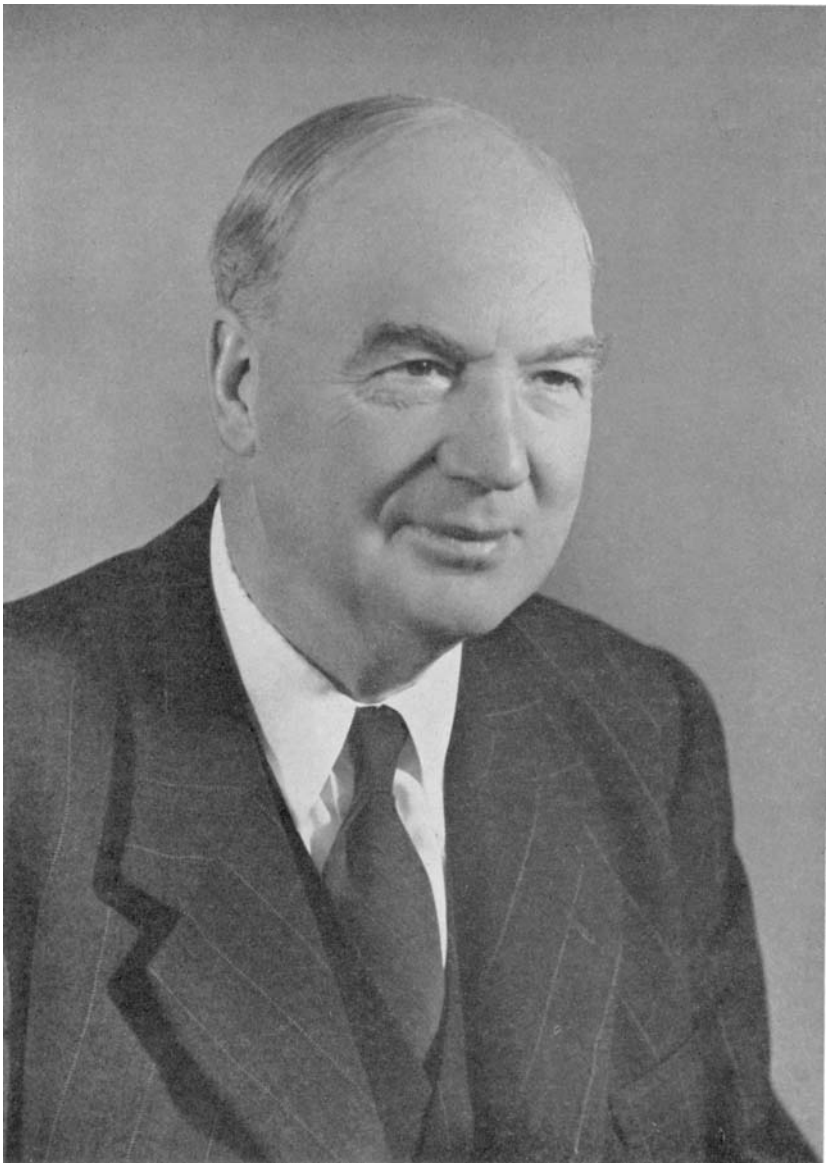

E. Mellanby

SIR EDWARD MELLANBY
G.B.E., K.C.B., M.D., F.R.C.P., F.R.S.

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Obituary

SIR EDWARD MELLANBY, G.B.E., K.C.B., M.D., F.R.C.P., F.R.S.

