

# History 2 – Bruneau to Dawson

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### 7. Oliver T. Bruneau (McGill: 1842- 1856)

Oliver Bruneau was the first francophone French-Canadian to teach at McGill <sup>Hanaway 1:149</sup>. Upon the death of John Stephenson, Bruneau became Chair of the Anatomy Department from 1846 to 1856. At first he had difficulty in giving lectures in English, but with time his fluency and teaching greatly improved. His colleagues were impressed by his ability to hold the attention of the class in these early days of poor student discipline. These were rough and ready days! Even William Osler, when faced with a disruptive group of students during in his early professorship, had pulled off his frock coat and challenged the best man in the class to step forward and fight it out with him! No one dared, and peace and quiet had returned <sup>Bliss: 80</sup>.

## **8. William Fraser (McGill: 1845-1872)**

William Fraser was McGill's first Histology teacher, from 1849-1872. An M.D. graduate of Glasgow University, he came to Montreal and obtained a second M.D. from McGill <sup>Hanaway 1: 156-157</sup>. At that time, Histology was part of the "Institutes of Medicine" (consisting of Histology, Physiology, Embryology and Pathology), of which Fraser was the professor. Typical of the Faculty of Medicine at this time, Fraser had little more knowledge of histology than his students, and simply went through the textbook chapter by chapter. He was uninspired but spoke slowly enough for students to take notes. There was no laboratory experience for the students.

## **9. George W. Campbell (McGill: 1835-1882) and the Montreal Teaching Hospitals**

George W. Campbell was McGill's first professor of Surgery and Practical Anatomy <sup>Hanaway 1:60, 150</sup>. His lectures in Practical Anatomy were precise, and with a strong anatomical and pathological correlation <sup>Hanaway 1:6</sup>. He came from Scotland to Canada and soon became an attending physician at the Montreal General Hospital. With a rugged and dominant personality, more inclined to action than words, he quickly established a large surgical practice and made a fortune. As a surgeon in the pre-anesthetic and pre-antiseptic era, he was fast and decisive. In those days, patients suffered incredibly from pain during surgery, and a good surgeon had to be compassionate but also undaunted by the patient's suffering. Campbell was both. He operated in his ordinary shirt and cuffs, as was the custom of the time, and come away unstained. In these pre-antiseptic days, surgical practice was limited due to the high mortality of infection. Prior to the germ theory and knowledge of infection, there was no recognition of the need of sterile technique and cleanliness. The surgeons operated in either street clothes or in blood-stained frock coats left at the hospital. Their hair and faces were never covered. Their hands, the patient, and the instruments were rarely washed except after surgery to clean off the blood. The wooden operating table was stained with years of pus and blood <sup>Hanaway 1:64</sup>.

Campbell was Dean of Medicine from 1872-1882, and he gave the memorable convocation address on the importance of Anatomy to medical practice described earlier in this work. Campbell's other lasting contribution to McGill was the recruitment of reformers such as Osler, Shephard and Roddick <sup>Hanaway 1:150</sup>.

### **a. Early History of Hospitals**

Hospitals, as we know them today, did not exist in classical Greece or Rome. Prior to becoming a Christian state, the Roman Empire had some facilities for the relief of slaves and soldiers but no

institutions for the sick in general <sup>Porter 65, 208</sup>. Hospitals were mainly a Christian innovation, reflecting the charitable philosophy of Christ. The Christian hospital started out as a “hospice”, i.e. a philanthropic institution offering hospitality to the poor. This was its primary emphasis, rather than medical care <sup>Ackerknecht: 93</sup>. By 450 A.D. there were hospitals throughout most of the now-Christianized Roman Empire. Most of these were small, but some in Constantinople and Jerusalem had over 200 beds <sup>Porter 65</sup>. In the later years of the Eastern Roman Empire (1136), the sophisticated Pantocrator hospital in Constantinople had a trained medical staff dealing with various illnesses and also providing medical teaching <sup>Porter 209</sup>. The Muslim religion which arose in the 700’s shared Christianity’s charitable attitude, and by the 1000’s there were large hospitals in every major Muslim town <sup>Porter 69</sup>.

