OBITUARIES

Prof. E. F. Burton, O.B.E.

ELI FRANKLIN BURTON, director of the Physics Laboratory, University of Toronto, died in Toronto on July 6, 1948.

Born in February 1879, he attended high school in Toronto and took the honours course in mathematics and physics at the University of Toronto, graduating in 1901. His first researches were carried on under the late Prof. J. C. McLennan and included work on the penetrating radiation from the earth (they just missed discovering the cosmic rays). Burton then proceeded to Cambridge in 1904 as an 1851 Exhibition Scholar and worked under J. J. Thomson on colloidal particles. Returning to Toronto, he assisted McLennan in the fitting up of the new physics building (now called the McLennan Laboratory) and obtained his doctorate of philosophy in 1910. He was promoted to an associate professorship in 1911 and to full professorship in 1924. In the First World War he was a member of a team consisting of McLennan, Satterly, Dawes and Patterson (of the Meteorological Service of Canada), and occupied himself with the problem of the estimation of helium gas in the natural gas of Canada and its extraction therefrom for use in balloons. He also was acting head of the department when McLennan was called to Britain to assist in the scientific work at the Admiralty.

On the return of peace and McLennan, Burton and his assistants continued his work on colloidal solutions and later published a monograph on the physical properties of colloidal solutions. A third edition of this book was published with the collaboration of Miss May Annetts in 1936. At one time he was very interested in the application of colloidal arsenic solutions to abate the onset of cancer, and in this work he was assisted by Dr. Hendricks. Although he fought hard for recognition of his method and he had concluded from X-ray photographs that the method had some advantages, the medical profession remained cold and the work was eventually dropped.

Just after the beginning of the Second World War, Burton had the intuition that radio-location would play a vital part in the contest. He tried hard to interest the Services and to get them to send their brighter men to take a course in radar; but they declined. Then he enlisted the support of a Toronto Kiwanis Club, who provided sufficient monetary assistance to enable the Physics Department of the University of Toronto to run a summer course in 1940 for about twenty selected men. Burton had the satisfaction in later years of knowing that some of these men, in ship and on land, filled very important posts in the Empire radar services. In the succeeding years he almost forced the Services to start classes in radar not only in Toronto but also across the Dominion, for the Royal Canadian Air Force and the Canadian Army, and eventually a large number of men were trained who served in all parts of the world.

Burton was also a director of Research Enterprises, Ltd., a Crown research company managed by Colonel Eric Phillips, now chairman of the board of governors of the University of Toronto. 'R.E.L.', as it was called, built huge factories and laboratories at Leaside just outside Toronto in which all kinds of apparatus for war purposes were made and assembled; mention need only be made of radar outfits, optical glass, periscopes and range-finders. Because the men could work under better and quieter conditions than in Toronto, the very complicated radar sets for the large battleships of the Navy were built at Leaside. As side issues, Burton promoted (with Pitt) the invention and design of proximity fuses for shells, and other investigations on the flight of shells, and directed research on problems in audition connected with shell shock. For this work he was awarded an O.B.E. in 1943. It was a great grief to Burton when, after the end of the War, the Government decided to relinquish all the work at 'R.E.L.' and to sell parts of the establishment; he had hoped that a portion of it would be maintained as a factory for the manufacture of scientific apparatus for use in Canada.

On McLennan's retirement from Toronto in 1932, Burton became director of the Physical Laboratory, and soon after that developed with A. Pitt and others the study of valve circuits, leading in one instance to the Burton–Pitt electrical method for the determination of the water content of grains and soils. The low-temperature work (initiated by McLennan) on helium and the superconductivity of metals was carried on by Burton and others. The study of the viscosity of liquid helium I and II, with the discovery of the very low viscosity of liquid helium II, opened up a new field which he, with the help of Wilhelm and Misener, vigorously prosecuted. Also, with the help of Grayson-Smith and others, he carried on the work of superconductivity and in 1934 published a small book on the subject.

Elected to the fellowship of the Royal Society of Canada in 1913, he became president of the Mathematics, Physics and Chemistry Section in 1934–35 and was awarded the J. M. Tory Medal in 1947. He was also president in 1931–32 of the Royal Canadian Institute, a Toronto society which gives public lectures on scientific subjects adapted for the general public. As a member of the National Research Council of Canada for many years, he gave much of his time and energy to the furtherance of scientific work in Canada and for providing means for young Canadians to stay at home and develop their own country rather than emigrate to the United States.

During the war years, Burton encouraged Prebus and Hillier to build an electron microscope. This was based on an existing European design and was probably the first electron microscope set up on the American side of the Atlantic. Burton gave Hillier and his successors all the backing he could, so that the Toronto School of Electron Microscopy has been in the forefront of this work, and many of the men who have been through it have secured important posts in the United States.

The physics building of the University of Toronto was sorely overtaxed for space during the war years, and as soon as labour was available Burton persuaded the board of governors to build a new wing to the building, which increased the total space by about thirty per cent. The new wing was named by the governors the "Burton Wing", and Burton was enabled to see it unofficially opened in May 1948. In this new wing there are special suites for research work on low-temperature problems, radio-work, and especially for electron microscopy. The Electron Microscope Society of America met here in September to honour the man who had done so much, but unfortunately he had passed away before he could receive their congratulations.