(8 April 1884–30 January 1955)

Edward Mellanby was born in West Hartlepool, the youngest of a family of six children and the last of four sons, one of whom died in childhood. John Mellanby, his father, was the manager of a shipyard in the Furness-Withy Company; his mother was born in Edinburgh. His father was a Yorkshireman who was noted for his management of men in the shipyard and for his ability in handling people, and he no doubt passed on some of his knowledge of human nature to his sons when he enjoyed his evening stroll with them. At Barnard Castle School Edward Mellanby excelled at sports: he won several running and jumping events and was captain of both cricket and football teams. His prowess in athletics was matched by his scholastic ability. He won the Upper School prize and a special prize for theoretical and practical physics and, like his elder brother before him, he took a leaving exhibition from school to go to Cambridge. His eldest brother, Alexander Lawson Mellanby, was Professor of Civil and Mechanical Engineering in the Royal Technical College, Glasgow. John, who preceded him to Emmanuel College, Cambridge, ultimately succeeded Sir Charles Sherrington in the Chair of Physiology at Oxford.

Mellanby's sister describes Edward in his early days as being very lively, as always being in evidence in the home, being the youngest, and a mimic of all the visitors. He grew up with this streak of mischief in him.

After 3 years at Cambridge, he was placed in the First Class of both parts of the Natural Sciences Tripos, his special subject for the second part being physiology. He became a research student of Emmanuel College from 1905 to 1907. He worked there with Frederick Gowland Hopkins, and in 1908 he published his first paper—on the excretion of creatine and creatinine in hepatic disease. There is no doubt that Hopkins had an important influence on Mellanby's life's work. He himself said that it was his great good fortune to be brought in 1902 under Hopkins's scientific care, and the relationship which he began as a student, later as a research associate until 1907, continued until Hopkins's death in 1947, as a close friend. During 1906 and 1907, whilst a research student, he shared one small room with Hopkins and he says he remembers that 'all our clean glass (cleaned by ourselves) had to be kept in one cupboard which remained locked to prevent raiding by fellow workers. In order to obtain any glass article from the permanently locked cupboard, it was necessary to remove an upper drawer and dig in the darkness for the particular flask or beaker required.' 'Such conditions', he says, 'would now be regarded as ridiculous restrictions as regards space and laboratory assistance.' He has described how the real stimulus to British biochemistry came from Cambridge University and particularly from the Physiological Department. 'Michael Foster had [at that time] been imported to Cambridge

by T. H. Huxley and ultimately became the first Professor of Physiology. As is now well known, Foster himself was no great scientific discoverer but he had many other qualities of greatness, particularly those of appreciating the value of experimental investigation and, what is of greater importance, an eye for picking men of outstanding qualities in research and persuading them to devote their life to their studies.' Mellanby writes: 'When I went to Cambridge in 1902, Foster had just retired and devoted all his time to Parliamentary work (and to his garden). Langley had succeeded him as Professor and the small laboratory was filled with men of the highest distinction—these included Gaskell, W. B. Hardy, H. K. Anderson, Keith Lucas, T. R. Elliot, J. Barcroft and, most important from the present point of view, F. Gowland Hopkins. It was a wonderful galaxy of talent and any young man who had the privilege of entering and being accepted by this circle was thereafter doomed to a career of research and investigation.' Mellanby, however, regarded himself as being for the most part 'a biochemist in the suspended chrysalis stage'. His interest throughout his life was in biological phenomena, more particularly those in the field of nutrition. There is no doubt of Hopkins's influence in this bias; Mellanby remarks how often, and especially in the period of his research with Hopkins, the latter talked about the imminence of revolutionary discoveries in nutritional science.

Mellanby went on to do his medical training at St Thomas's Hospital, London, where from 1909 to 1911 he was demonstrator in physiology. In 1913 he became lecturer and later Professor of Physiology in the University of London at King's (now Queen Elizabeth) College for Women, a post which he held until 1920 when he became the first occupant of the Chair of Pharmacology at the University of Sheffield. At the same time he was appointed an Honorary Physician at the Sheffield Royal Infirmary. In 1933 he was made Secretary to the Committee of Privy Council for Medical Research and Secretary of the Medical Research Council where he exercised his qualities of statesmanship for 16 years. The Council at the time of his death recorded their appreciation of his great services to medical science in these words: 'Sir Edward Mellanby took the leading part in the difficult tasks of deploying the Council's scientific resources in support of the national effort during the second world war, and of reconstructing and notably expanding the organisation thereafter. To these responsibilities he brought an intense regard for scientific truth, a wide knowledge and deep understanding of medical problems, a sure sense of what was important in research, and a constant desire to encourage all who showed ability as investigators and ideas likely to lead to real discovery. His endeavours had great success.'

