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OBITUARIES

Prof. Maud Menten

MAUD MENTEN, experimental pathologist, died on July 20, 1960, at the age of eighty-one in Leamington, Ontario. She was born in Lambton County, Canada, in 1879 and received the B.A. degree at the University of Toronto in 1904, the bachelor of medicine degree in 1907 and her M.D. in 1911. In 1916 she obtained a Ph.D. degree in biochemistry at the University of Chicago, where she studied with A. P. Mathews. Between 1904 and 1905 she was a demonstrator in physiology in the laboratories of A. B. Macallum. During 1907-8 she was a Research Fellow at the Rockefeller Institute for Medical Research, and, together with Simon Flexner and J. W. Jobling, was author of the first monograph of the Institute, a work on radiobromide and cancer. During 1910-12 and 1913-14 she was a Research Fellow at Western Reserve University in the sphere of Dr. George Crile. In 1913 she worked with L. Michaelis in Berlin, and this collaboration resulted in the famous paper on chemical kinetics which appeared in 1913 in the *Biochemische Zeitschrift*. In 1915-16 she did research in cancer at the Barnard Skin and Cancer Hospital in St. Louis, Missouri. In 1916 she joined the School of Medicine of the University of Pittsburgh, Pennsylvania, where she remained until her retirement in 1950. In Pittsburgh she was pathologist to the Children's Hospital of Pittsburgh from 1926 until 1950, and was a full-time teacher in the Department of Pathology of the Medical School; she rose to become a full professor of pathology. On retirement, she continued to do research work on cancer at the Medical Research Institute of British Columbia, until ill-health forced complete cessation of scientific activity in 1955.

Maud Menten was an avid research worker all her life. In Pittsburgh, despite full schedules as a hospital pathologist and teacher of pathology, she continued to make noteworthy contributions to scientific literature.

She was a versatile scientist, as becomes a pathologist. She will be best remembered at present for four pieces of work. Her work on enzyme kinetics with Michaelis in 1913 resulted in the Michaelis-Menten constant. In 1924, together with Helen Manning, she discovered the hyperglycaemic effects of salmonella toxins. In 1944, together with Andersch and Wilson, she determined the sedimentation constants and electrophoretic mobilities of adult and foetal carboxylhaemoglobin; this has been stated to be the first use of electrophoretic mobility to de-

termine differences in human haemoglobin, antedating Linus Pauling. In 1944, together with Junge and Green, she developed an azo-dye coupling reaction for the demonstration of alkaline phosphatase in the kidney. This piece of work was called enthusiastically "a stroke of genius" by A. G. Pearse in the first edition of his book on *Histochemistry* because it opened up a field of enzyme histochemistry. Other research papers encompassed work on potassium in cells (with A. B. Macallum), radiobromide and cancer (with Simon Flexner and J. W. Jobling), oxidases, vitamin C (with C. G. King and O. Bessey), streptococcal toxins, histochemistry of glycogen, and nucleic acids in bone marrow. Other papers were published in the fields of physiology, chemotherapy, haematology and pathology.

Dr. Menten was a member of numerous scientific societies. Aside from science, she was a student of languages, music and art. She was a fine painter, and several of her canvases were hung in art exhibitions.

Maud Menten was untiring in her efforts on behalf of sick children. She was an inspiring teacher who stimulated medical students, resident physicians and research associates to their best efforts. She will long be remembered by her associates for her keen mind, for a certain dignity of manner, for unobtrusive modesty, for her wit, and above all for her enthusiasm for research.

AARON H. STOCK
ANNA-MARY CARPENTER

Prof. G. Bonnier

PROF. GERT BONNIER died on January 11 in Stockholm, where he had held the chair of genetics from 1936 until 1958. Even after his retirement he continued his experimental work until a few days before his death. He belonged to the generation of geneticists who, under the influence of the Morgan school, started to analyse the mechanism of heredity by means of experiments with *Drosophila*. One of his earliest papers, published before he had obtained his doctorate, is a thorough and ingenious study of secondary non-disjunction, which may gain renewed importance now that non-disjunction in man has proved to be a source of profound pathological disturbances. Crossing-over in triploids and attached X-chromosomes, chromatid interference, gynandromorphism and mosaicism were among the problems that interested him most. In 1947, together with B. and M. Rasmuson, he published a paper on "Gene Divisibility", which at the time of its appearance

was somewhat of an oddity, but which now fits beautifully into the modern concept of the structure of the gene. After the War, Bonnier became increasingly interested in the genetical effects of X-rays and published a series of papers on this subject, several of them in collaboration with K. G. Luning, his successor to the chair. Perhaps the most interesting result of these studies was the finding that X-rays produce more mutations in spermatozoa when they are exposed in the inseminated female than when the male is treated. During the past few years, Bonnier's interest in radiation genetics shifted from these more fundamental aspects to the problem of radiation damage to populations, and he studied the genetical effects of X-rays in model *Drosophila* populations of different breeding structures and under different selection pressures. All these investigations are characterized by carefully thought-out and often novel techniques, by large and painstakingly collected data, by thorough statistical analyses and by cautious and critical interpretations.

