THE EARLY HISTORY OF PATHOLOGY/LABORATORY MEDICINE AT THE UNIVERSITY OF ALBERTA, HER TEACHING HOSPITALS, AND THE PROVINCIAL LABORATORY

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A chronicle of Pathology in Alberta truly begins with the earliest pioneer physicians and surgeons who came to settle the North West. Pathology in the sense of studying the cause of disease (the Post Mortem examination and Bacteriology), or Laboratory Medicine in the sense of the study of bodily fluids (Clinical Chemistry and Hematology) and tissues (Surgical Pathology and Cytology), was probably carried out with varying degrees of sophistication by some of these pioneer medical men and women. However, there were no "full-time pathologists" as we know them today until 1907 – and it is doubtful that many of the earliest doctors in Alberta had microscopes, let alone spectrometers of their own!

The early history of Medicine in Alberta, as described for example by Dr. Heber Jamieson in 1947, (he was an Alberta pioneer and medical historian), or in the numerous papers produced for the Historical Bulletin of the Calgary Associate Clinic (CACHB), is a fascinating subject.To paraphrase H.W. Price (Calgary Clinic Historical Bulletin 1940):

> *"Woven in the rich tapestry of this historical tale are the explorers often accompanied by physicians in the 1820's, such as Dr. John Richardson and in 1849 Dr. John Rae; the North West and Hudson's Bay Fur Trading Companies with their "factors" often doctors in the 1860's (Dr. W.M. Mackay); the Red-Coated Mounties, many posts had duty surgeons (Dr. R.B. Nevitt, 1874); the coming of the steel, the railroad, with their own medical staff by 1885 (Dr. R.G. Brett); and the first settlers (including H.C. Wilson in Edmonton, 1882). Then the establishment of the first hospitals by nursing sisters (the Grey Nuns) and pioneer doctors - in Fort Mcleod 1874, St. Albert 1881, Medicine Hat 1889, Lethbridge NWMP/ mine hospital 1886, Calgary 1890, and Edmonton 1895."*

In 1892, when Edmonton became a city, a Municipal Board of Health was formed and a local doctor, Dr. E.A. Braithwaite, formerly an NWMP (North West Mounted Police) surgeon, was appointed Edmonton's Chief Medical Officer. For several years at this time, public health issues were managed at the local level.

On September 1, 1905, Alberta became a Province in the Canadian Confederation, and the Honorable A.C. Rutherford was the first Premier. Among other objectives, Rutherford not only envisaged that Alberta should have its own University, but eventually its own Medical School and both should be located in the capital, Edmonton.

It should be noted at this point that prior to Alberta becoming a Province, the laboratory needs of the area - the North West Territories - were partially met by the Manitoba Medical College founded in 1883, the Manitoba Provincial Laboratory established in 1897, directed by Dr. Gordon Bell, and by the Public Health Laboratory in Regina, developed in 1904, headed by Dr. George A. Charleton, an MD Bacteriologist.

As well, it is important to note that in 1906, the Strathcona Cottage Hospital was first opened in the old Barry house on 78th Avenue in the Town of Strathcona , population 3000, located on the South side of the North Saskatchewan river opposite Edmonton, population 12,000. The hospital had 15 beds but there was no space dedicated to a pathology laboratory.

Early in 1907, a Provincial Public Health Act was passed and a Provincial Health Service developed. At this time, Dr. Daniel G. Revell (1869-1954) was appointed Provincial Pathologist by premier Rutherford on the recommendation of Dr. R.G. Brett, to organize and equip a Public Health Laboratory "which from its inception was regarded by Rutherford, as the nucleus of a medical faculty". Dr. "Daddy" Revell should be considered as the **First Laboratory Physician in Alberta**. He was a 1900 graduate from the University of Toronto, where he was given the nickname "Daddy", a soubriquet that remained with him for the rest of his life. This was followed by six years of post graduate laboratory work and teaching at the University of Chicago, but mostly in Anatomy. After his appointment in Edmonton, he visited leading Public Health laboratories in Eastern Canada, Winnipeg, Regina and in

Minnesota, and brought back the methods and techniques appropriate to Alberta's needs. By late 1907, the Provincial Laboratory was located in the East end of the Terrace Building, on government grounds on the north side of the North Saskatchewan River and under the jurisdiction of the Department of Agriculture. According to an annual report of the time, some 600 "examinations" of various types were performed in the first year of operation.

In 1908, **The University of Alberta was Incorporated** and presided over by Henry Marshall Tory (a McGill graduate). Like Rutherford, Tory envisioned a university that would not only offer Humanities, the Sciences and the Classics, but Professions such as Law and Medicine. Within a few years, university buildings, located in Strathcona, began to appear. One of the first such buildings was called Athabasca Hall.