In the later middle ages, these institutions were copied in Western Europe, and by 1250 some towns in France and northern Italy had large hospitals caring for the sick <sup>Porter 69-71</sup>. These medieval hospitals were usually associated with monasteries and more emphasis was placed on the patient dying in a state of grace than on medical treatments to prolong temporal life <sup>Porter 65, 209</sup>. It was most important to prepare the patient for a good death, leading to an eternal life in heaven. Thus a priest was needed at the bedside as well as a doctor.

In Britain, the dissolution of the monasteries by Henry VIII in 1536 closed practically all of these religious hospitals. New secular hospitals were established in London such as St Bartholomew’s (1123), St Thomas (1215) and the mental hospital Bethlem. Several more hospitals were added in the Age of Enlightenment with the foundation of Westminster (1720), Guy’s (1724), St. Georges (1733), London (1740) Middlesex (1745), and the Edinburgh Royal Infirmary (1729). <sup>Porter 213</sup>. These general hospitals mainly provided the poor people with treatment, food, shelter, and opportunities for convalescence. They restricted themselves to fairly minor complaints and excluded infectious cases since they could not be cured and risked spreading rapidly.

Before 1700, there was little connection between hospitals and surgery. For centuries, surgery was performed on the kitchen table, on the battlefield, or below decks on a warship <sup>Porter: 202</sup>. The chances of a patient’s survival were much greater outside of the infectious environment of a hospital. If patients could afford it, most private operations were done in the patient’s home.

In North America, the first hospital was the Hospital of Jesus founded by Cortes in Mexico and is still in continuous operation since that date until today <sup>Persaud 2: 286</sup>. In the English American Colonies, the first general hospital was in Philadelphia in 1751 followed by the Massachusetts General Hospital in 1811 <sup>Porter 214</sup>. Both of these institutions became major teaching hospitals.

## **b. The Montreal General Hospital**

In 1870, the Montreal General Hospital on Dorchester Street (now René-Levesque) accommodated 150 patients. It was mostly a charity institution for the poor. Most patients of means avoided hospitals if at all possible. The wards were ill-lighted, ill-ventilated, and the whole building was overrun with rats and cockroaches. Most medical patients were admitted to the hospital with an infectious disease (i.e. typhoid, tuberculosis, dysentery, bronchitis, pneumonia, syphilis). Some had had strokes or heart attacks <sup>Hanaway 2: 31</sup>.

By the 1880's the physical condition of the Montreal General Hospital had become even more deplorable! The poorly ventilated wards had dark and dingy walls infested with roaches, needing paint and dimly lit only by gaslight <sup>Hanaway 2:16</sup>. The hospital air was a nauseating soup of odors, dominated by the smell of urine because patients' samples were kept by their bedsides for the convenience of medical students' testing <sup>Bliss: 96</sup>. Tuberculosis patients were subjected to the smoke from their neighbors' pipes. Toilet and bathroom facilities were totally inadequate and in disrepair. Temperatures were too hot in summer and too cold in winter. Conditions were so crowded that some patients had to sleep on the floor. Separating patients with infectious diseases such as typhoid, tuberculosis and diphtheria was impossible. Noisy mental patients might be confined to special rooms in the basement. Small wonder that it was difficult to recruit young women to act as nurses <sup>Hanaway 2:17</sup>! Thus most of the nursing staff were tough old women, adept at stealing the alcoholic stimulants liberally prescribed for the patients. <sup>Bliss 61</sup> The operating room, designed 40 years before antisepsis, was an open theatre where students stood in tiers to observe surgical procedures. As mentioned previously, the table, floor and walls were made of wood and impossible to clean. The surgical staff wore street clothes, and students could wander in and out oblivious of the risk of infection. The small dark autopsy room was located in the basement next to the mental patients. Yet it was in this room that Osler performed 789 post-mortems between 1874 and 1884. In the late 1880's, various donations enabled the renovation of the old buildings along with the building of new separate surgical wings with modern operating rooms <sup>Hanaway 2:17-18</sup>.

### **c. Royal Victoria Hospital**

In 1887, George Stephen and Donald Smith (Lord Strathcona) donated \$500,000 each towards the building of the new Royal Victoria Hospital to be situated on the slope of Mount Royal, north of the original Medical Building. This impressive baronial structure with stone turrets had 265 beds, electrical lighting with gaslight backup, and central heating. Many staff members of the Montreal General Hospital eagerly applied for positions in this new facility. It was anticipated that everything would be better, and hopefully there would be no rats <sup>Hanaway 2:22</sup>!