To geneticists in general, Bonnier is probably best known as a pioneer in applied genetics. In 1928, he became the first chief of the Animal Breeding Insti-

tute in Wiad; he held this position until the Wallenberg Fund in 1950 withdrew its financial support. There he introduced the use of cattle twins for systematic studies of the effects of environment and nutrition on identical genotypes; similar groups of twins have now been collected and are being studied at many research stations throughout the world. He was also one of the pioneers of the use of artificial insemination in cattle, and the centre organized at Wiad in 1936 was the first of its kind in Scandinavia.

As a person, Bonnier was modest and shy, full of kindness and tolerance, and with a quiet sense of humour; he was respected by all who came in contact with him and loved by many friends and pupils. His father had owned one of the largest publishing houses in Sweden, and the tradition of culture and gracious living in which he had grown up was continued in the life of his own family. To have been a visitor in his beautiful house and to have enjoyed the warm hospitality of him and his wife is an unforgettable memory. His death will be deplored not only as a loss to genetics; it will also be a deeply felt personal loss for many people in many countries.

CHARLOTTE AUERBACH

NEW FELLOWS OF THE ROYAL SOCIETY

AT a meeting of the Royal Society on March 16, the following were elected to fellowship of the Society:

PROF. J. BADDILEY, professor of organic chemistry in the University of Durham, King's College, Newcastle upon Tyne, distinguished for his researches in organic and biochemistry, particularly in the field of coenzymes, nucleotides, and bacterial cell-wall constituents.

PROF. H. E. M. BARLOW, dean of the Faculty of Engineering, and Pender professor of electrical engineering and director of laboratories in the University of London, University College, distinguished for his work on engineering aspects of microwaves, particularly wave guides and semi-conductors.

PROF. M. S. BARTLETT, professor of statistics in the University of London, University College, distinguished for his contributions to the methods of mathematical statistics and their application to physical and biological science.

PROF. R. E. BILLINGHAM, professor of zoology in the University of Pennsylvania, Philadelphia, distinguished for his studies on the pigmentary system of mammals and on tissue transplantation.

PROF. C. C. BUTLER, professor of physics in the University of London, Imperial College of Science and Technology, distinguished for his researches on the elementary unstable particles in cosmic rays.

DR. J. CHATT, head of the Inorganic Chemistry Department, Akers Research Laboratories, Imperial Chemical Industries, Ltd., Welwyn, Hertfordshire, and group manager of the Heavy Organic Chemicals Division, distinguished for his work on the chemical and physical constitution of co-ordinated metallic compounds.

PROF. B. H. FLOWERS, Langworthy professor of physics in the University of Manchester, distinguished for his numerous contributions to theoretical nuclear physics, especially the shell model of the atomic nucleus.

DR. L. H. GRAY, director of the British Empire Cancer Campaign Research Unit in Radiobiology, Mount Vernon Hospital and Radium Institute, Northwood, Middlesex, distinguished for his contributions to the effects of radiations on cells and to radiotherapy.

DR. S. H. HAUGHTON, inter-African scientific correspondent for geology, Commission for Technical Co-operation in Africa, Pretoria, formerly director of the Geological Survey of South Africa, distinguished for his many contributions to South African geology, especially in the fields of palaeozoology, stratigraphy and economic geology.

PROF. RODNEY HILL, professor of applied mathematics in the University of Nottingham, distinguished for his contributions to the theory of continuous mediums, particularly to the plasticity of metals.

DR. H. E. HINTON, reader in entomology in the University of Bristol, distinguished for his work on insect biology, particularly on the larval stages of insects, and on classification and morphology of Coleoptera, Lepidoptera and Diptera.

DR. R. G. S. HUDSON, Research Fellow in the Department of Geology, Trinity College, Dublin, distinguished for his stratigraphical and palaeontological researches in the Carboniferous of the North of England and in the Mesozoic rocks of the Middle East.

MR. C. F. KEARTON, managing director, Courtaulds, Ltd., Coventry, distinguished for his work on chemical engineering characteristics of volatile uranium products and for technological development in the textile industry.