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**JAMES BERTRAM COLLIP**  
**CBE, MA, PhD, DSc, MD, FRS, FRCPC, FRCS, FACP**  
**1892-1965**

## ASSOCIATION JOURNAL

## INTERNAL SECRETIONS

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**T**HE reciprocity of activity between different parts of the animal body and the concomitant interrelationship of function has been well called the "*consensus partium*". It is within comparatively recent years that the manner in which the individual organs react upon one another and the mechanism by which their inter-balance is maintained has been elucidated. The central nervous system, affecting and controlling as it does the correlation of the various physiological activities, supplies an excellent example of such a mechanism. By its means the coördinated activities of the different parts of the body are regulated and controlled, and it is little wonder, in view of the manifold characteristics of this controlling station, that scientists, until very recently, considered it the sole mediating agent between the many different parts.

From the time of the ancients a humoral relationship between the various organs has been given credence to and indeed this idea is older than that of the neural relationship of organs.

Soon after experimental physiology had found a sure footing it was seen that the course of normal development and growth might be materially modified by artificially modifying the chemical constitution of the fluids surrounding the organism. It was also noted that changes both qualitative and quantitative in the metabolic processes of some parts of the body did likewise. It was, therefore, clearly demonstrated that to the nervous regulating mechanism a chemical regulation must be added.

A great deal of the so-called automatic irritation of the nervous system is really brought about by the agency of the products of cell metabolism. Thus, in suffocation, the changes in respiratory and cardiac activity, the spasms of the voluntary muscles, and the tonic contractions of the muscular tissues of the blood vessels are

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Read September 22nd at a session of the 11th Annual Convention of the Alberta Medical Association.

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# JAMES BERTRAM COLLIP

## CBE, MA, PhD, DSc, MD, FRS, FRCPC, FRCS, FACP

### 1892-1965

### The Alberta Years: 1915-1928

*"I experienced then and there,  
all alone on the top story of the old Pathology Building  
perhaps the greatest thrill,  
which has ever been given me to realize"<sup>(1)</sup>  
J.B. Collip, January 16, 1922*

#### Introduction

Frequently omitted in the recounting of the discovery and isolation of insulin in 1921/22 is the contribution of Professor James Bertram Collip. If Collip had not been in Toronto in December 1921 and provided the knowledge and expertise to concentrate the Banting and Best pancreatic extract, the discovery of insulin may have been delayed, and quite possibly the achievement would have gone to researchers in other countries.

Collip spent his formative years in medical research and teaching at the University of Alberta. During his thirteen years on the UofA Faculty of Medicine (1915-1928), Dr. Collip received his Ph.D. (1916), isolated insulin (1921/22), received a D.Sc. (Alberta, 1924), isolated parathormone (1925), earned an MD (Alberta, 1926), and published seventy-seven papers. The most important decision of his career occurred when UofA President H.M. Tory's approved his eight-month sabbatical in 1921/22. His trip was made possible by the 1920 Rockefeller Foundation conditional grant to the UofA's Faculty of Medicine. The grant required that the UofA create a full four year degree granting medical undergraduate program and upgrade its teaching staff. Professor Collip was the first applicant to be funded.

Professor Collip's sabbatical began in Professor J.J.R. Macleod's Laboratory in Toronto in April 1921. Eight months later in December 1921, he was asked by Macleod to join the Banting and Best team to see if he could concentrate their crude, ineffective pancreatic extract. Within two weeks, he had isolated a potent extract. Within a month his compound was powerful enough to convert a diabetic coma into a hypoglycemic state in a laboratory rabbit. The extract which the team named insulin, heralded the discovery of a life saving treatment for diabetics.

After Collip returned to the UofA in 1922, he continued his research on "internal secretions". It became lifelong. He isolated parathormone in 1925 before leaving to become the head of the Department of Medical Biochemistry at McGill in 1928. Collip's career, propelled by the 1921 isolation of insulin, became one of the most productive Canadian research careers of all time.

#### From Youth to PhD 1892-1916

James Bertram "Bert" Collip was born in Belleville, Ontario, on November 20, 1892. He skipped through school so quickly that he was admitted to UofT's Trinity College at age fifteen. Collip graduated with an honors degree in Physiology and Biochemistry in 1912. He continued his studies and received an M.Sc. before presenting his first research paper with Professor Dr. A.B. McCallum at the British Association meeting in 1913. The paper was published in 1914. Collip continued to work on his Ph.D. His chosen topic was the comparative biochemistry of vertebrates and invertebrates. He completed his Ph.D. requirements in 1915 and received his UofT degree in 1916. Collip's thesis was published in pamphlet form in 1920.

#### The pre-insulin years at UofA 1915-1921

Dr. H.C. Jamieson recommended Collip's name to his UofA colleague Dr. H.H. Moshier. Collip accepted Moshier's offer and joined the Faculty of Medicine on September 15, 1915.<sup>(2)</sup> He came as the lecturer in biochemistry and one of four faculty members. At that time Dr. D.G. Revell (anatomy) was full-time and Dr. Moshier (physiology) and Dr. Jamieson were part-time. Provincial Laboratory Director Dr. A.C. Rankin had arrived a year earlier, but left almost immediately to join the RCAMC in late 1914.