One condition Mellanby made on his appointment as Secretary of the Medical Research Council was that he should be allowed to continue his personal researches, which he did to the very end of his life. For several years he travelled 300 miles each week-end to visit his laboratory in Sheffield until, at the beginning of the war, the Nutrition Building at Mill Hill was opened. There he continued working at the week-ends until his retirement from the Medical Research Council in 1949 when he was able, apart from several months spent abroad on missions to India, Australia and New Zealand, to devote the whole of his time to research. He died suddenly at midday on a Sunday at the Nutrition Building, having spent the morning at work, the immediate

outcome of which is included in a posthumous paper published in this number of the *Journal* (Mellanby, 1956).

Sir Henry Dale (1955), in the Royal Society's biographical memoir, writes of Mellanby's dual achievements as scientist and statesman in these words: 'His greatest titles to fame, however, will still be found in the record of his own major enterprises in research, and of his service to medical research in general, as a great administrator and public official. Other instances could, no doubt, be cited, beginning perhaps with that of Isaac Newton, of men who, having risen to great eminence as scientific investigators and discoverers, have later found opportunity to show a different aspect of their powers, as great public servants. It was Mellanby's special title to greatness that, having achieved his rank as an investigator of great originality and distinction, he continued to hold it, by maintaining the high level of his own activity in research, when he became, in addition, a great administrator of the public funds provided for the general support of research in his own field of the medical sciences, and a most determined and forceful advocate, in official circles and widely beyond them, of the proper use and application of the results of such research, for the promotion of health in the nation and throughout the world.'

It is impossible in a small space to give an adequate account of Mellanby's work; even a list of publications, the bulk of which are contributions to nutritional science, would require all the space allotted to this notice. Also, I feel, as I have said elsewhere (Platt, 1955) like Mellanby himself felt when faced with the preparation of the Hopkins Memorial Lecture to the Chemical Society, that the task requires a 'degree of knowledge, skill, judgement and sympathy... almost unattainable.'

The Royal Society Memoir already mentioned is a fine tribute to Mellanby by a colleague and contemporary of great eminence in medical science. It contains a full account of Mellanby's work as well as personal reminiscences which go back to a first meeting in the summer of 1904 when Dale first met Edward in John Mellanby's laboratory and he says he was 'immediately attracted, as many others must have been, by the vigour and the straightforward friendliness of his manner, and the evidence of an active and independent mind... an impression which all later encounters were to deepen'.

Of special interest to nutritionists would be the memorial number to Sir Edward Mellanby of the *British Medical Bulletin* (Platt, 1956*a*), which deals with recent research on vitamins. Several contributors to this volume of essays, which was planned by a committee of which Sir Edward Mellanby was the chairman, have paid homage to this pioneer of the science of nutrition; and Sir Charles Harington in an appreciation which takes in the whole man, faults as well as virtues, concludes that 'the impression that will fill our minds and will remain with us for the rest of our lives... [is]... of a man with greatness in him; of a great scientist and a great public servant, above all a man whose life was a shining example of uncompromising devotion to a fine ideal, the service of science to medicine'.

Mellanby left behind him a few pages of a draft for the prefatory chapter in the *Annual Review of Biochemistry* for 1956 which he had been invited to write; I have reviewed Mellanby's research work and his contributions in other ways to medical

research in completing this prefatory chapter (Platt, 1956*b*). Any measure of success I may have achieved must be attributed to the extent to which the chapter is composed of quotations from Mellanby's own writings, a complete bibliography of which is appended to the chapter. Anything less than this account would not I feel do justice to Mellanby's many achievements, of any one of which an ordinary person might well be proud. The number of prizes, the invitations to give named lectures, honorary degrees and civic honours, all serve to attest to the service Mellanby gave to mankind, the magnitude of which most of its beneficiaries will never know.

