FREDERICK GRANT BANTING

1891–1941

FREDERICK GRANT BANTING was born on 14 November 1891, on a farm near the town of Alliston, Ontario. His father, William Thompson Banting, was of Irish extraction, and his mother, Margaret Grant, of Scottish ancestry. Banting attended the rural school and the high school in Alliston. He had a remarkably robust physique and a most enquiring mind, both of which were to stand him in good stead in later life. He was fond of athletic exercise in his early days, but in later life spent little time in recreations with the exception of drawing and painting. He entered the University of Toronto, Victoria College, in 1912. Banting was not a brilliant medical student but his enquiring mind impressed his instructors and his classmates. There are many stories about the small impromptu investigations which he conducted as a part of his undergraduate course. His studies were interrupted in 1915 when he joined the R.C.A.M.C. as a private. He was later sent back to complete his course in medicine, and he was given his commission in the Medical Corps immediately after his graduation in 1916. He saw service in England and in France, and received the Military Cross for exceptional bravery while attending the wounded under fire. He was wounded at Cambrai and for a time it was thought that he would lose his right arm.

He returned to Canada after the first Great War and was appointed Resident in surgery in the Hospital for Sick Children, Toronto. He became a well-qualified surgeon with particular interest in orthopaedics, which he had developed as a result of his contacts with Professor C. L. Starr, Professor W. E. Gallie and Dr D. E. Robertson. In 1920 he began the practice of medicine in London, Ontario, but his practice grew very slowly and he obtained a position as part-time demonstrator in the University of Western Ontario. He conducted some research work there in the department of physiology, 1920–1921, but the results were not published until after the work on insulin was well under way. While preparing a lecture on diabetes Banting was greatly stimulated by the idea that failure by previous workers to obtain the hormone of the pancreas was due to the fact that the enzymes of the external secretion might have destroyed the hypothetical internal secretion during the course of preparation of the extract.

The formulation of this idea was really the turning-point of his life. It forced him to give up his practice and his position in London and to seek the opportunities available in Toronto for the testing of his hypothesis. These facilities were provided by Professor J. J. R. Macleod, head of the department of physiology. The year 1921 was certainly one of the most strenuous and the most productive of Banting’s life. He demonstrated at that time four great traits of his character—courage, persistence, scientific ingenuity and industry. He sold
his personal efforts to secure money, and threw himself wholeheartedly into medical research which was to become his life's work.

In his Cameron Lecture in 1927 Banting described in detail the start of the investigations which led to the discovery of the internal secretion of the pancreas. This work was begun on 16 May 1921 in collaboration with the writer, who had been asked by Professor Macleod to participate. The memory of the intimate association with Banting during that spring, summer and autumn, when it became clear that an active diabetic principle could be prepared from degenerated or from normal pancreas, will always be cherished. The intense excitement and pleasure with which we watched the depth of colour in the sugar reagent fade as the blood sugars of the diabetic animals became reduced under the action of insulin, is difficult to describe. At the beginning of the investigations the surgical aspects of the problem were entirely in Banting's hands, while more chemical procedures fell to my lot. Later he taught me the essentials of surgical technique, and he acquired considerable skill in the estimations of sugar and of the other constituents in which we were interested. We were soon completely convinced that success had been achieved and looked forward with eager anticipation to the application of our findings to the human diabetic. In those days most of our time was spent in the laboratory where we frequently slept and prepared our meals.

Banting was light hearted and easily amused when the research was progressing favourably. He was inclined to be silent and preoccupied when advances were not being made. The mental stimulus furnished by a new idea was remarkably well demonstrated in his attitude toward life in the summer and autumn of 1921. He worked unceasingly under all conditions. Failures made him dourly determined that something must be done to push the problems ahead.

Banting was genuinely fond of the experimental animals with which he worked. The dogs were trained to put out their paws and to hold them steady while blood was removed from their veins. He was loath to sacrifice an animal, even though it was necessary to prove the validity of the conclusions which had been drawn from the experiments. He felt that no animal should be subjected to pain which the human experimenter would not willingly bear himself.

When Professor Macleod returned to his laboratory in the autumn of 1921 the work was continued under his general direction. Banting was given an appointment as lecturer in the department of pharmacology under Professor V. E. Henderson. During the following year, when he became interested in the clinical application of insulin, he was appointed senior demonstrator in the department of medicine under Professor Duncan Graham, a position which he held until 1923 when the Banting and Best department of medical research was created and he was installed as director. The chair was supported in part by an annual grant voted by the legislature of the province of Ontario. In the same year the parliament of Canada provided Banting with a life annuity.

In the years following the discovery of insulin the whole scientific world joined to honour Banting with a galaxy of awards and medals. It will always be
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a source of gratification to his colleagues in the University of Toronto that they were among the first to recognize the greatness of the man. In 1922 he received the Starr gold medal for his M.D. thesis and the George Armstrong Peters prize for his important contributions to surgical science. In 1923 he received the Reeve prize, which is awarded for a published report of the best scientific research accomplished in any department of the faculty of medicine by a junior member of the staff, and in the same year the Charles Mickle fellowship, which is awarded to that member of the medical profession (anywhere) who is considered by the council of the faculty of medicine of the university of Toronto to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science. The Nobel prize in medicine was awarded to Drs Banting and Macleod in 1923. Banting, with characteristic generosity, immediately divided his share equally with the author, and Professor Macleod with Dr J. B. Collip who joined our group in the autumn of 1921 and who had made several very important contributions within a short period of time.