In recent times, the relation of surgery to hospitals has changed radically from previous eras. The introduction of asepsis has made hospital more safe for patients, and transportation facilities such as improved highways, automobiles, and ambulance services have made rapid transportation to hospitals feasible <sup>Porter 202, 245</sup>.

In the last two centuries, hospitals have changed from little more than poor-houses to the nerve center of modern medicine. Technical innovations such as operative facilities and instruments as well as advanced diagnostic tools have made the hospital indispensable to modern surgery. Unfortunately this newer technology has also made the modern hospital astronomically expensive, and one of the great challenges of future society will be to determine what level of advanced care the population can afford.

#### **10. William Scott (McGill: 1856-1883)**

William Scott was McGill's professor of Anatomy from 1856 until his death in 1883 <sup>Hanaway 1: 51</sup>. His family had migrated from England to Montreal when he was eight years old. He initially studied medicine as an apprentice to Drs. Andrew Holmes and William McCullough, and then received his M.D. from McGill in 1844. He was Demonstrator of Anatomy from 1845-1851, Professor of Clinical Surgery from 1852-1856, and Professor of Anatomy from 1856-1883. A product of his time, he had only a textbook knowledge of Anatomy. While a devoted teacher, he lectured by reading verbatim from a current textbook of Anatomy. He never used blackboard drawings, but used bones passed around the class and occasional dissected specimens for demonstration purposes. The students were not inspired by his teaching, and he never went to the dissecting room <sup>Hanaway 1:21, 161</sup>.



William Scott in 1867

From: Hanaway 1: 52

The demonstrator in the anatomy lab from 1868-1874 was William Fuller who also had no natural talent for teaching or organization <sup>Hanaway 1: 52</sup>. Dissection was carried out only on the upper and lower limbs, neck, and back. There was no real assistance from the demonstrator. The examinations at the end of third year were written and oral, the latter consisting of a brief questioning period by the professor (outside of the laboratory). They were purely a test of memory of anatomical facts and no actual dissections of specimens were shown. <sup>Persaud 2: 306</sup>.

Dissection of the thorax, abdomen, pelvis and cranial cavity was optional and usually omitted. During this era, surgery was rarely performed in these regions due to fear of almost certain death of the patient from infection. Therefore a detailed anatomical knowledge of these regions was not considered necessary, and most students never saw a dissection of the major cardiovascular, pulmonary, gastrointestinal, and urogenital systems, or of the brain and spinal cord. <sup>Hanaway 1:52, Persaud 2: 306</sup>.

Indeed, at this time, even the relevance of anatomical knowledge to clinical therapy, especially in the case of internal organs, was debated. With the cursory examination techniques used during this period of Traditional Medicine, the state of the internal organs could not be assessed in a living patient. Furthermore there was no possibility of surgically altering these organs. After death, autopsies were not routinely carried out since trying to correlate a disease in a living patient with the dead organs seen at autopsy seemed to be a waste of time <sup>Duffin 24</sup>. Under these

conditions, even the relevance of anatomical knowledge of the internal organs to the practice of bedside medicine had been repeatedly questioned! Clinicians did not reject the learning of Anatomy of the body's internal structure as an intellectual pursuit, but they thought it lacked practical application. While knowledge of external structures was obviously useful for the surgical treatment of superficial injuries or tumors, knowledge of internal structures was not relevant to the management of other complex medical ailments. In 1668, John Locke stated that "All that Anatomy can do is to shew us the gross and sensible parts of the body, or the vapid and dead juices, all which, after the most diligent search, will be not much able to direct a physician how to cure a disease...If Anatomy shew us neither the causes nor cures of most diseases, I think it is not very likely to bring any great advantages for removing the pains and maladies of mankind." Even in 1788, Louis Sebastien Mercier stated that "Anatomy, though so carefully cultivated, has yet not supplied medicine with any truly important observations. One may scrupulously examine a corpse, yet the necessities on which life depends escape one. Anatomy may cure a sword wound but will prove powerless when the invisible dart of a particular miasma has penetrated beneath our skin." <sup>Duffin:32</sup>.