Nevertheless, some account must be given of Sir Edward's contribution to the science of nutrition and its application for the promotion of human health and efficiency; it includes the results of his personal researches and many measures for which he was mainly responsible or to which he gave his support. It must indeed be admitted that his research was the heart of his scientific life; his discoveries were the essence of joy to him, and his achievements in the broad field of public health were the pillars of his power.

One of his researches in nutrition, and that for which he will probably be best remembered, began in 1913 when the Medical Research Committee (now the Medical Research Council) allotted to him 'the study of experimental rickets and its relations to conditions of oxidation.' Mellanby has described in *A Story of Nutritional Research: The Effect of Some Dietary Factors on Bones and the Nervous System* (Mellanby, 1950) the outcome of this assignment, which included the experimental demonstration of the need for the fat-soluble vitamin D in the prevention of rickets, the presence of rachitogenic substances in cereals and the importance of vitamin A in the moulding of bones. The work on vitamin A culminated in the fascinating discovery of the function of vitamin A as 'a "director" of basal cell development', a reward for his constant inquiry into the problem of why such substances as vitamins are essential and how they perform their functions.

Although Mellanby worked through the period when the notion was recognized that much nutritional disease is due to deficiency of essential food factors, with characteristic independence of outlook, almost amounting to 'cussedness', he developed an interest in positive or toxic factors in food. Beginning with his study of the anticalcifying factors in cereals which he included in a group of substances he called 'toxamins', he became interested in 'the chemical manipulation of foods', the outstanding result of which was his discovery that 'agenization' of wheat flour was the cause of canine hysteria.

Mellanby's work was characterized by an appreciation of the importance of biological problems, by his recognition of the value of the experimental method and by an awareness of the interaction of clinical and experimental work. He coupled this approach with a devotion and doggedness which can only be apprehended by reading his own accounts of his researches and from his views on medical research to be found in various named lectures and in his appreciation of the work of other great men—Hopkins and Huxley, Paget and Jenner.

Mellanby's efforts to ensure that the practical fruits of research should be reaped are best seen in his work as Secretary of the Medical Research Council—as many who read

this notice will know from their own experience. In the international sphere he was, from 1930, intimately connected with the Health Organization of the League of Nations. He was Chairman of the International Conferences for the Standardization of Vitamins in 1931 and 1934 and of the International Technical Commission sponsored by the League. With Professor E. V. McCollum, Mellanby represented nutritional experts on the Medical Committee of the League of Nations which was responsible for the report that led to 'the marriage of nutrition with agriculture'. He was for many years Chairman of the Accessory Food Factors Committee of the Medical Research Council, and he ensured that the importance of nutrition was recognized and that its principles were put into practice in the feeding of civilians and of service personnel, especially during the second world war. He was also effective in extending work on applied nutrition to British colonial territories and to other overseas countries. But for his death he would have presided over an international conference on protein malnutrition recently held in Princeton. As will be seen from Volume 1, page 1 (1944), of the *Proceedings of The Nutrition Society*, he was one of eleven signatories to the document which led to the founding of The Nutrition Society. B. S. PLATT

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The nutrition of Nigerian children, with particular reference to their energy requirements

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The physical condition of Nigerian children, and their capacity to learn, which educationists believe is closely related to the adequacy of their diets, are of great importance to a country like Nigeria in which the present speed of development is frighteningly fast. In the rural areas the rate of progress is still slow, but it is the peasant farmer, cattleman and fisherman who must supply the energy foods and nutrients for the increasing numbers of semi-literate, literate and educated people living in urban communities.

The present paper reports the results of an investigation designed to compare the state of health and of nutrition of peasant children from different parts of the Nigerian bush with those of the offspring of educated families living in towns.