Banting became an honorary member of most of the outstanding scientific and medical societies of the world. Awards followed each other in rapid succession: the Johns Scott medal (Philadelphia) in 1923, the Rosenberger gold medal (Chicago) in 1924, the Cameron prize (Edinburgh) in 1927, the Flavelle medal of the Royal Society of Canada in 1931, the Apothecaries medal (London) in 1934, and the F.N.G. Starr gold medal of the Canadian Medical Association in 1936.

In recognition of his great service to science and humanity Dr Banting was created Knight Commander of the civil division of the Order of the British Empire in June 1934. In the following year he was elected a Fellow of the Royal Society of London.

The first problem which he attacked after the experimental work on insulin reached a stage at which he felt that he could leave it, was the physiology of the adrenal cortex. He made strenuous efforts to prolong the lives of adrenalectomized dogs by giving extracts of various types. None of these attempts were successful, but he did advance our knowledge of the adrenal cortex and showed that with appropriate treatment the lives of these animals could be greatly prolonged.

The creation of a research department provided Banting with excellent facilities and enabled him to secure an adequate number of collaborators. In the course of the eighteen years in which he held the post as director of this department, a great many researches were undertaken. Banting did not believe in the publication of results which did not materially advance the field. He had an aversion to a thorough search of the literature before a problem was undertaken. He felt that this procedure blunted the imagination. He was determined that young investigators with new ideas should be given the opportunity to investigate their problems. As was inevitable some of the studies yielded no valuable results but there were many which repaid his confidence. He became tremendously interested in work on silicosis. Interesting and valuable results
were obtained in this field and a goodly portion of the credit belongs to Banting, who gave the investigators his support and enthusiastic help.

He divided his department up into several sections—one devoted to physiology, one to biochemistry, and one in which the work was largely pathological. He spent much of his own time on cancer research and devoted himself to this field with great enthusiasm and energy. He did much of this work with his own hands and derived great satisfaction from the slow but steady progress which he made in this difficult field. He would occasionally break away from his own researches and throw himself wholeheartedly into problems which his younger colleagues had initiated. He earned and deserved the affection and admiration of a great many young men who were at one time or another attached to his department.

Although Banting’s great energies were devoted for the most part to scientific research on medical problems, he had many other interests in which he always hoped to indulge more fully after he had retired from active work. A member of the Arts and Letters Club of Toronto, he was one of Canada’s most accomplished amateur painters. His oils of Quebec scenes, of arctic life, and of the Canadian Rockies, form a valuable addition to the artistic records of those regions. Mr A. Y. Jackson has written: ‘Banting’s interest in art was something much more serious than is generally realized. Through pressure of work and the war he had done little sketching during the last three years of his life. He intended to devote much more time to painting when the war ended. He was not merely the amateur who paints as a hobby. He showed the same enthusiasm for painting as he did for research and much of the same enquiring spirit. When he took his sketch out of the box his invariable question was, ‘Now what’s wrong with it?’ And in the next sketch he would show that all you had told him had been remembered. He loved the country and found sketching very exciting. With his energy, his active mind, his dislike of anything but honest work, he might have achieved fame in yet another field.’

Banting interested himself in various aspects of Canadiana. He collected books and old manuscripts and various articles associated with the development of the practice of medicine in Canada. He made trips to the far north and thoroughly familiarized himself with the lore of the earlier explorers of that region.

Banting preserved his association with his old colleagues and particularly his classmates of 1917. He looked forward to his class reunions, to informal gatherings with his close friends, many of whom were classmates. He was fond of singing and had a good baritone voice.

The exceptional mental equipment with which Banting was endowed enabled him to overcome many obstacles which would have deterred a less forceful personality. His scientific curiosity was never satisfied and his energy was boundless. His training as a practical surgeon served him well on numerous occasions and he was always interested in the fundamental aspects of the problems which he attacked. His experiences during the great war as a battalion medical officer made a lasting impression on his mind. He was never too busy
to leave the laboratory in order to set a fracture or to perform a surgical operation on one of his army comrades or on some patient who was in need.

The second world war found Banting occupying the leading place in Canadian medical science and in the esteem of the Canadian people. He was almost immediately made the head of the central medical research committee of the national research council of Canada. Banting was ready for this new responsibility because, from the time of Munich, he had made up his own mind that war was inevitable and he had taken steps to initiate aviation medical research in his own department. This is not the place to describe in detail his tireless efforts from one coast of Canada to the other, to stimulate research workers to undertake problems of national importance. He was able, through his popularity with men in other fields and his unceasing efforts, to secure funds and to organize the work of a large group of scientists who devoted themselves to war problems.

When it became necessary in 1940 to effect a liaison with medical workers in Great Britain, Banting insisted on going himself. He carried valuable information in both directions, and on his return to Canada he threw himself again into research and organization. No risks were too great for him and he undertook many hazardous investigations in which he himself was the subject. When a second trip to England became necessary he welcomed the opportunity, but he had a premonition that the end was near. He died in a remote spot in Newfoundland on 21 February 1941, when the bomber in which he was travelling crashed in a forced landing. Banting died as he had lived—in the service of his country and of humanity. He is survived by his wife, the former Henrietta Ball whom he married in 1939, and by one son of a previous marriage, William Robertson Banting, born in 1929.

The Banting Institute, the Banting Foundation, and the Banting Memorial Lectureship, have been created in the University of Toronto as tangible tributes to him, but his name will live for ever in the hearts of successive generations of diabetics and in the minds of young investigators who will be stimulated by his brilliant and fearless career.

C. H. BEST

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