted in 1944. Other honours include the USA Medal of Freedom with Silver Palms, honorary membership of the New York Academy of Sciences, Commander (Civil Division) of the Order of Orange Nassau and Docteur (*honoris causa*), Université de Paris. In 1915 Drummond married a former fellow student, Mabel Helen Straw. In 1939 this marriage was dissolved and the following year he married his co-author Anne Wilbraham. They had one daughter, Elizabeth, born in 1942. During the night of 4<sup>th</sup>/5<sup>th</sup> August 1952 he, his wife and daughter were murdered on holiday while camping near Lurs in the French maritime alps. They were buried at Forcalquier, Departement des Alpes-de-Haute-Provence, France. His first wife Mabel Helen Drummond died in Chorleywood Hertfordshire in 1978. He continues to be commemorated nationally by the Drummond Trust which endows a Drummond Research Fellowship or Research Studentship and within UCL through the Drummond Prize which, like the Plimmer Prize, is a college prize awarded annually to the best second year students in the UCL Biochemistry and Biochemistry-related BSc programmes.

### **MARGARET KERLY**

Lily Margaret Kerly was born in London on 11<sup>th</sup> February 1903. She was the daughter of Emma Agnes Kerly (née Burgis) and Duncan Mackenzie Kerly, a barrister who subsequently became a KC and was knighted. Between 1921 and 1924 she read for the Natural Sciences tripos at Newnham College Cambridge. Owing to an accident she had to accept an Aegrotat degree but subsequently gained an MA in 1929. Between 1927 and 1931 she undertook research within the Department of Physiology and Biochemistry at UCL for which she was awarded a PhD in 1931. It cannot be ascertained who formally supervised this research but in two Biochemical Journal papers of 1930 and 1931 for which she was the sole author she acknowledged the interest and advice of Professors Jack Drummond and Charles Lovatt Evans. Between 1931 and 1933 she worked with the future Nobel laureates Carl and Gerty Cori at the Washington University School of Medicine in St. Louis. On her return to the UK in 1933 she re-established her association with UCL as firstly Assistant Lecturer then Lecturer and subsequently Senior Lecturer, being appointed Reader in Biochemistry in 1949. On the outbreak of war in 1939 the activities of the department on the UCL site were closed down

and the teaching of University College Hospital Medical School preclinical students was evacuated to Leatherhead in Surrey where Kerley served as Acting Head of the Biochemistry 'department' until the Autumn of 1945. Her research publications (28 listed by Pubmed with her as author between 1930 and 1971) were almost entirely devoted to aspects of carbohydrate and amino acid metabolism with particular interest in these in the retina and the liver. She was elected a Fellow of UCL in 1965. In 1968 she retired and, together with her sister Beatrice, concentrated on the running of their farm at Dane Hill in East Sussex raising various livestock. She died in 1990. A generous bequest in her will allowed UCL to establish the annual Margaret Kerly Prize that she wished to be awarded "to the most deserving first year Biochemistry BSc student(s)".

### **SIR FRANK YOUNG**



Frank George Young was born in Clerkenwell, London in 1908, the son of Jessie Eleanor Young (née Pinkney), the daughter of a paper manufacturer, and Frank Edgar Young, a solicitor's clerk whose father Joseph Young also had been a law clerk. After attending Alleyne's School in Dulwich he entered UCL in 1926 to read for a BSc in Chemistry with subsidiary Physics, graduating with first class honours in 1929. His principal teachers were Professors J.N. Collie and F.G. Donnan. He rejected Chemistry as a career, deciding to take up Biochemistry, despite having no background in Biology.