In 1911, mostly as part of Rutherford's and Tory's "grand vision", the Public Health Laboratory was transferred to the newly constructed Athabasca Hall on the University of Alberta campus. By this time, the Laboratory had three clerical employees and Mr. Harry Graham, a Chemist from the University of Toronto, to assist Dr. Revell and it came under joint jurisdiction of the University and the newly created Provincial Department of Health. The major activities of the laboratory, in these early times, were the detection of Typhoid Fever, Diptheria and Tuberculosis, the investigation of water and milk and a variety of foods, the preparation of vaccines, Medico Legal autopsies including histological examination, and chemical analysis of liquor! A laboratory report from 1910 noted that some 1000 "examinations of all types" were performed during the year.

The Faculty of Medicine at the University of Alberta was formed in 1912, the **First Medical School in Canada to Originate Within the Framework of an Established University**, although initially not a full degree granting program. Tory, the University President, acted as Dean of the Faculty until 1920. Also in 1912, the cities of Strathcona, population now 6000, and Edmonton, population now 25,000, amalgamated, and the High Level bridge connecting the two cities, and the Provincial Legislative Building in Edmonton, on the North bank, were under construction. Then between 1913 and 1914, a new 90 bed Strathcona Hospital was erected on the university campus on land donated by Tory on the South bank (in 1922, renamed the University Hospital). There was a small laboratory in this hospital, mainly for specimen collection, urinalysis, and blood smear examination usually performed by house staff. The hospital laboratory was initially "directed" by Drs. Revell and Rankin, and most of the more complicated tests of the times, glucose, BUN, culturing, etc. were performed at the Provincial Laboratory.

It should be noted here, as an interesting sidelight, that in 1912, Dr. Rosamund Leacock was the **First Pathologist in Calgary, Alberta**! She was appointed Pathologist to the Calgary General Hospital. She also operated her own private independent laboratory, where she carried out mostly "bacteriological tests". She happened to be the sister of Stephen Leacock, the famous Canadian humorist.

From this point on in the Edmonton story, the developing intimate (cosy) relationship between the professional staff of the Alberta Provincial Laboratory, the Faculty of Medicine's Departments of Pathology and Biochemistry, and the Strathcona (University) Hospital Laboratory service, (said to be a like a "Common Law Marriage"), will become quite obvious.

One of the first members of the Faculty of Medicine to be appointed in 1912, was the above noted Dr. Daniel Revell, who was named Professor and Chairman of the Anatomy Department, a post he would hold with distinction for the next 25 years. At this time, Revell resigned as Director of the Provincial Laboratory, although he continued to serve as consultant Pathologist to the four Edmonton hospitals, the Strathcona, the Edmonton General (founded in 1895), the Royal Alexandra (established in 1900), and the Misericordia Hospitals (opened in 1906). All these hospitals became more or less "teaching hospitals" for the medical students, particularly in the period between 1917 to 1922 when the Strathcona Hospital was deemed a Military Hospital and not available for clinical teaching.

The second Faculty member was Heber H. Moshier, a Calgarian and a 1909 University of Toronto graduate, who in 1912, was appointed a Professor of Physiology and Pharmacology, as well as Biochemistry, and in addition taught Pathology! For a short time in 1914, he also served as Superintendent of the Strathcona Hospital. In 1915, Moshier volunteered to form the University of Alberta's field ambulance service in France during WWI. In 1918, he was struck by shrapnel and was killed while driving an ambulance searching for a new hospital site.

In 1914, Allan C. Rankin, a McGill graduate in Medicine with post graduate training in Pathology and Public Health, was named Professor of

Bacteriology, and succeeded Revell as Director of the Provincial Laboratory, now controlled by the University. At the same time, a separate Industrial Laboratory Division, under J.A. Kelso, a chemist, was formed at the Provincial Laboratory, to deal with the increasing requirements for chemical testing of water, waste, milk, grain and liquor, etc. Soon after, Rankin joined the Royal Canadian Army Medical Corps, and served overseas with the First Canadian Contingent. After the war was over, he returned to his posts in Edmonton, but by 1919, in addition to being Director of the Provincial Laboratory, and Professor and Chair of Bacteriology. By 1920, he was appointed Dean of the Medical School, and in this role, also a member of the hospital's Advisory Board. He was the first but not the last Laboratory Physician to become a Dean or have multiple responsibilities! Rankin maintained all these positions with equanimity. After a six year interval for military service in WW2, he retired in 1945! He passed away in 1959. He was a talented, versatile, tireless individual to be sure.