## **11. Medical Education in North America During the 1700 and 1800s: McGill's Medical Degree**

In North America, the first medical school had been established at the National University of Mexico in 1553, followed by several other Mexican universities. In the newly established American Colonies of Virginia and Massachusetts, on the other hand, health conditions were horrible. Half the passengers on the Mayflower died within three months of arrival in America <sup>Ackerknecht: 218</sup> ! Horrible smallpox epidemics attacked the white settlers and reduced some native tribes of Indians to extinction <sup>Persaud 2: 289</sup>. Until the opening of the first medical school in Philadelphia in 1765, medical practitioners were trained by the apprenticeship system for a period of four to seven years <sup>Ackerknecht: 222</sup>. The sons of wealthy colonists might make the long ocean voyage to study in Edinburgh, London, or Paris and then return to become pioneers of modern medicine in America. <sup>Persaud2:290</sup>.

The College of Philadelphia (1765) became the first and most important medical school in the United States, followed by Kings College (later renamed Columbia University) in New York City (1767), Harvard University in Boston (1783), Dartmouth College in New Hampshire (1797), University of Maryland in Baltimore (1807), Yale University in New Haven (1812), and Jefferson University in Philadelphia (1824) <sup>Persaud2:296</sup>. The first medical school in Canada was the Montreal Medical Institution (1822) which became McGill's Faculty of Medicine in 1829 <sup>Persaud2:302</sup>. This was followed by medical schools at the University of Montreal (1843), University of Toronto (1843), Laval University (1852), Queen's University (1854), Dalhousie University (1868), University of

Western Ontario (1882), and University of Manitoba (1883)<sup>Persaud2:302</sup>. Of these schools, McGill was by far the best<sup>Howell?:12</sup>. No other North American school at this time had higher standards or offered better facilities and hospital access than McGill. It was the only school with a four year curriculum and which required students to take courses in sequence rather than a helter-skelter order<sup>Bliss 60</sup>.

In the United States, during the 1800's, the level of medical training had even deteriorated to some degree. This was due to an almost complete absence of legal standards for medical practice in many states. With the increased demand of growing populations, the time-consuming apprenticeship system had often been abandoned in favor of short courses in private medical schools that had sprung up everywhere. There were up to four hundred of these schools in the United States<sup>Ackerknecht: 224</sup>. The least demanding of these, the "diploma mills" were mainly interested in making a profit, and provided only the lowest grade of instruction<sup>Ack:224</sup>. The regulation of physicians remained chaotic in the USA until the 1880's. Anyone could call themselves a doctor after perhaps three years of apprenticeship or two years in a private medical school which provided little opportunity to do dissection or to see patients<sup>Porter: 127</sup>. Even Harvard's medical school, possibly the best in the United States, was judged in those years as little better than a diploma mill, and its president wrote: "The ignorance and general incompetency of the average graduate of American Medical Schools, at the time when he receives the degree which turns him loose on the community, is something horrible to contemplate"<sup>Bliss 60</sup>.

For graduation with a M.D. from McGill, students faced oral public examinations in all branches of medicine and surgery. They also had to be able to translate any Latin author at sight into English, and to translate English or French into Latin<sup>Frost 1:132</sup>. Only a smattering was taught of the new science which was beginning to emerge at this time in Europe (see below)<sup>Hanaway1:xxi</sup>.

In 1862, McGill changed its M.D. degree to M.D., C.M. (Doctor of Medicine, and Master of Surgery) to assure the governmental licensing bodies that the candidate had been trained in both medicine and surgery<sup>Hanaway 1:44</sup>. This degree required a minimum of four years, each with an academic session of six months. One of these years could be replaced by a year at another recognized medical school or a recognized year of apprenticeship. Many of McGill's medical students had obtained an Arts degree prior to entering medical school. Those who had not were required to pass additional examinations in English language and grammar, arithmetic, algebra, geometry, Latin, Greek, and one of French, German or natural philosophy (science)<sup>Hanaway 1:46</sup>. Since students had little training in chemistry and biology prior to entering the medical school, it was necessary to provide instruction in these subjects within the medical curriculum<sup>Hanaway 1:xxiii</sup>.