Young's mentor in this bold switch was Jack Drummond. He worked with Professors Archibald Hill (a Nobel laureate in 1922) and Charles Lovatt Evans in the UCL Department of Physiology and Biochemistry, obtaining his PhD in 1933. In the same year he married Ruth Eleanor Turner, a fellow student at UCL who had qualified in medicine in 1932. She was the daughter of Eleanor Thistle Turner (née Nesbitt) and Thomas Turner, an Assistant Examiner at the Patent Office. They had four children, three sons and one daughter. In 1932 Frank Young had been awarded a Beit Memorial Research Fellowship. He decided to divide this between research at UCL (1932-33 and 1935-36) and at Aberdeen (1933-34) and Toronto (1934-35) with, respectively, J.J.R. Macleod and C.H. Best, two of the co-discoverers of insulin in 1921. In 1936 he accepted the offer of an appointment as a member of the scientific staff at the National Institute for Medical Research. Within a year he had discovered that a permanent form of diabetes could be induced in experimental animals by injection of anterior pituitary extracts (the active principle later being shown to be Growth Hormone). This discovery gave him a substantial international reputation and set him on his future researches into various aspects of the regulation of growth and metabolism by hormones. In 1942, aged only thirty four, he became Professor of Biochemistry at St. Thomas's Hospital Medical School, succeeding Plimmer. He subsequently moved back to UCL in 1945 to take up the Biochemistry chair vacated by Drummond. In January 1946 UCL Biochemistry finally became an autonomous department with Young at its head. His major priority was to establish a BSc programme in Biochemistry. Although he did not achieve this during his short tenure he did succeed in getting an MSc programme started which became a gateway through which several distinguished biochemists have entered the subject; to name but a few: Professor Patricia McLean, Professor Bob Rabin (a future head of UCL Biochemistry), Professor Peter Garland (the first Head of Biochemistry at Dundee and subsequently Chief Executive of the Institute of Cancer Research) and one of Young's own sons Simon who became Professor of Neurochemistry at McGill University. In 1949 Young was appointed to the Sir William Dunn Chair of Biochemistry at Cambridge where he stayed until retirement in 1975. Between 1931 and 1970 he was an author of 147 research papers although by the early 1950s he gradually abandoned personal research and teaching and concentrated increasingly on educational and scientific affairs in Cambridge and at national and international levels, serving as member or Chair of many boards and committees. In Cambridge he was among the first to advocate the establishment of postgraduate colleges, becoming a highly successful founder Master of Darwin College. He also played a decisive part in the founding of the Cambridge University Undergraduate Clinical School (prior to that on completion of their BA the majority of Cambridge medical students were seconded to other medical schools for their clinical training). He was elected FRS in 1949 and was knighted in 1973. His achievements were further recognized in a number of ways including Fellowship of UCL, the Croonian lectureship of the Royal Society, the Banting lectureships of the British and the American Diabetes Associations, the Upjohn Award of the American Endocrine Society and several honorary degrees. Frank Young died in 1988; his widow Ruth lived to be 92 and died in 2003.

**ERNEST BALDWIN**

Ernest Hubert Francis Baldwin was born on 29<sup>th</sup> March 1909 in Gloucester, the eldest of the two sons of Nellie Victoria Baldwin (née Hailes) and Hubert Charles Baldwin, an organist and music teacher from whom he inherited considerable flair as a pianist. After attending the Crypt Grammar School in Gloucester he entered St. John's College Cambridge in 1928 as a prize and open exhibitioner. He gained first class honours in both parts of the Natural Sciences tripos, including part two in biochemistry. After this he obtained various scholarships, including being a senior student of the Royal Commission for the Exhibition of 1851 (1933-35) which enabled him to perform research in the Cambridge Department of Biochemistry. In 1933 he married Pauline Mary Edwards who was born in Newport Wales in 1912. They had two children, one daughter and one son. From 1936 to 1941 Baldwin was a fellow of St. John's College and from 1936 to 1943 he was a Cambridge University Demonstrator and subsequently he became Lecturer in Biochemistry (1943-50). Much influenced by Sir Frederick Gowland Hopkins, a Nobel laureate and Head of the Cambridge Biochemistry department, Baldwin particularly applied himself to research into comparative aspects of Biochemistry with emphasis on the study of nitrogen metabolism and the phosphagens in both invertebrate and vertebrate tissues (50 research publications between 1932 and 1969). Early studies brought him into collaboration with the eminent Cambridge biochemists Joseph and Dorothy Needham with whom he published a number of papers. In 1937 he published a small book, *Comparative Biochemistry* which became recognized as a classic introduction to that subject. At Cambridge through his witty and stimulating lectures he acquired wide recognition as a gifted teacher and during the Second World War much of the burden of teaching biochemistry at Cambridge fell upon him. The upshot was the publication in 1947 of his book *Dynamic Aspects of Biochemistry*. In many respects this was the first modern textbook of biochemistry, providing a lucid description of metabolic interactions and taking biochemistry out of the age of natural products chemistry and of purely medical and physiological chemistry. The book was translated into many languages eventually running into five editions and in 1952 gaining Baldwin the European Cortina-Ulisse Prize of one million Italian lire. In 1950 Baldwin succeeded Young as Professor and Head of the Biochemistry department at UCL. There he was able to fulfill Young's ambition of the establishment of a BSc programme in Biochemistry – the first in the University of London. The programme began with three students in 1953 and soon rapidly expanded. Subsequently through 1958 to 1961 he helped to oversee the move of his department into new, purpose-built accommodation in what is now the UCL Darwin Building. He was Visiting Professor at the University of California during 1956-57. He had inherited the genetic condition myotonic muscular dystrophy and towards the end of his life was suffering frequent bouts of illness and was a frail and forlorn figure. He died suddenly at his home in Northwood Middlesex on 7<sup>th</sup> December 1969. He was survived by his widow Pauline who died in 1994.