In 1912, Heber C. Jamieson, a 1901 University of Toronto graduate and an MRCP in England, after which he practiced Clinical Medicine in New York, the Ottawa Valley and Red Deer, came to Edmonton as a Bacteriologist at the Provincial Laboratory. While Rankin enlisted from 1914 to 1918, Jamieson served as Acting Director at the Provincial Laboratory and also taught Pathology and Bacteriology, including a practical Laboratory course, one of the first of its kind. By 1922, Jamieson became a member of the Department of Medicine at the Medical School as well as a member of the Medical Advisory Board at the Strathcona (University) Hospital. He was a life long student of the Laboratory side of medicine, particularly in endocrinology and diseases of metabolism and initiated these divisions at the University Hospital. He was also an associate member of the University Department of Biochemistry in the early years, and later collaborated with J.B. Collip on the clinical application of insulin, and developed one of the first Diabetic Out Patient clinics. With Dr. F.H. Mewburn, Jamieson started the first Medico-Surgical ward rounds and medical refresher courses at the hospital. In 1924, a University Department of Medical History was formed, stimulated by Dr. Jamieson. He taught Medical Ethics in 1928, and was also a member of the Osler Club. He had a life long interest in Medical History and in 1929, was appointed Professor of the Department of the History of Medicine – a wonderful, fascinating career to be sure. Dr. Jamieson retired in 1947, and died in 1962.

Another member of the early faculty was the above noted J. Bertram Collip, a 1912 University of Toronto graduate in Biochemistry, arrived in 1915 (receiving a Ph.D soon after). Collip lectured in both Physiology and Biochemistry. In 1920, Collip was appointed Professor and Chairman of the Biochemistry Department. Shortly after, while on a "sabbatical leave" in Toronto, Collip participated in the discovery of Insulin. (More of Collip and Biochemistry later.) During WW I, Jamieson, Collip and Revell basically held the Medical School together.

In 1914, Morton E. Hall joined the Medical Faculty at the suggestion of one of his classmates, Heber Moshier. He had an MD from the University of Toronto in 1909, with post graduate training in Pathology in Toronto and Bellevue in New York City. He arrived in Edmonton early in 1914, where he was a Demonstrator of Pathology and was responsible for tissue diagnosis (Quick Sections) at the Strathcona Hospital (apparently using his own freezing microtome). But shortly after, he joined the RCAMC and served in Britain as well as at Kingston and Ottawa. He returned to Edmonton in 1919,and was employed as the **First Pathologist** at the new Royal Alexandra Hospital, which, since 1912, was located on 111th Avenue in Edmonton. As background, in 1913, a small room for simple urinalysis and blood collection was constructed in "the attic" of the RAH, the actual analyses being performed for the most part at the University.

The following comments are from an autobiographical note written by Hall in 1972.

> *"In May of 1919, the Edmonton Hospital Board recommended that I be employed as the pathologist (albeit on a part-time basis), acting on behalf of the Edmonton Hospital's Board and that I be paid $150 per month, and in addition, the sum of $50 monthly was provided for a laboratory assistant. I would be responsible for all pathology, bacteriology, and serological work arising in the Royal Alexandra Hospital, and all fees for such work would be collected by and belong to the hospital".*
> *"When I took over the laboratories on the roof of the fourth floor of the Royal Alexandra Hospital in November 1919, there was no equipment in the 14 foot square room to be used for the laboratory. I provided about $400 worth of equipment myself. I borrowed an old B & L microscope and the nursing staff had a*

> *small electric incubator which I found in the basement. Heating for tests was provided by a small oil burner. I also soon purchased a freezing microtome and the hospital employed a nursing sister, Miss Jean McNee as my assistant."*

Initially, many of the more complicated laboratory procedures continued to be performed for the RAH at the University's Department of Biochemistry, or at the Provincial Laboratory. Over the years, Dr. Hall not only directed the RAH laboratory providing mostly anatomic pathology service, but taught at the Medical School and joined a private clinical "group" practice. He was Secretary of the first reorganized Medical Staff at the Alex in 1929, and a member of the Executive of the recently formed (1920) Alberta Hospital Association. In 1934, Hall was joined by Dr. Dora Newson, a University of Alberta graduate, with Pathology training in Edmonton, who over the years, supervised each of the laboratory sections i.e., a "Clinical Pathologist". Later, she served in the military in WWII and then worked with Hall and later Dr. P.W. Davey until, in 1958, she departed the RAH and opened a private laboratory on Jasper Avenue in Edmonton. Meanwhile, Dr. Hall faithfully, although with some controversy, served the RAH until his retirement in 1949. Morton Hall passed away on Galiano Island, B.C. in 1975.

Between 1919 and 1923, the University received a considerable grant from the Rockefeller Institute, in part to assist the Medical School in hiring more staff which led to its expansion to a full degree granting faculty. Prior to this time, graduates completed their medical education at McGill or at the University of Toronto. In addition, these actions supported the development of a new Medical Building on campus, which opened in 1921. It housed not only the basic Medical Departments including Biochemistry, but the Provincial Laboratory moved in as well.