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1. Bliss, Michael J.B. Collip, quoted in *The Discovery of Insulin*, page 117, M&S, 1982.  
2. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," in *Memoirs of Fellows of the Royal Society*, Transactions 19:235-267, December 1973.



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James Bertram Collip, circa 1915

When Collip arrived at the UofA in September 1915 as an instructor, he was twenty-three and younger than many of his students. There were about twenty first-year students. The medical program in 1915 consisted of one premedical year and two years of basic medical undergraduate teaching. The last two clinical years leading to an MD were spent at McGill or Toronto.

Professor Collip's first sabbatical came quickly. On December 29, 1915 he journeyed back to Toronto and married his fiancée Rae Vivian Ralph.<sup>(3)</sup> Disconcertingly, one Edmonton newspaper adver-



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The University of Toronto Medical School where Banting, Best and Collip worked.

tised that a young Edmonton lawyer George Steer was to marry her and Collip was to marry Steer's intended wife.<sup>(4)</sup>

When the 11th Field (Universities) Ambulance Unit was mobilized in March 1916, the commanding officer was Major Moshier. He went overseas with it almost immediately. Collip suddenly inherited an additional teaching load – the physiology and pharmacy courses for the second year medical students. While he may have taught all day, Collip still found time to work on his research projects at night. At first he continued the research started during his PhD years on the comparative blood chemistry of vertebrates and invertebrates.<sup>(5)</sup> From 1915 to 1920 he produced nineteen papers and monographs and had sixteen articles published in the literature.<sup>(6)</sup> One article was seminal. It was entitled "Internal Secretions" and was presented to the 11th Annual AMA Meeting in September 1916.<sup>(7)</sup> It appeared in the CMAJ in 1916.<sup>(8)</sup>

1920 was a turning point year at the UofA. Dr. A.H. Downs arrived from Montreal as the Head of Physiology and Biochemistry. Collip was displeased. He had been appointed the Assistant Professor (1917) and expected to be appointed as head of the department. As a favor, President H.M. Tory appointed him head of Biochemistry, but did not create a separate Department of Biochemistry.

That same year (1920) the soon to be elected Prime Minister of Canada MacKenzie King secured a five million dollar Rockefeller Foundation Grant to upgrade Canadian Medical Schools.<sup>(9)</sup> The UofA Faculty of Medicine was awarded a conditional \$500,000 that required the faculty to be upgraded.

### Collip's 1921/1922 Sabbatical

Seeing the opportunity to expand his skills and knowledge, Professor Collip applied for a traveling scholarship. With the help of Dean Rankin, Collip convinced President Tory to grant him a globetrotting year in biochemical research. The year started in April 1921 at the J.J.R. Macleod laboratory in Toronto. The Toronto laboratory was a world leader in the rapid measurement of blood glucose levels.

3. Noble, Robert L. "Memories of James Bertram Collip," CMAJ 93: 1356-1364, December 1965.
4. Wilson, Donald R. "James Bertram Collip," Appendix to the AMA 77th Annual Report, pages 20-25, September 1982.
5. Nobel, Robert L. "Memories of James Bertram Collip," page 1357.
6. Corbet, Elise A. *Frontiers of Medicine*, pages 43-47, University of Alberta, 1990.
7. Noble, Robert L. "Memories of James Bertram Collip," page 1358.
8. Collip, J. Bertram "Internal Secretions." First presented to 11th Annual AMA meeting, September 1916. Published in the CMAJ 6: 1063-1069, 1916.
9. Spaulding, William B. "Why Rockefeller Supported Medical Education in Canada." Canadian Bulletin of Medical History 10: 67-76, 1993. For further elaboration see Marianne Fedunkiw's "The University of Alberta and the Rockefeller Foundation," in Part 2, and the profile of Dr. Allen Coats Rankin.

The time in Toronto was to be followed by six months with Van Slyke in New York and then four months with Dr. Henry Dale at the Medical Research Institute in Hamstead, England.<sup>(10)</sup>

In May of 1921, Collip attended a meeting with Dr. Banting and Dr. Macleod. Banting had just arrived from the UWO in London, Ontario and needed an assistant. After winning the toss of a coin, Collip elected to remain working with Macleod. Medical students Nobel and Best flipped another coin. Best lost and was assigned to assist Banting's experiments which involved injecting pancreatic extract into pancreatectomized dogs.<sup>(11)</sup> Banting had come to Toronto to test his cornerstone theory, that ligating the pancreatic duct would atrophy the pancreatic tissue, but leave the Islets of Langerhans intact. From the Islet cells, an extract could be prepared. Something from the pancreas had already been proven to have hypoglycemic properties.<sup>(12)</sup>