**PRAKASH DATTA**

Satya Prakash Datta was born in 1920 in Calcutta, the son of a Scottish mother and an Indian Father. He received much of his schooling in Geneva where his father was a representative of the government of India to the League of Nations. Datta read for a BSc in Chemistry at UCL and subsequently read Medicine at University College Hospital Medical School. He then joined the staff of the UCL Department of Biochemistry. His 54 research publications between 1949 and 1966 covered a range of topics, mainly in the area of physical biochemistry with particular emphasis on measurements of acid dissociation constants of biological molecules and the stability constants of metal complexes with the same. In 1966 he was appointed to a personal chair in Medical Biochemistry. His was only the second personal chair within Biochemistry (A.L. Greenbaum having been the first). Prior to that it had been customary for the Head of Department to hold the only Biochemistry professorship. Following the death of Baldwin in December 1969 he was acting Head of Department until the end of September 1970. Though Datta had applied for the vacant headship, this went to Bob Rabin. However this did not mean that his abundant wisdom and organizational flair would go to waste as he subsequently served UCL as Dean of the Faculty of Medical Sciences (now Life Sciences) and then as a Vice-Provost between 1973 and 1978. Through the Federation of European Biochemical

Societies (FEBS) he also gave exceptionally long and outstanding service to the wider community of biochemists from the 1960s through to and considerably beyond his retirement from UCL in 1985. From the Founding of FEBS in March 1964 Datta served continuously as its Treasurer until 1990. Additionally in 1968 Datta became the founding Managing Editor of FEBS Letters and was largely responsible for the successful evolution of that journal until 1985. In 1974 he was awarded the FEBS Diplôme d'Honneur. He is commemorated by the Datta Lectureship and Medal which is normally awarded at each FEBS meeting for outstanding achievements in the field of biochemistry and molecular biology or related sciences. In 1943 Prakash Datta married a fellow medical student Naomi Savill Goddard, the daughter of Ellen Henrietta Goddard (née Illingworth) and Alexander Goddard CBE, the secretary to the Institute of Chartered Surveyors. They has three children two daughters and one son. Naomi Datta became internationally known for her work on the genetics and epidemiology of antibiotic resistance in bacteria and was elected FRS in 1985. Both Prakash and Naomi Datta were elected Fellows of UCL. Prakash Datta died peacefully at his home in Chiswick in 2010 a few days after he had celebrated his 90<sup>th</sup> birthday in fine style together with family, colleagues and other friends. He was pre-deceased by Naomi who died in 2008 and also by their son Max.

### **BOB RABIN**

Brian Robert (Bob) Rabin was born in Islington on 4<sup>th</sup> November 1927. He was the son of Sophia Stephany Rabin (née Neshawer) and Emanuel Rabin whose parents had emigrated to the UK from Wilkomir in Lithuania in about 1891. He graduated with a BSc from the UCL Department of Chemistry in 1951 and then moved into the UCL Biochemistry department where he graduated from the MSc programme in 1952 and was awarded a PhD in 1956. In 1954 he married Sheila George. They had two children, a daughter and a son. Within the UCL Biochemistry department he was firstly appointed as Assistant Lecturer (1954) and then Lecturer (1957), Reader (1963) and Professor of Ezymology (1967). In 1970 he was appointed Head of the department – a post he held until 1988. His early research, frequently in collaboration with Prakash Datta and Eric Crook, was largely devoted to studies of proton and metal ion binding to peptides and proteins. The late 1950s and early 1960s saw him launch into investigations of the catalytic mechanisms of several enzymes – in particular pancreatic ribonuclease. Together with Tony Mathias and others a chemical mechanism for the ribonuclease reaction was put forward following an inspired piece of chemical intuition well before the crystal structure of the enzyme was solved. This was the very first deduction of the catalytic mechanism of an enzyme and, although some refinements have subsequently been added, it has stood the test of time and its basic characteristics are still accepted. During 1963-64 he worked in Berkeley, California in the laboratory of the Nobel laureate Melvin Calvin investigating the catalytic mechanism of ribulose biphosphate carboxylase ('Rubisco'), a key enzyme of the photosynthetic Calvin Cycle. By the end of the 1960s Rabin, having largely turned away from enzymology, had begun studies of the effects of steroid hormones and chemical carcinogens upon the interaction of polysomes with microsomal membranes. Eventually this led to studies of the biosynthesis, induction and membrane topology of Cytochrome P-450. In all PubMed lists 101 publications with him as author between 1954 and 1995. In 1985 he became the founding director of London Biotechnology Limited which, with the support of venture capital, was set up within the UCL Darwin Building to develop amplified analytical assays for commercial use. He was elected a Fellow of UCL in 1984, retired in 1994 and died in 2012.

### **LEADERS OF UCL BIOCHEMISTRY FROM 1904 TO THE PRESENT.**

Robert Plimmer*	1904-1919
Sir Jack Drummond FRS <sup>fl</sup>	1922-1945
Margaret Kerley**	1939-1945
Sir Frank Young FRS <sup>fl*</sup>	1945-1949
Ernest Baldwin <sup>fl</sup>	1950-1969
Prakash Datta**	1969-1970
Bob Rabin <sup>fl*</sup>	1970-1988
Peter Butterworth <sup>fl</sup>	1988-1990
Michael Rosemeyer <sup>fl</sup>	1990-1992
Michael Waterfield FRS <sup>fl</sup>	1992-2001
David Saggerson <sup>fl*</sup>	2001-2006

Gabriel Waksman FRS<sup>¶</sup>  
Snezana Djordjevic<sup>¶</sup>

2006-2019  
2019-

- <sup>¶</sup> Head of Department.
- \* Acting Head of Department.
- \* Graduate of UCL.