In 1919, DR. J. J. Ower (pronounced "OAR" as in a row boat!) first came to Edmonton. He was a 1909 McGill MD, receiving his pathology training with J.G. Adami at McGill and the Montreal General Hospital and further did work at the Mallory Institute in Boston. By 1920, he was appointed **The First Professor and Chairman of the Department of Pathology** in the Faculty of Medicine as well as Provincial Pathologist and Serologist at the Provincial Laboratory. Dr. R.M. Shaw joined Rankin and Ower and a staff of ten at the Provincial Laboratory at this time. (More about Shaw later.) In addition, the separation of Tissue Pathology (Anatomic Pathology) and Bacteriology services at the Provincial Laboratory became more defined. In 1921, both the Department of Pathology and the Provincial Laboratory relocated to the new Medical Building. By this period, the Provincial Laboratory was carrying out annually almost 6,400 examinations, including post mortem examinations.

Dr. Ower, "Johnnie" to his close friends, played a dominant role in Edmonton for many years, becoming the Faculty of Medicine's Second Dean in 1945. He was considered a demanding, but excellent teacher, assisting students as much as possible, even entertaining some of "his favorites" in his own home. He had diversified interests, studied languages (French and Spanish), enjoyed playing the "horses" – he was called the "Two Buck Bettor". Ower was a Scoutmaster for many years, known as "Brown Owl", often seen wearing full scout regalia around the campus. In 1939, he received Scouting's highest honor – "The Silver Acorn Award". Dr. Ower was the founder of many of the "Scientific Reporting Clubs", a popular phenomenon of the times in Edmonton. He was one of the few doctors of the era to treat women as "equals". One of his important research activities was studying the immunology of tuberculosis and the role of BCG in its prevention.

In 1924, the Department of Health introduced a regulation that all tissues removed at surgery should be examined by a Pathologist. Ostensibly, this action was in part because Alberta, at the time, had one of the highest post operative death rates in the country. If a hospital did not have a pathologist, the material should be submitted to the Provincial Laboratory for examination. Ower provided Surgical Pathology services not only to the Provincial Laboratory and the University Hospital, but also on occasion, to the General, the Misericordia and the Royal Alexandra Hospitals - often by walking or cycling across the High Level Bridge! In the winter time, he wore "a short overcoat over his white lab coat with a red scarf around his neck, and a brown beret".

When Rankin was appointed Director of Hygiene for Canada's Military Service in 1939, Dr. Ower was not only appointed Acting Dean, but Acting Director at the Provincial Laboratory, in addition to continuing as "Provincial Pathologist". In a 1941 report, he noted that the number of tissue specimens examined at the Provincial Laboratory had increased from 1500 in 1924, to 9500 in 1939! He faced severe staffing problems at both the University and the Provincial Laboratory during these years, in part related to

"accelerated programs" for potential military, and in part due to the loss of staff members to the RCAMC. After the war, many of the returning faculty soon retired, accelerating the difficulties. Then, Dr. Ower also had to face space shortages, as well as proposed curriculum changes. He must have done well "Acting" however, because in 1946, he was appointed full time Dean. Dr. Shaw took over directing the Provincial Laboratory at the time. Unfortunately, in 1948, Dr. Ower had to step down from the Dean's Office because of failing health as the result of the complications of diabetes. In spite of all these responsibilities, and his poor health, Ower was one of the founders of the Alberta Society of Pathologists in 1948, and of the Canadian Association of Pathologists in 1949. Also, he continued to teach, and hold the Chair of Pathology and attend meetings until 1951, when he fully retired. In 1959, he received an Honorary Doctor of Law degree from McGill. It was said at the time:

> *"Dr. Ower was a stimulating leader, an able administrator, a man of singular directness, with energy of mind and uncompromising in his standards, yet with a natural charm and boyish spirit."*

Dr. "Johnnie" Ower died in 1960.

Going back in time, in 1924 Harold M. Vango of London, England, was appointed Assistant Pathologist at the Provincial Laboratory and by 1925, was a Lecturer and later an Assistant Professor in the University Department of Pathology. Vango was particularly adept in the areas of Medical Jurisprudence, Ballistics, and Forensic Pathology. In 1914, Dr. Vango had joined Dr. Revell as a technician in the Anatomy Department. He soon joined the RCAMC - like many other faculty members, but in 1918, returned to Edmonton, completed the three year Medical School program of the time, and in 1923 received an MD from McGill. He did post graduate studies in Edinburgh and in Vienna before again returning to Edmonton. Vango was active in the Academy of Medicine and was its Secretary in 1930. He was a violinist of no mean reputation, in fact second violinist with the Edmonton Symphony Orchestra. Unfortunately, Harold Vango died in 1931 at the age of 36 from Septicemia, as the result of a wound sustained while performing an autopsy.