Dr. Collip circa 1925 25-4

Collip then went to the Woods Hole Research Centre in Boston Mass. Back in Toronto on September 1, Macleod offered Collip a one-year appointment in the Department of Pathological Chemistry at UofT. He accepted. Then Collip wrote Dr. Rankin at the UofA informing him of the proposed change of plans, and asked him for an increase in his salary. Both Tory and Rankin expressed disappointment, as they felt he should go abroad. Collip demurred and began to lecture for eight hours per week. The rest of the time he spent doing research in the University's Pathological Chemistry Laboratory. Not infrequently he would drop in to see Banting and Best and inquire of their progress. Often he offered to help.<sup>(13)</sup>

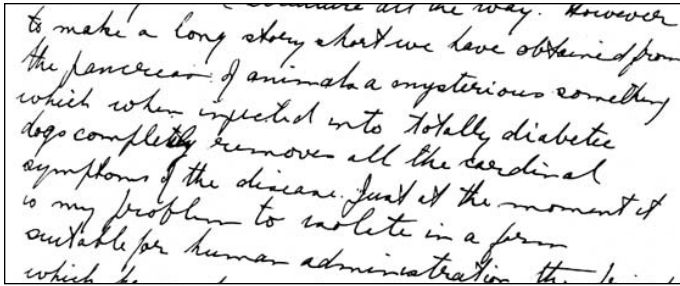
Banting and Best first tried to isolate an active extract from a fetal pancreas source. They found their extract could restore high glucose levels to normal levels in dogs. Then they switched to adult beef pancreatic extract, which was precipitated using 65% alcohol. By December 1921 the Banting and Best's extract had kept alive a pancreas ligated, diabetic dog for seventy days. But they could not maintain consistent control of the dog's blood glucose levels. The dog died. Banting asked Macleod for help to concentrate and purify the extract.

#### **The isolation of a potent extract in 1921/20**

Macleod assigned Collip to the team on December 12, 1921.<sup>(14)</sup> Collip went to work immediately. On December 13<sup>(15)</sup> Collip injected his first extract into a pancreatectomized rabbit. He knew he would have to precipitate and then separate the undesirable proteins. He found that 95% ethyl alcohol precipitated a very potent extract from its soluble lipids and salts. Collip then sterilized and injected the precipitated extract into normal laboratory rabbits and dogs. By December 22, the extract was sufficiently potent for Collip to inject it into a pancreatectomized dog. It cleared the dog's urine of ketones and lowered its blood sugar levels. When Collip autopsied the dog, he found the storage of glucose in the dog's liver had markedly increased.<sup>(16)</sup>

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10. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," pages 238-240. Also see E.A. Corbet's *Frontiers of Medicine*, pages 43-44.
11. Wilson, Donald R. "James Bertram Collip," page 21.
12. Bliss, Michael *The Discovery of Insulin*, pages 48-50.
13. Bliss, Michael "J.B. Collip: A Forgotten Member of the Insulin Team," pages 110-125, in *Essays in the History of Canadian Medicine*, McClelland and Stewart, 1988. For more on the isolation of insulin, see Michael Bliss' *The Discovery of Insulin*, pages 84-122, M&S 1982.
14. Bliss, Michael *The Discovery of Insulin*, 304 pages, McClelland and Stewart, 1982.
15. Bliss, Michael "J.B. Collip: A Forgotten Member of the Insulin Team," page 113-114.
16. Bliss, Michael "J.B. Collip: A Forgotten Member of the Insulin Team," page 114. Also see *The Discovery of Insulin*, page 103.

Collip's excitement was evident in his January 8, 1922 letter to UofA President H.M. Tory. He closed it with the note, "I only wish that the various papers that will be published on this were coming from Alberta, rather than Toronto. A whole new field has been thrown open however, and I will continue to work along these lines."<sup>(17)</sup>



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... we have obtained from the pancreas of animals a mysterious something which when injected into totally diabetic dogs completely removes all the cardinal symptoms of the disease. Just at the moment it is my problem to isolate in a form available for human administration ..."  
Letter from J.B. Collip to President Tory, 8 January, 1922

On January 11, 1922, Banting and Best convinced Macleod to allow their extract, precipitated with 65% alcohol, to be injected into a fourteen year old boy, Leonard Thompson. Thompson's blood sugar dropped from .440 to .320%. A twenty-four hour urine collection showed a slight drop in glucose.<sup>(18)</sup> The conclusion was that the Banting and Best extract was of no clinical benefit. Then a sterile abscess developed because of the impurities in the injection.

By that time Collip had discovered that his extract was much more potent than he first thought. He injected it into a rabbit and it caused a hypoglycemic convulsion and death. Then he found that the hypoglycemia could be reversed by administering sugar.<sup>(19)</sup> Collip worked late into the night diluting, centrifuging, and blending solution after solution.

About January 16, 1922 Collip made his breakthrough. He found he could trap the active extract by precipitating the protein contaminants with an ethyl alcohol concentration of less than 90%. Then he could precipitate the active extract by increasing the

alcohol concentration to over 95%. "I experienced then and there, all alone on the top story of the old Pathology Building, perhaps the greatest thrill, which has ever been given me to realize".<sup>(20)</sup>

Collip sent his extract over to the clinic to be used on Leonard Thompson. On January 23 the injection was spectacularly successful.<sup>(21)</sup> Sometime between January 17 and 23 there was a vociferous confrontation between Collip and Banting. Collip said, "I have found it" but "I have decided not to tell you". Banting was incensed. He went to Macleod. The end result was an agreement, concluded by January 25 between the four researchers, that future efforts would be collaborative and the extract would be developed in cooperation with the Connaught Laboratory. The four agreed not to patent or develop the process independently of the others. The testing was expanded to other patients.