Transfer from one medical school to another was common in those days. A student with a degree from another school had to attend a minimum of one six-month session at McGill to obtain the



McGill degree. This was considered worthwhile in view of McGill's excellent anatomical reputation and hospital facilities. Alternatively, students in a hurry to graduate could attend McGill for one year to obtain an excellent background in Anatomy and then transfer to a less demanding private school in New England or elsewhere in Canada for a degree in only one more year <sup>Hanaway 1:44</sup>.

By 1851, the enrolment was 69 students over the four year period, and the medical school had chairs in Anatomy, Surgery, Midwifery, Practical Medicine, Chemistry and Materia Medica <sup>Hanaway 1:37</sup>. In 1860, there were ten faculty members who lectured in nine courses. These men were all full-time general practitioners, no specialization yet having occurred in Canada <sup>Hanaway 1:50</sup>. All wore frock-coats and long top-hats. Most of them had little more than a text-book knowledge of their subjects <sup>Hanaway 1:43</sup>. There was no official Dean of Medicine until 1854, when Andrew Holmes was appointed to this position. By 1866 the student body had grown to 184 <sup>Hanaway 1:37</sup>.



**Medical Graduating Class in 1870**

From: Frost 1: 281

In 1870, McGill was still teaching in the very traditional style inherited from Edinburgh. The Anatomy course and its laboratory instruction were considered the strong points of the curriculum. Students customarily took the basic disciplines during their first two years of the four-

year medical curriculum, followed by two clinical years. This “progressive” curriculum was strongly recommended, and first years student were permitted to take clinical courses only under special circumstances<sup>Hanaway 1:47</sup>. In their two clinical years, students were allowed to move freely about the hospital to examine patients along with the attending physicians<sup>Hanaway 1:39</sup>. They had no responsibility for patient care, however, and played no role in the planning of patient treatment. Clinical lectures were carried out at noon, two days per week, in the hospital operating room.

## **12. The Advent of Scientific Medicine (1800s)**

During the 1800’s, dramatic developments were taking place in the medical world, especially in Europe. With the great philosophical movement of the “Enlightenment” during the 1700’s, attitudes changed. Preoccupation with the fate of the soul was replaced by increased interest in practical improvement of conditions in this world. This new “Age of Reason” advocated the use of reason and individualism instead of tradition and established doctrine. This led to a new burgeoning of science and the scientific method<sup>Ackerknecht: 137</sup>.

Up until this time, the medicine practiced in the Western world was pre-scientific, “Traditional Medicine” which had been the norm since the beginning of its medical history. With the new enlightenment philosophy, this changed. Instead of simply using traditional practices to treat patients’ symptoms, attempts were now made to discover the actual diseases causing these symptoms. Furthermore, in addition to simply noting symptoms, the patient was given a careful clinical examination looking for signs which could indicate changes in organs and systems which might have caused the symptoms. As mentioned previously, using the cursory traditional examination procedure of traditional medicine, it had been difficult to know anything about the condition of internal organs. As newer techniques of clinical examination evolved, however, this became increasingly possible (see “George Ross and the New Methods of Physical Examination”). Additional essential information about disease was provided by extensive studies of the organs after death at the autopsy table, correlating the observed changes with clinical observations during the patient’s lifetime.

To obtain useful scientific information about diseases, it came to be realized that it was necessary to have data not from just one patient but from many. The best environment in which to obtain this information was in hospitals with their numerous patients and opportunity for performing autopsies. Thus this new type of medicine, which was developing at the beginning of the nineteenth century was designated as “Hospital Medicine”. It began particularly in France, where the Revolution had abolished the old traditional universities and hospitals and the climate encouraged new ideas and approaches<sup>Ackerknecht: 146</sup>. These new scientific studies permitted

conclusions regarding diseases never before possible. It became obvious that diseases were often localized to one system or organ rather than being caused by the ill-defined humors of previous ages. It was shown, for example, that “mysterious” strokes were caused by brain hemorrhages <sup>Ackerknecht: 124</sup>.

This concept of localization of disease encouraged the development of Medical and Surgical specialization where attention could be concentrated on one specific organ or system. This trend was developed in the Paris Medical Schools and especially the New Vienna Medical School <sup>Ackerknecht: 155</sup>.