In July 1932, Dr. John Macgregor, a 1930 Alberta graduate with post graduate training in General Pathology in Edmonton and Montreal, joined the staff as Lecturer in the University Department of Pathology, and was also appointed Assistant Pathologist at the Provincial Laboratory. His starting annual salary was purported to be $2200! He was summoned to Edmonton half way through his training program at McGill, after the untimely death of his mentor and colleague, Dr. Vango. Even though Dr. Macgregor's "formal training" was therefore somewhat shortened, his education and learning continued, due to the large volume and great variety of material available for him to study at the Provincial Laboratory – about 10,000 surgical specimens and 200 post mortem exams annually since the late 1930's. In addition, he attended seminars and further post graduate studies at Johns Hopkins in Baltimore, the Mayo Clinic in Minnesota and Memorial Hospital in New York City. Later, he even spent time in Costa Rica studying tropical diseases to prepare him to recognize these conditions in troops returning from the war. Therefore, Dr. Macgregor very quickly obtained an unusually broad experience and developed a high degree of competency in Surgical Pathology, and in particular, a remarkable ability to give accurate, reliable diagnosis on "Quick Section". He presented regular clinical pathological conferences, complication rounds, and for over 25 years, chaired weekly city wide Pathology review sessions. Because of his service and teaching workload, Macgregor had little time for basic research, but had a special interest in Breast Pathology, and made a considerable contribution to the literature on this subject. Dr. Macgregor was a true champion of medical students and personally carried the major part of the lecturing in Pathology. He was affectionately known to his students as "Black Mac", and much later, was named an Honorary Class President. Mcgregor inspired many young students to become pathologists, including Barry Pierce who went on the Chair the pathology departments in Pittsburgh and then Denver; Foster Scott who eventually headed the program in Albany, New York and Gordon Bain who followed him as Chair at the University of Alberta. In addition, one of Dr. Macgregor's grand daughters presently practices Pathology in Edmonton!

For over fifteen years, Drs. Ower and Macgregor not only provided Anatomic Pathology service to the entire province, but "administered the Provincial Laboratory" virtually by themselves, and when in 1945, Ower moved to a full time position in the Dean's Office, Macgregor was basically "alone". However, Ower and Macgregor would be the first to admit that they could not have done it without a "supporting cast" of dedicated technologists and clerical staff, interns, medical and surgical residents,

bacteriologists, chemists and the absolutely essential "dieners" (Morgue Assistants).

Macgregor was promoted to the rank of Professor of Pathology in 1949, and in 1951, after Dr. Ower's retirement, was appointed Professor and Head of the University Department of Pathology, Chief Provincial Pathologist and in charge of the University Hospital's Clinical Laboratories, called a Division in the early days. Dr. Macgregor organized a training program in Laboratory Medicine at this time and a few years later, the program was fully approved by the Royal College of Physicians and Surgeons of Canada, and continued to function for over 50 years.

Dr. Macgregor held many professional offices during his career, including President of the Alberta Medical Association in 1958. He was nominated by the Nominating Committee of the AMA Board and then elected at an annual meeting, being opposed by none other than Dr. Charles Allard who was nominated from the floor, attesting to Macgregor's stature in the medical community. He became active in the Canadian Association of Pathologists, serving on various committees on laboratory technologist training, and was President in 1960. Throughout his life, in addition to all the above, Macgregor actively pursued his love and interest in classical music. He was a great tenor and took part in musical and operatic productions and with the local men's Glee Clubs and church choirs. Once, when he was on the Executive of the Edmonton Academy of Medicine (it's President in 1952), he was a member of a Barber Shop Quartet which sang at the Academy's 50th Annual Banquet. Dr. John Macgregor was Professor and Chairman for almost twenty years until his retirement in 1970. He was then named an Emeritus Professor and continued to work in the Department, and even chaired the city Pathology rounds until 1975. Dr. Macgregor died on February 1987, at the age of 81 years.

In 1950, Macgregor recruited Dr. R.E. (Ted) Bell, a 1942 University of Alberta graduate with training in Clinical Pathology in London and the Mayo Clinic and military service, to direct the hospital's Clinical Laboratories. In 1951, he became one of the first physicians accredited and registered in Alberta as a Clinical Pathologist. By 1955, the Division was renamed the Department of Laboratory Medicine. Bell was active in many areas of education, research and development of the quality control in Clinical Pathology. By this point in time, clinical chemistry testing had undergone explosive expansion and within ten years, most of this testing was "automated". Bell set up the first radio isotope laboratory at the hospital in 1954 and developed the Medical Laboratory Science Technology Training Program. In 1957, Dr. Bell became wheelchair bound, as the result of polio, which did not slow him down. He was joined at this time, by Dr. Harold Bell (no relation), another University of Alberta graduate, with post graduate training at the Mayo Clinic and in Boston. Dr. Don Buchanan, a MD, ChB from Glasgow, who had come to Edmonton to run the Red Cross Blood Transfusion Service in 1949, was cross appointed to the hospital's Department of Laboratory Medicine. Dr. Buchanan, a gentlemen's "gentleman" headed the Red Cross Unit until 1978, housed in 1954 in new quarters on 106thStreet in Edmonton. In 1966, R.E. Bell directed the College of Physicians and Surgeons of Alberta's program on Laboratory Accreditation. In addition, Bell founded the medical biochemists' committees of the Royal College, and the CAP's Intersociety Council of the 1950's.