Then the unexpected happened. Collip lost the recipe.<sup>(22)</sup> The variables were multiple: control the temperature, the pH, and the alcohol concentration to precipitate the extract, then determine when and



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Leonard Thompson the first patient to receive insulin, January 23, 1922

17. Corbet, Elise A.

*Frontiers of Medicine*, page 44. Also see Michael Bliss' "J.B. Collip: A Forgotten Member of the Insulin Team," page 84. For more extensive comments on the letter see Professor Bliss' *The Discovery of Insulin*.

18. Bliss, Michael

"J.B. Collip: A Forgotten Member of the Insulin Team," page 117.

19. Bliss, Michael

"J.B. Collip: A Forgotten Member of the Insulin Team," page 118.

20. Bliss, Michael

"J.B. Collip: A Forgotten Member of the Insulin Team," page 119 and "The Discovery of Insulin", page 117.

21. Bliss, Michael

"J.B. Collip: A Forgotten Member of the Insulin Team," page 118. There appears to be a typographical error in the date of the Bliss essay. The Leonard Thompson injections restarted on January 23 (not January 13 as documented), when all four researchers agreed to recommence the injections, as recorded in *The Discovery of Insulin*, page 117.

22. Bliss, Michael

"J.B. Collip: A Forgotten Member of the Insulin Team," page 120.

how fast to centrifuge it to separate it from the solution. Work stopped. Collip no longer had a formula that could make insulin in usable amounts. Clinical testing was suspended. Following the death of a diabetic patient, the struggle became frantic. Finger pointing started. The team quickly realized that more help was needed.

Help came when Banting and Best went to Indianapolis to apprise the very interested Eli Lilly Company, of what they knew. Later that year researchers at Eli Lilly discovered how to precipitate the insulin fraction by adjusting the acid base balance and the isoelectric point. This led to the large scale production of insulin.

### Insulin 1922

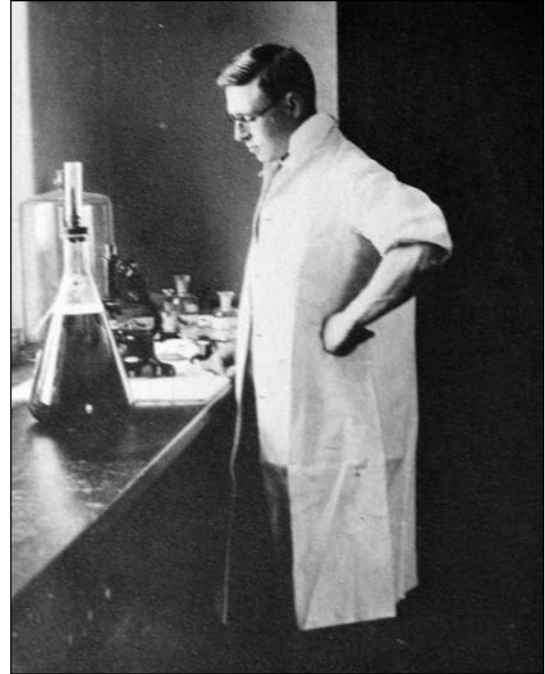
In March 1922, the team chose the name for the extract: insulin.<sup>(23)</sup> The researchers read six short papers on their work at the annual meeting of the Royal Society of Canada in May 1922. One was on Banting and Best's initial extract. One was on Collip's more potent extract. Another one was on the first clinical cases.

Before leaving Toronto, Collip succeeded in developing a standardized assay for measuring the potency of insulin extract.<sup>(24)</sup> In September 1922, Collip completed his eighteen-month sabbatical and returned to his position at the UofA.

The patent for insulin was taken out in the names of Banting, Best and Collip. One half of the royalties remained with Connaught Laboratories and one sixth went to each investigator. In Collip's case, his royalties went to the University where he worked. Initially it was to the UofA until he moved to McGill.<sup>(25)</sup>

### Back in Edmonton 1922-1928

On his return to Edmonton, Collip was named the Chairman of the Department of Biochemistry. In his absence, the UofA completed its new medical school building. The Strathcona Hospital had been returned to the UofA by the Federal Government's Soldiers Civil Re-establishment Commission. A start had been made to expand it. In October 1922 it was renamed



Dr. Collip in his lab, 1927 25-7

the UofA Hospital or UAH. After a satisfactory medical curriculum audit, the UofA Rockefeller grant conditions were removed in December 1923.

Collip was enthused and focused. In his research he sought to extract glukinin from vegetables to control glucose levels.<sup>(26)</sup> Initially, he thought he had made a breakthrough but was unable to replicate the results.