A final development in medicine came with the understanding that, in terms of explaining and curing disease, even “Hospital Medicine” had severe limitations in that it had to deal with living human patients. Future progress necessitated scientific studies in controlled laboratory conditions, sometime using animals rather than human subjects. This led to the development of “Laboratory Medicine”. This new medicine required the emergence of full-time pure scientists along with the financial means to support them. It was in the reformed universities of Germany that these conditions were first met.

Unfortunately, McGill’s medical school had serious deficiencies compared to the more progressive European medical schools. During the early 1800’s, Scotland had a virtual monopoly on university medical education in Britain, and this extended to the British colonies in Canada as well as to the American States <sup>Persaud 2:171</sup>. Thus it was to Edinburgh University that students from North America came for their medical training <sup>Ackerknecht: 130</sup>. Not surprisingly, in their own curricula, the new American and Canadian medical schools followed the program and traditions of Edinburgh University <sup>Persaud2:290</sup>. This was particularly true of McGill, whose four founders had all attended Edinburgh University.

In the period during which the European peoples were embracing the new scientific revolution, the British maintained an anti-science attitude. This was reflected in their universities, and by the late 1800’s, Edinburgh University had missed the boat in terms of scientific progress. It had not kept pace with the Reformed European Universities in terms of teaching methods or research. Thus while Edinburgh had been a great role model in the 1820’s, it was no longer one in the 1860’s, and it was the German universities that became the new mecca for progressive young doctors such as McGill University’s William Osler <sup>Persaud: 2:291</sup>.

### **13. Early Anatomical Research and Publication at McGill**

#### **a. A Brief History of Anatomical Research and Publication prior to McGill’s Founding**

By the time the McGill Medical School was founded in 1829, research in human anatomy had been carried out for thousands of years. As described previously (see 4.b. Anatomy in the Ancient World), the first serious studies were carried out by the Greeks, Herophilus and Epistratus (300-250 B.C.) followed by the Roman, Galen (130-201 A.D.).

The results of these studies were recorded in manuscripts which were hand-written by their authors, copied laboriously by copyists, and physically transported by individuals to interested parties around the known world. Galen produced more than three hundred works and kept twelve scribes continuously occupied <sup>Hae 57;</sup> <sup>Knight: 13!</sup> In the early ancient world, the language of communication had been mainly Greek. With the advent of the Roman Empire, it switched to Latin, and remained so for the next 1500 years until the late Renaissance <sup>Ack: 79</sup>. All learned men could read and write Latin since this was the language of the Bible. This therefore became the universal language of communication.

With the development of universities in the Middle Ages, most anatomical studies occurred in the medical schools of these institutions. However most of these schools, following the Scholastic tradition of deference to ancient authorities, did not encourage any real research. New breakthroughs in anatomical knowledge only came in the early Renaissance with innovative and radical faculty members such as Vesalius (1543), Servetus (1553) and Columbo (1559).

In fact, some of the most exciting anatomical discoveries emerged not from university academics but from individuals elsewhere. The discoveries of the artist and scientist Leonardo da Vinci (1512) are an excellent example. Many other “scientists” were essentially well-educated amateurs. Leeuwenhoek, for instance, was a simple cloth draper. These scientists were often men of moderate means and needed money for their research or storage and dissemination of their results to others. This was done by letters in an era when posts were slow and costly. Fortunately the needs of these early scientists were often met by the emergence of wealthy “patrons of science” who could arrange for meetings of the scientists and storage of their letters <sup>Singer Biology: 134</sup> In time, the scientists became associated with one another in learned scientific societies. The first one was the “Academy of the Lynx” in Italy in 1609, in which Galileo was a member. (the Lynx was chosen because of its supposedly piercing eyesight!). The Royal Society of London was

founded in about 1645<sup>Singer Biology: 139</sup>. These scientific societies, rather than universities, were often the centers of scientific discovery and discussion up to the nineteenth century, when the universities were reformed in Europe<sup>Ack: 126-127</sup>.

In the late Middle Ages, the invention of the printing press allowed mass distribution of scientific results. Books such as “On the Fabric of the Human Body” by Vesalius (1543) could be disseminated widely. This dramatically improved the process of communication and led to a great acceleration of investigation.

With time, scientific journals began to appear. One of the first was the “Philosophical Transactions of the Royal Society of London” (described above), in which Leeuwenhoek published many letters<sup>SingerBiol: 140</sup>. These first journals were multidisciplinary. The development of journals specializing in certain disciplines came only considerably later near the end of the 1700’s.