After a short illness, Dr. Bell passed away in 1973. "Ted played a unique and important role in all laboratory activities. We remember him not only because of his contribution but we admired the courage with which he accepted his physical handicap" (History of the CAP 1994)

In 1959, the two "Bells" were joined by Donald J. Campbell, an Edmontonian and an honors chemist from the Department of Chemistry in the Faculty of Science at the University of Alberta with a PhD from Purdue in Indiana. Campbell had cross appointments in the hospital laboratory as well as in the University Department of Biochemistry. He was instrumental in the development of the chemistry side of the university hospital laboratory as well as training programs for biochemists and laboratory technologists. Campbell departed for the greener pastures of Vancouver in 1972.

As in most parts of the country, the Post World War II era brought considerable change to the Edmonton scene. After1945, the professional staffs of the Provincial Laboratory, the Faculty of Medicine and University Hospital laboratories expanded to cope with the markedly increasing work loads and the technical advances including the switch to paraffin sections, automated tissue processing, immuno-staining for marker proteins and the routine use of the electron microscope. Coming on staff with Dr. Macgregor during the mid 1950's were Dr. Gordon Bain, Dr. R.J. "Bob" Swallow, and Dr. Ted Shnitka, all University of Alberta graduates, with much of their

post graduate Pathology training in Edmonton or in the USA. As has been noted, Dr. Bain, in 1970, followed by Dr. Shnitka in 1980, became University Pathology Department Chairmen.

In 1961, Dr. Ted Kasper, also a University of Alberta graduate, after four years Pathology/Cytology training in Salt lake City, Utah, returned to Alberta and established the **First Cytology Service** at the Provincial Laboratory, including an excellent training program for Cytology Technologists. Because of the ever increasing development of the Science of Cytology and the availability of cytology services in the community at large, the Provincial Laboratory withdrew provision of such services. In 1970, Kasper, with Dr. N. John Ball, opened an independent laboratory in the Le Marchand Building.

In 1946, Dr. Sam Hanson, a 1938 University of Alberta graduate with military service and post graduate work in Toronto, was appointed Director of the Department of Laboratory Medicine at the Edmonton General Hospital, where he would serve for the next 40 years! In 1955, he joined Dr. Gordon Macdonald in a private independent laboratory operation. After Macdonald's death in 1964, the laboratory was called Hanson & Associates, was located in the Professional Building, and would markedly expand over the next ten years.

Dr. James H. Stirrat, a Glaswegian, came on the scene in 1948 as an Assistant Bacteriologist at the Provincial Laboratory, but later moved over to the University Department of Pathology as Lecturer in Pathology. Stirrat became particularly adept in the field of Forensic Pathology. He later moved to the Misericordia Hospital as the Chief Pathologist from 1965 to 1972. In 1969, he opened an independent laboratory at the Meadow Lark Shopping Center in Edmonton.

Also coming on stream as an Anatomic Pathologist for a short time (a year) at the Provincial Laboratory and the University Pathology Department in 1950 was Dr. Douglas Waugh, of Queen's, and McGill. One year later Dr. Gordon H. Macdonald, a University of Alberta MD, with post graduate training at the Sunnybrook Hospital in Toronto joined the Pathology staff and then relocated and between 1952 and 1958 directed the Pathology Laboratory at the Misericordia Hospital. From 1958 to 1964, he was also Vice President Medical at the Misericordia Hospital. In 1951, Macdonald also operated a private laboratory in the Northgate Building in North Edmonton, joined in 1955 by Dr. Hanson. Unfortunately, as previously indicated, Dr. Macdonald died suddenly at an early age in 1964.