With his new found fame, Collip was the recipient of considerable attention. It included the donation of a six-foot long banana snake for research purposes. Before he could use it, he lost it. The medical school was closed for ten days.<sup>(27)</sup> A month later it reappeared from behind Collip's shelf of flasks.

In January 1923 the Nobel Prize for physiology and medicine was granted to Banting and Macleod.<sup>(28)</sup> The prize totaled \$24,000. Banting and Macleod volunteered to share half of their purse with Best and Collip.

In the summer of 1923 Dr. H.C. Jamieson organized a three-day course on the clinical use of insulin.<sup>(29)</sup>

23. Bliss, Michael "J.B. Collip: A Forgotten Member of the Insulin Team," page 119.

24. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," page 242.

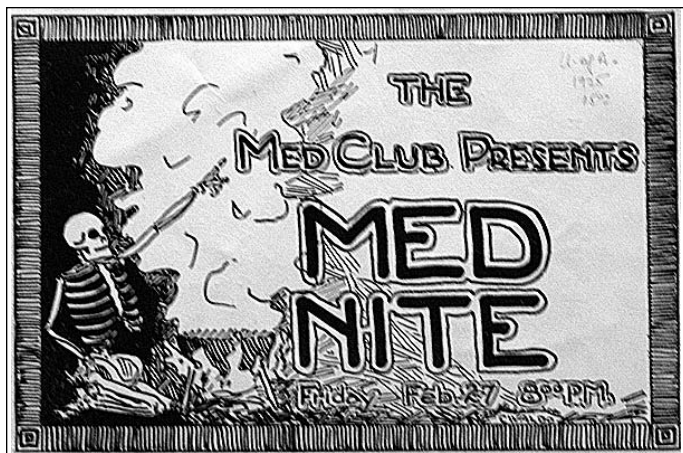
25. Corbet, Elise A. *Frontiers of Medicine*, page 46, and W.H. Johns', *A History of the University of Alberta*, pages 73, 76, 121, UofA, 1981.

26. Li, Alison "J.B. Collip, A.M. Hanson and the Isolation of Parathyroid Hormone or Endocrines and Enterprise." *Journal of the History of Medicine and Allied Sciences*, 47:405-438, October 1992.

27. Noble, Robert L. "Memories of James Bertram Collip," page 1357.

28. Bliss, Michael "J.B. Collip: A Forgotten Member of the Insulin Team," page 123.

29. Scott, John W. "Memories of a Career in Medical Education in Alberta, 1914-1959," in *Medicine in Alberta: Historical Reflections*, pages 122-123, AMF, 1993.



*The Med Show Program, 1925*

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Injectable insulin was less than one year old. Collip helped Jamieson present the course. Dr. John Scott, who was a new general practitioner in Edmonton, attended the refresher. It excited him. Collip suggested that Scott work with him for a year in the Department of Biochemistry. That experience, he said, would be a good basis for studying Internal Medicine. One year became five. When Collip went to McGill in 1928, as the first Director and Head of the Department of Biochemistry, UofA President Tory asked Dr. Scott to stay for a year and run the Department, which he did.

Then Dr. Scott continued his research in London, England. No sooner was he in England than Collip wired him twice, trying to convince him to come to McGill for a year to teach biochemistry. Dr. Scott declined. He completed his Internal Medicine training and returned to UofA as an Associate Professor in Internal Medicine. He would become the third UofA Dean of Medicine from 1948 to 1959.

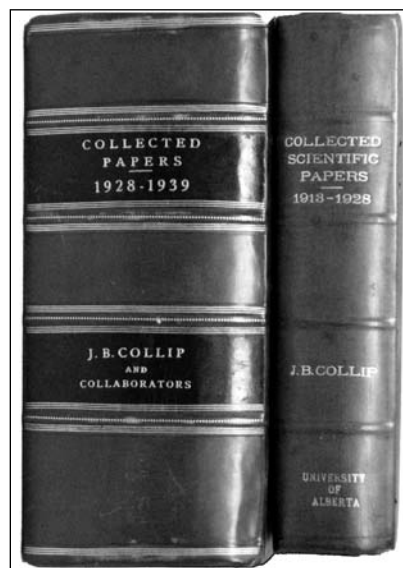
Sometime after 1948, UofA endocrinologist Dr. D.R. Wilson, inherited the second and third diabetic patients who had attended the first Collip and Jamieson Diabetic Clinic. The second patient went for twenty years without another visit to a physician. The third one lived to age sixty-five without developing any complications at all.<sup>(30)</sup>

### Not to be an MD in the First Class, 1925

Wanting to become an MD, Professor Collip applied and was accepted into UofA's first full MD class, the Class of 1925. He took all the necessary courses but was unable to complete his obstetrical casebook. Despite a protest by Dr. W.A. Wilson with Dr. L.C. Conn over the number of deliveries required, Collip's graduation was deferred for a year.<sup>(31)</sup>