Dr. Burton was one of the most cheerful and kindly of men. Unfortunately, in later years his energy was

undermined by diabetes and heart-shocks, and in his last year failing memory and eyesight robbed him of his lively good humour. He leaves an honoured name in Toronto and Canada generally. He is survived by his widow and one son and one daughter.

JOHN SATTERLY

Dr. Susan Isaacs, C.B.E.

SUSAN ISAACS died on October 12 at the age of sixty-three. Few can have had a greater influence in our time on the upbringing and education of children; indeed, the modern trend towards full recognition of the human aspect of nursery school and subsequent education owes much to her work.

Dr. Isaacs was the daughter of William Fairhurst, of Bolton, Lancashire, and of Miriam Sutherland. Educated at Bolton Secondary School and at the Universities of Manchester and Cambridge, she became a research student at Cambridge in the Psychological Laboratory in 1912, and then lecturer in psychology at Darlington Training College. In 1924 she was invited to become principal of the Malting House School at Cambridge. It was during the following three years that she gathered the comprehensive data of children's behaviour, thoughts and feelings which she presented brilliantly in her two books "Intellectual Growth in Young Children" (1930) and "Social Development in Young Children" (1933).

In 1933 she was made head of the new Department of Child Development of the University of London, at the Institute of Education. She held this post with outstanding success for ten years. In the course of that time a large number of experienced teachers and educationists were enriched by the wide and deep new knowledge which she was able to impart, and above all by her vivid sense of every child as a full, living personality, needing to be imaginatively realized and understood in his own right.

Dr. Isaacs turned to the new insight offered by Freudian psycho-analysis as soon as this work became generally known in England, and joined the British Psycho-Analytical Society in 1921. She was appointed a psychologist on the staff of the London Clinic of Psycho-Analysis in the year 1931. She remained on the staff of the Clinic until her death, and contributed signally in a great number of ways to the scientific work of the Society and to the practical work of the Institute. She was a valued member of the Training Committee and of the Council.

Dr. Isaacs was a clear writer as well as teacher and lecturer; her books and scientific papers are well known to students of psychology to-day. Her small handbook for mothers and teachers, "The Nursery Years", written in 1929, is known all over the world; it was awarded the Parents' Magazine Medal in the United States. "The Children We Teach" is another little book which is widely popular. One of the two books published just before her death is "Childhood and After", containing essays and clinical psychological studies which belong to the later period of her life [see review on p. 871]. A chapter in it called "Children in Institutions", originally a memorandum presented to the Home Office Care of Children Committee, known as the Curtis Committee, 1945, was probably the most important single document consulted by that Committee.

Dr. Isaacs' gifts were based on a combination of intellectual and emotional factors. Her passionate interest in the conditions, first, of young children's education, and, secondly, of their general upbringing in the home, arose out of her own experiences. Her mother's death when she was just six, terminating a fatal and incapacitating illness which started when Susan was barely four, led her to find in her first elementary school in a Lancashire town in the 1880's a refuge and solace from the tragedy at home, but also to become very quickly a rebel against its manifold constraints and inadequacies. This disappointed eagerness and keen sense of what 'school' might have been like, but in fact was not, remained in the background of her mind throughout her growth and did much to shape her later life-work.

It became clear to her at an early stage in her development that mere criticism and mere abandonment of existing methods could bring no constructive results. She quickly assimilated and adopted the most advanced educational ideas current at the time, and her immediate response to the new teaching of psycho-analysis showed that no conventional opposition or resistances could stand in the way of her unhesitating acceptance of anything that offered her wider horizons and deeper understanding. In the same way, at a later stage, when Melanie Klein's ideas were first put forward in Great Britain, she was among the earliest to sense the further sources of knowledge which were now opening up. She saw how these new ideas could be developed to the general benefit of every child's upbringing, and from that moment she pursued that knowledge, and applied it untiringly up to the very last.

Her outstanding intellectual characteristic was an extremely rapid and comprehensive grasp of the matter in view and an ability to classify and summarize it, to present it with remarkable clarity, and to discuss it from various angles. Her exceptional capacity for instantly translating her thoughts and impressions into verbal expression served as a powerful instrument for all her other gifts.

It was characteristic of Susan Isaacs that when she found that there was a great deal which she had not yet encompassed, especially in the work of Melanie Klein, she decided (although she was already a member of the British Psycho-Analytical Society) to start again as a trainee and to go through the whole course. Thus she developed further, undergoing a second long personal analysis, and greatly enriched her own work and the contribution which she was eventually able to make to general psychoanalytic research. In her last years she devoted herself almost entirely to actual analytic practice, and felt this to be the most satisfying of the various kinds of work she had done.

In her husband, Nathan Isaacs, she had a constant friend and supporter, and a constructive critic.

DR. FRANTIŠEK BĚHOUNEK, lecturer in radiology at the Charles University of Prague, died at the end of October at the age of fifty. He had been a pupil of Mme. Curie and had developed a method for measuring atmospheric radioactivity. In 1926 he accompanied General Nobile on his ill-fated polar expedition, and when the airship *Citta di Milano* came to grief they were rescued by the Russian ice-breaker *Krassin*. Běhounek, with Heyrovský, wrote the standard Czech text-book of radioactivity.