At the Royal Alexandra Hospital, there were a series of Pathologists following Morton Hall's departure in 1949. Dr. John Sturdy, a 1939 University of Alberta graduate, with military service and post graduate training in Toronto, London and the Mayo Clinic, came in 1948. Apparently his salary was $6,000 annually. In 1950, he departed for Vancouver as Director at St. Paul's Hospital, at twice the income! Then came Dr. W.B.(Bill) Leach, a Toronto graduate, who stayed for only 18 months, leaving for Vancouver in June 1952, apparently for more training. He was followed briefly,(less than 8 months), by M.J. "Matt" Lynch, of Hamilton Ontario, who had even brought his own technologist! In July 1952, Dr. Peter W. Davey, a Queen's graduate with Pathology training at the Kingston General Hospital, arranged to come to the RAH to complete his resident training program with Leach and Newson and as "advisor", Dr. Macgregor, at the University. However, by the time Davey arrived, both Leach and Lynch had departed! Between Macgregor, Ower, Newson and the young Davey, they, in effect, "ran the RAH laboratory" until in the fall of 1953, when Dr. Davey was certified in Pathology by the Royal College of Physicians and Surgeons of Canada. He was then appointed Director of the Department of Laboratory Medicine at the RAH, a post he would hold with distinction for the next 35 years!

Biochemistry

In so far as Biochemistry/Clinical Chemistry/ Pathological Chemistry, etc. in Edmonton are concerned, in the early years of the Medical School, there was no actual Department of Biochemistry. It probably takes more than two professionals and their technical and clerical aides to make a department? Lectures and practical courses were initially presented by professors from the Faculties of Science or Arts, such as A.L. Lehman. In 1912, Dr. Heber Moshier, a 1909 University of Toronto medical graduate, was named a Professor of Biochemistry, Physiology and Pharmacology, but he also taught Pathology! In 1915, J.B. Collip arrived as a lecturer in Biochemistry, Physiology and Pharmacology and soon completed his PhD thesis begun at the University of Toronto. As has been noted, he, and Drs. Revell and Jamieson, basically held the Medical School together during WWI.

Around 1918, a full Department of Biochemistry was formed in the Medical Faculty and Jamieson was

appointed as part time Chairman. In 1920, Dr. Ardry Downs, an MD from Pennsylvania with a DSc from McGill, was appointed full time Chairman of the Department of Biochemistry. He lasted only a year as Head, though later he continued to lecture in Chemistry for several years, apparently "never changing his lecture notes"! He moved on to become Head of the Department of Physiology and Pharmacology in 1922, a post he held until 1948.

In 1921, Dr. Collip (noted previously) was appointed Biochemistry Department Chairman. Shortly after, Collip's department moved into palatial quarters in the New Medical Building. Collip served the University as Head until 1928. His career and life are so well known that little more will be said here, except to note that shortly after his appointment, he went on a traveling fellowship to Toronto (supported by a Rockefeller grant) and during this period, was instrumental in the discovery of Insulin by isolating its "active portion". The rest is history. On his return to Edmonton and with increased funding from a variety of sources, he continued to develop his department. Not only did Collip subsequently carry out outstanding research relative to parathyroid hormone and calcium metabolism, but in 1926, he also obtained a medical degree at University of Alberta, more or less in his "spare time". Working in the department during these years was Dr. J.W. Scott, a 1914 University of Alberta graduate, who did most of the teaching while Collip was "investigating" in the laboratory. In fact, Collip and Scott were not only professional colleagues but became great friends. Scott later became Chief of Medicine and in 1948, Dean of Medicine. (Later in 1963, Scott dedicated his History of Alberta's Faculty of Medicine to Collip.) During these early years, Collip's laboratory provided analyses of the more complicated tests that were required by the teaching hospitals in the Edmonton area. In 1928, Collip was offered a position as Head of the Biochemistry Department at McGill, to succeed his former mentor A.B. Macullum, and for a lot of reasons he departed Edmonton for Montreal, "a deal he could not refuse".

Following Collip's departure in 1928, Dr Scott was appointed Acting Chief until Dr. George Hunter, a University of Toronto Biochemist was appointed Professor and Chair of the Department. Initially, the department functioned well under Hunter and included physicians of the Department of Medicine such as the afore-mentioned Dr. John W. Scott, who during these years, was also in charge of the hospitals' Medical Biochemistry Laboratory. In 1938, Dr. Max Cantor, a University of Manitoba MD, with post graduate training in Endocrinology in Toronto, worked with Hunter and Scott. During this time, the Department apparently provided biochemical testing to the RAH at $2 per test! During WWII, Hunter promoted the use of wild rose hips as a rich dietary source of Vitamin C. In the late 1940's, the Department was particularly interested in methods of preserving blood for transfusion and Cantor was an active participant in the founding of Edmonton's Red Cross Blood Transfusion Service in 1947. Cantor was also interested in Medical History, and became an Editor of the Alberta Medical Bulletin. In 1948, he was appointed Chief Provincial Coroner, a role he would play for many years thereafter. However, for the most part, the Department of Biochemistry was weak under Hunter; under graduate teaching became out of date, there was no PhD program and little fundamental research carried out. Hunter resigned in 1948, under considerable duress. Dr. J.B. Collip was a hard act to follow!