By 1925 Collip was receiving \$8,000 per year in royalties. The funds went toward his research at the UofA. The Alberta College of Physicians and Surgeons gave him another \$9,000 spread over two years. The Carnegie Foundation gave him \$10,000 for the Outpatient Insulin Clinic to be used for those who had insufficient funds to pay for it. The grant covered a supply for future Dean J.J. Ower, who was diagnosed as having pancreatitis and diabetes circa 1928. John D. Rockefeller Jr. gave a personal cheque for \$5,000 to buy insulin for the clinic.<sup>(32)</sup>

By the end of 1925 Collip had switched his research to the parathyroid gland. It started with the knowledge that some extract from it could control blood sugar levels. He isolated parathormone in 1925 using



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*J.B. Collip, Collected Papers from 1913-1928 (UofA) and 1928-1939, (McGill), UAA*

30. Wilson, Donald R. "James Bertram Collip," page 22. Eleanor Cleary RN of Lamont recalled that in early 1924 "...when I was on night duty, I witnessed the first dose of insulin being administered in the Lamont Public Hospital, to a diabetic patient who was brought into the hospital in a diabetic coma. Drs. Archer and Young administered the medication and the patient made a most remarkable return to consciousness. Dr. Archer exclaimed in a whisper, "It's a miracle, it's a miracle". The story was retold in Trudy Harold's *On Highest Mission Sent*, page 25, Lamont Healthcare Center, 1999.
31. Wilson, Donald R. "James Bertram Collip," pages 22-23.
32. Vant, J. Ross, Cashman, Tony. *More Than a Hospital. The University of Alberta Hospitals 1906-1986*, page 259, UAH, 1986. J.D. Rockefeller provided a \$5,000 personal gift to start the insulin outpatient service in the 1920's. Miss Kilgour (Eadie) recalled administering the first dose of insulin in Alberta to Dr. J.J. Ower the future UofA Dean of Medicine, in *To Teach This Art*, AARN, page 34, 1977.



5% hydrochloric acid, and established a bioassay for measuring serum calcium.<sup>(34)</sup>

Collip and Edmonton pediatrician Dr. D.B. Leitch, felt they had successfully treated a case of tetany with parathyroid extract, and recorded the accomplishment in the 1925 literature.<sup>(35)</sup> Collip's parathyroid experience was presented in the prestigious Harvey Lecture Series.<sup>(36)</sup>

### Awards

As early as 1924, academic accolades were being accorded Collip. The UofA awarded him a D.Sc. in 1924 for his work in isolating insulin.<sup>(37)</sup> The Provincial Government, by a unanimous resolution in the Legislature:<sup>(38)</sup>

*“Expressed it's gratitude to Dr. J.B. Collip ... (who) ... has conferred inestimable benefits on suffers in all parts of the world, and, by his generous and disinterested action in placing the discovery at the disposal of the public, has placed it within reach of all suffers at moderate cost”.*



Dr. James Bertram Collip, in the 1930s

In 1925 Collip was elected to the Royal College of Canada. This was followed by his election to the Royal Society of London in 1933.

In 1927 Dr. Collip resigned from the UofA during a trip to the Mayo Clinic, where he was taking his wife for medical reasons. Collip rescinded the letter two weeks later.<sup>(39)</sup> In December 1927 he submitted his resignation again, having decided to accept a position as the first Chairman of the Department of Biochemistry in Canada, at McGill.

He left the UofA department in the trustworthy hands of the future Dean, Dr. John W. Scott in 1928. His departure was momentarily interrupted when his car broke down in the middle of Edmonton's High Level Bridge.

### The Montreal and MRC Years 1928-1946

Specializing in endocrine research, Dr. Collip's McGill laboratory isolated and purified chorionic gonadotrophin, Premarin, and ACTH. The latter he used to treat his wife's asthma.<sup>(40)</sup> It improved her clinically, but the dose was so high that she developed Cushingoid features.

In 1934 Collip presented a paper at the CMA Annual Meeting in Calgary. Dr. Banting attended the meeting and gave a speech as well. In 1938 Dr. Collip was appointed to the Associate Committee for Medical Research of the National Research Council (NRC). The Chairman was Dr. (Sir) Frederick Banting. Following Banting's airplane crash death on February 21, 1941,<sup>(41)</sup> Dr. Collip was appointed to replace him. During WWII Collip was occupied performing research on wartime problems, organizing the medical research effort in Canada, sharing results with researchers in the United States, and accepting the editorship of the "Canadian Journal of Research" from 1944-56.<sup>(42)</sup>

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33. Barr, Murray L., Rossiter, R.L. "James Bertram Collip," page 244.
34. Noble, Robert L. "Memories of James Bertram Collip," page 1359.
35. Collip, J. Bertram, Leitch, D.B. "A Case of tetany treated with parathyroid," CMAJ 15: 59-60, 1925 and J.B. Collip's "Clinical use of the parathyroid hormone," CMAJ 15: 1158, 1925.
36. Noble, Robert L. "Memories of James Bertram Collip," page 1359.
37. Corbet, Elise A. *Frontiers of Medicine*, page 46.
38. Corbet, Elise A. *Frontiers of Medicine*, page 46.
39. Corbet, Elise A. *Frontiers of Medicine*, page 46. Before he left, Dr. Collip gave a speech to the CMA on the treatment of Pernicious Anemia, using an active extract from the liver. Calgary Medical Society minutes, December 6, 1927.
40. Wilson, Donald R. "James Bertram Collip," page 23.
41. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," page 248.
42. Noble, Robert L. "Memories of James Bertram Collip," page 1357.