The language of research communication also changed. After the bible had been translated, the use vernacular languages such as French, German and English became acceptable in publications. Leeuwenhoek, for example, was unable to write Latin and wrote all his letters in Dutch<sup>Knigh:112</sup>. In modern times English has become the universal language of communication, replacing French in this capacity. Until the middle 1900’s, however, many prominent journals were still published in French and German (with perhaps an English abstract). A knowledge of foreign languages was considered to be an essential part of scientific training and review articles in the early years would often include extensive quotes from papers in their original language without feeling it necessary to provide any translation!

#### **b. Early Anatomical Research and Publication at McGill**

With its intellectual heritage from Edinburgh University (whose emphasis was excellence in clinical teaching), research was not encouraged at in the McGill medical school during its early years. This was compounded by the serious lack of funding for higher education by the Province of Quebec<sup>Hanaway 1:49</sup>. One result was that a professor’s pay was only \$ 500 per annum (for giving five lectures/week over a six-month period). This was not nearly sufficient to meet living expenses, and thus all of the faculty members were full time medical/surgical practitioners

who taught students in addition to their practice. This left little time for research. The few studies that were published would have been mostly clinical in nature, such as John Stephenson's description of his cleft palate surgery (see 6. John Stephenson in chapter 1).

In the field of human anatomy, the emphasis was naturally on its clinical application. One of McGill's most illustrious early Anatomy professors, Francis Shepherd, considered the subject of anatomy to be essentially a handmaiden of surgery, and throughout his long career, he emphasized its clinical usefulness

Hanaway 2: 136

However, throughout history, anatomical research had also been carried as a purely intellectual pursuit. Aristotle (384-322 B.C.), for example, was not a physician. He carried out extensive investigations on the structure of various animals and founded the discipline of Comparative Anatomy as well as making major contributions in the field of Embryology. Leonardo da Vinci (1512) similarly investigated human anatomy as an intellectual discipline.

As stated by the famous historian Charles Singer, "at a certain level in human development, knowledge comes to be set forth for its own sake. It begins to be expounded for the satisfaction of human curiosity, and thus a new motive is added to the mere desire to meet the needs of some art or craft. Then, and only then, can we truly say that we have to do with "science." Singer: 5.

At McGill, in later years the study of comparative anatomy was emphasized whereby the anatomy of the human body was compared with that of other species to better understand its complexities. An allied interest of several members of our Anatomy Department has been in the field of physical anthropology.

The question of clinical application, nonetheless, has always remained an issue in appeals for research funding, and candidates are careful to highlight the clinical usefulness of their anticipated findings. While the essence of university research should be the freedom of the individual to follow his or her own curiosity, history has repeatedly shown that the information obtained, while perhaps not immediately clinically useful, may be essential for important breakthroughs in some future time

Frost 2: 376

By the time of McGill's early days, some scientific journals specializing in medicine had become established, such as the Edinburgh Medical Journal (1805). The New England Journal of Medicine was first published in 1812, while the Lancet Medical Journal appeared in 1825. In Canada, the first medical journal was the "Quebec Medical Journal (1826)" followed by the "Montreal Medical Gazette" (1844)<sup>Hanaway 1:38, 197</sup>. At McGill, George Fenwick and Francis Wayland Campbell founded the "Canada Medical Journal and Monthly Record of Medical and Surgical Science" in 1864. When Campbell subsequently became associated with Bishops University Medical School, the publication split into the "Canada Medical and Surgical Journal" edited by Fenwick and the "Canada Medical Record" edited by Campbell. Relations between the two schools were never very cordial, and these journals provided the two parties with platforms from which to fire off criticisms at one another<sup>Frost 2:44!</sup>

Some of the most prestigious scientific journals remained multidisciplinary. The British journal, Nature, appeared in 1869, followed by the American journals, Science (1880) and the Proceedings of the National Academy of the U.S (PNAS) (1915).

The American Association of Anatomists was formed in 1888 and published proceedings of its meetings for several years<sup>Basmajian in Pauly:3</sup>. The association's two journals: The American Journal of Anatomy and The Anatomical Record appeared in 1901 and 1906 respectively.