In 1949, Dr. Bruce Collier, a University of Toronto PhD, who had already directed biochemistry services in Nova Scotia and Saskatchewan, was appointed Professor and Chairman of the Department of Biochemistry. He fostered research again, and brought in top notch graduate students. By 1953, the department offered a PhD program. Collier enjoyed teaching and was good at it, he emphasized "the biological significance of biochemical phenomena". He was elected a Fellow of the Royal Society of Canada in 1954. He had an appointment at the University Hospital and contributed to method development within the Division (and later the Department) of Laboratory Medicine which was by this time directed by Dr. R.E. Bell. In 1959, the University Department of Biochemistry discontinued its community biochemical analytical service, turning it over to the urban hospitals and independent laboratories, most of which, by this period, had efficient laboratories of their own. Collier resigned as Head in 1961, but continued to teach and serve the University in a variety of ways until full retirement in1971. Dr. Collier died in 1992 at age 87. To honor Dr. Collier's contributions to the Faculty of Medicine, the H.B. Collier Gold Medal in Medical Laboratory Science was established.

Microbiology

Recall that, as in most of Canada, in the early days, Bacteriology was considered "a part" of Pathology. Lectures on this subject, or necessary services, were provided by the Medical Schools' Pathology

Departments, if they existed, or by Provincial Public Health Laboratories. As has been already described, Drs. Heber Moshier and Heber Jamieson of the University of Alberta taught Bacteriology and acted as consultants to the hospitals during the first years of the Medical School. In 1914, Dr. Allan Rankin was named a Professor of Bacteriology and at the same time, Director of the Provincial Laboratory of Public Health, succeeding Dr. Daniel Revell. Up to this time however, there was no separate Department of Bacteriology in the Medical Faculty. While Rankin "went to war", Jamieson was appointed Acting Director of the Provincial Laboratory.

In 1920, a Department of Medical Bacteriology was officially formed in the Faculty of Medicine, and Rankin, home from the war, was its Chairman, as well as being named Dean of Medicine. Even as Dean, Rankin always maintained an active interest in communicable diseases and epidemiology. At this time, the New Medical Building was completed, and both the Provincial Laboratory and the University Bacteriology Department were relocated to its new quarters.

In 1919, Dr. Robert M. Shaw, a 1906 McGill MD, with military service followed by a D.P.H. at McGill, came on staff at the Provincial Laboratory. He was appointed as Assistant Bacteriologist in the newly formed University Department of Bacteriology. By 1931, Shaw was a full Professor. At this point, the separation of Anatomic Pathology and Bacteriology services at the Provincial Laboratory became more definite. Shaw's research interests included the field of immunology and vaccine development. He was described as a "kind, considerate gentleman with courtly manners". To take some of the load away from the Provincial Laboratory, in 1939, an independent Animal Disease Laboratory was established, directed by veterinarian Dr. T. L. Jones. Then in 1940, to further assist Dr. Shaw, Dr. J.A. Romeyn was appointed an Assistant Bacteriologist. In 1945, while Rankin was at World War II, and Ower had become Dean, Shaw was appointed Director of the Provincial Laboratory, as well as named Chairman of the University Department of Bacteriology. Dr. Shaw gave a long and faithful service to both these positions until he retired in 1949, although he was rarely seen "on the wards" of the University Hospital. In 1951, he was named an Honorary Member of the Canadian Medical Association.

In 1949, Dr. Robert D. Stuart, an MD, DPH from Glasgow, was appointed Professor and Chairman of the University's Department of Bacteriology, and a year later, was named Director of the Provincial Laboratory. By then, the Provincial Laboratory had moved into a new separate building on the University campus near the University Hospital. In 1950, a "Branch" Public Health Laboratory was opened at the Baker Sanitorium in Calgary, directed for over 20 years by Dr. Dennis Shute, who was joined in 1952, by Dr. Erica Crichton, an MB ChB from Scotland. Over the years, Stuart's Department in Edmonton included a number of outstanding Bacteriologists such as Drs. Tats Yamamota, Gordon Myers, James N. Campbell, J. Penikett who was acting Director at the Provincial Laboratory in the late 1960's, and Steve Hnatko. Around 1960, the University Department of Bacteriology was split into the Department of Microbiology in the Faculty of Science, headed by Dr.Gordon Myers, and Medical Microbiology in the Faculty of Medicine, chaired by Dr. F. L. Jackson. Meanwhile, Dr. Stuart directed the Provincial Laboratory until 1967, and was followed by Dr. J.M. Dixon, a 1950 Wales MBChB. In 1974, the Provincial Laboratory withdrew its Anatomic Pathology and Cytology Services, leaving them to the major urban hospitals and their own Pathologists, or to the private laboratories.

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