*Drs. McEachern, Banting and Collip, at the CMA Convention, Calgary, 1934* 25-11

In 1941 Dr. Collip became the Head of the McGill Institute of Endocrinology and in 1946 he was appointed the first Director of the Division of Medical Research of the NRC. Collip also created the Western Canadian Regional Research Group.<sup>(43)</sup>

#### **Dean of Medicine at UWO 1947-1961**

In 1947 Dr. Collip accepted the offer of President Dr. G.E. Hall, to become the Dean of the Faculty of Medicine at the Western University of Western Ontario. Dr. Collip was also appointed the Director of the Collip Medical Research Laboratory. He remained the UWO Dean until 1961, when he retired.

#### **Awards, at the end of a Career, 1961-1965**

At the end of a very full life, with 249 publications to his credit,<sup>(44)</sup> spread over a fifty-one year period from 1914-1965, Collip had a world-wide reputation. Twelve Universities including nine in Canada, granted him honorary Doctorates. He received five Fellowships. Banting, Best and Collip were awarded the first FNG Starr Medal by the Canadian Medical Association for exemplary and humanitarian services to medicine in 1936. Collip received a CBE in 1943 and the Banting Medal in 1960.

Collip's research approach was characterized as restless, rapid and incisive, mixed with frequent changes of topic. He would drive across the country to attend medical meetings because of a fear of flying. His driving record remained accident free. A reticent speaker, he could captivate an audience when he spoke extemporaneously about his own work. He was beloved, enjoyed and respected wherever he worked, whether it was Edmonton, Montreal, London or abroad.<sup>(45)</sup>

Dr. Collip passed away following a stroke on June 19, 1965, at the age of seventy-two. As Dr. G.E. Hall modestly said in his obituary, "He was unusual in that he didn't make just one significant discovery in his life but many more thereafter".<sup>(46)</sup>

#### **Alberta Never Forgot Dr. Collip**

The University of Alberta acknowledged Collip's insulin and parathyroid research work, in the years that followed his departure. In 1942 the Collip medical research Club was established, thirty years after he had formed a similar Science Research Club at UofT's Trinity College. In 1959 while Dr. Collip and his wife were visiting the UofA, President Johns unveiled a bronze plaque in the Department of Biochemistry in honor of Collip's isolation of parathormone. Dr. Johns added, "No one else has made so great a contribution to the University of Alberta as has Dr. Collip and no name is more outstanding than his".<sup>(47)</sup> Three bound books containing the seventy-seven papers written at the UofA, along with a special issue of the Canadian Journal of Biochemistry and Physiology devoted to Collip, and special papers from his McGill years, were on display at the UofA that day.

In 1963 Dr. Scott dedicated his "History of the Faculty of Medicine 1913-1963" to Dr. Collip as My Teacher and former Chief. Mrs. Gladys Muttart, who was a diabetic under the care of endocrinologist Dr. D.R. Wilson, together with her husband, donated an electron microscope to the Department of Medicine, and a second electron microscope to the J.B. Collip

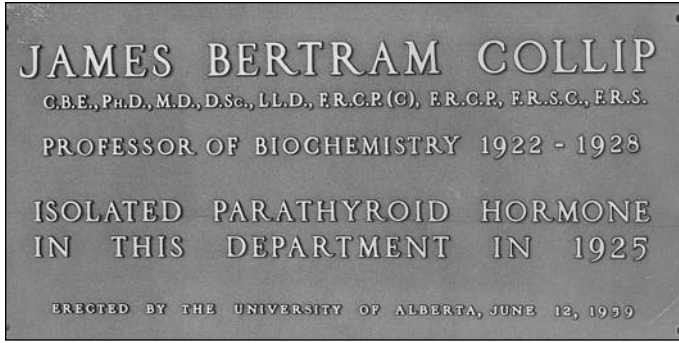
43. Noble, Robert L. "Memories of James Bertram Collip," page 1357.

44. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," pages 257-267.