#### **14. Sir John William Dawson (McGill: 1855-1893)**

In the mid-1800's, a number of faculty members were to lead a new wave of progress at McGill. The pioneer of this movement was William Dawson. Through his influence along with that of Robert Palmer Howard, four young staff members were recruited who were to profoundly change McGill's medical faculty. These were William Osler in the Institutes of Medicine (i.e. Histology, Physiology, Embryology and Pathology), Frank Shephard in Anatomy, George Ross in Medicine, and Thomas Roddick in Surgery<sup>Hanaway 1:64</sup>.



**Principal John William Dawson in 1862**

From: Hanaway 1: 58

Dawson, best known as one of McGill's most famous principals, had a brilliant career as a teacher, scientist, author and administrator. As a teacher of botany and zoology to the medical students, William Dawson was not primarily a member of the medical faculty <sup>Hanaway 1: 57; 159-161</sup>. Nonetheless, he had enormous influence over the medical school during his long tenure as Principal (1855 to 1893). Dawson was a towering figure in Canadian university education. When he arrived at McGill from Nova Scotia in 1855, he was astonished to see the university campus in such a pitiful condition - two derelict, deserted, damaged, and rundown buildings in a cow pasture <sup>Frost 1:198</sup>. The roofs had been damaged by blasting for the new Montreal reservoir (immediately to the north). The medical school had moved back downtown, and the Arts faculty had moved to Burnside Hall (not to be confused with McGill's original country home, Burnside Place). This building, located on the corner of University Street and Dorchester Boulevard, was shared with the High School Department of McGill College <sup>Frost 1:161, 200</sup>.

With his pioneering spirit and incredible enthusiasm, Dawson single-handedly set about transforming the campus and atmosphere at McGill. He put his entire salary into improving the buildings, living on his savings <sup>Hanaway 1:159</sup>. By 1865, dramatic improvements had taken place. The City of Montreal had provided compensation to repair the buildings from the blasting damage, and the Arts Faculty had moved back to the campus buildings. To the west of the Arts building,



William Molson had built a west wing (Molson Hall) to match the east wing, and he had linked all three buildings into a harmonious suite <sup>Frost 1:200</sup>. Enrollment was 177 students in Medicine (in all four years), 68 in Arts, and 48 in Law <sup>Frost 1:202</sup>. In 1880, Peter Redpath donated to McGill the first purpose-built natural history museum in Canada, a very impressive greystone building in the neoclassical style with soaring, sunlit exhibition galleries.

A brilliant teacher, Dawson copiously illustrated his lectures. When he began teaching in 1855, the only artificial light in lecture rooms came from oil lamps. Gas came into use only in 1864, and electricity was installed in some buildings only in 1888. There existed kerosene-lit “magic lanterns” used to illustrate the popular talks of returning explorers, but Dawson preferred to use large drawings, lit by sunlight, for his classes. In later years, when the Redpath Museum was built, Dawson made sure that the auditorium had huge windows which filled the room with natural light. When lecturing to large classes of medical students, he created huge illustrations on a set of thirty-four cotton bed sheets which he attached to the auditorium walls. These have been carefully preserved in our university archives <sup>Pasztor: 27-29</sup>.

Dawson felt that students were over-lectured, and he encouraged more laboratory experience <sup>Hanaway 1:57</sup>. His own lectures, however, were superb and in them he emphasized the role of science. He felt that the future of McGill lay in the study of modern science rather than on studies of the past, and that an overemphasis on studies of classical antiquity would make graduates more suitable for a museum than actual life. This was very much part of the philosophy of the Scottish Enlightenment which stressed observation and experience as the primary source of knowledge, and included a broad base of knowledge including science <sup>Herman 392</sup>. In fact, prior to Dawson’s arrival at McGill, there had been widespread dissatisfaction on the part of the Montreal public who felt that there was a lack of applicability of the material being taught in the university to the ordinary pursuits of life. This was one of the fundamental reasons for its poor financial support from the community. Dawson finally convinced the latter that modern facilities for students meant better trained physicians and other graduates <sup>Hanaway 1:49</sup>. In the end it also put the stamp on McGill’s emphasis on science and practicality in its overall philosophy. <sup>Hanaway 1:57 , 159-161</sup>. Sir William Dawson died in Montreal in 1899, and is considered the father of McGill University.