45. Barr, Murray L., Rossiter, R.J. "James Bertram Collip," pages 254-255.

46. Hall, G. Edward Obituary. James Bertram Collip 1892-1965, CMAJ 93: 673, 1965.

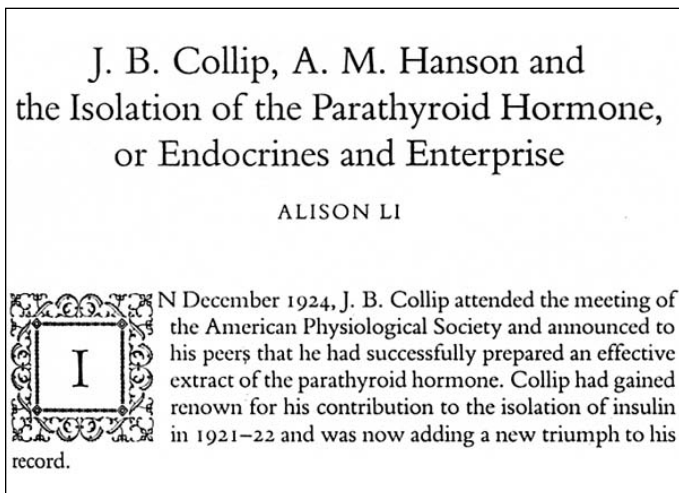
47. Editor, AMB "Doctor James Bertram Collip." A bronze plaque was placed in the Department of Biochemistry by UofA President Walter H. Johns, at a ceremony on June 12, 1959. Dr. Collip and his wife attended the unveiling. AMB 24(3): 156, August 1959.



*UofA Plaque commemorating Collip's discovery of the parathyroid hormone, Edmonton, 1959* <sup>25-12</sup>

Research Laboratory in the Department of Urology to study diabetic uropathy. The Muttarts also endowed the UofA Diabetic Treatment and Research Centre with \$1.2 million.<sup>(48)</sup>

In 1967 the Department of Medicine established the J.B. Collip Visiting Professorship.<sup>(49)</sup> In 2000 UofA researchers reported the first successful transplantation of insulin producing Islet of Langerhans cells, for the treatment of Type I or Juvenile Diabetes. UofA Drs. Lionel Shapiro and Ray Rajotte led the Project Team that worked for over twenty-five years, to develop the "Edmonton Protocol" for post infusion immunosuppression. A high percentage of Type 1 diabetics accepted into the protocol at the UofA have been able to discontinue their insulin completely.<sup>(50)</sup>



*Journal of the History of Medicine and Allied Sciences, October 1992*

Dr. Collip, who indirectly shared in the 1923 Nobel Prize, might have secured a second one if he had continued his research on ACTH from the adrenal gland. It yielded a Nobel award for a Mayo Clinic investigator. The research work of the Edmonton team may yet lead to more breakthroughs and major recognition for the UofA.

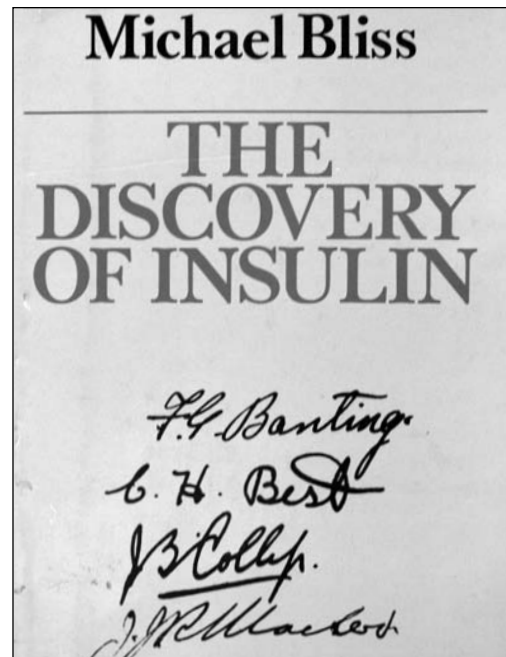
**The Collips**

The Collip family connection with Alberta, continued long after 1928. Three of the Collip children were born in Alberta: Margaret, Barbara and John. Barbara graduated with an MD from McGill in 1945. John took Anesthesia after the war and practiced at the Misericordia Hospital from 1950 onwards. Barbara had a daughter who entered medicine. A grandson graduated from UofA with an MD in 1990. In 2005 Dr. Collip was named one of Alberta's 100 Physicians of the Century.

**Related Profiles:** Archer, Rankin, Jamieson

**Related Perspectives:** The UofA and the Rockefeller Foundation

**Key Words:** Insulin, Diabetes, Parathormone, UofA 1920 Rockefeller grant, UofA Faculty of Medicine, 1st UofA MD class 1925, Medical Research



*The Discovery of Insulin by Michael Bliss*

48. Wilson, Donald R. "James Bertram Collip," page 23.

49. Corbet, Elise A. *Frontiers of Medicine*, page 101.

50. Shapiro, James, Cashman, Tony Two of Three National Transplantation Chairs were awarded to University of Alberta researchers. UofA Faculty of Medicine and Dentistry News 4(4): 4, June 2002. For more on the Edmonton Protocol see Shapiro, James et al, "Islet transplantation in seven patients with Type I Diabetes," *New England Journal of Medicine* 343: 230-238, 2000; and "Islet transplantation in Type 1 Diabetes mellitus," *CMAJ* 164(2): 255, January 23, 2001.

**THE COLLECTED SCIENTIFIC PAPERS  
OF  
JAMES BERTRAM COLLIP, M.A., M.D., Ph.D., D.Sc.**

**1913-1928**

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*Bound copies of a complete set of Collip's reprints were presented by the Scientific Research Committee of the UofA to Dr. Collip, and to the UofA Archives, Edmonton, 1929.*