

Neurology and Neurosurgery at the Montreal General Hospital 1960-1980

D.W. Baxter and J.G. Stratford

Can. J. Neurol. Sci. 2000; 27: 79-83

Neurology and neurosurgery are among the most active disciplines at the Montreal General Hospital (MGH) today with impressive academic and neuroscientific profiles. This paper records an earlier period of activity when the feasibility of such research and clinical developments was only a dream.

The history of neurology and neurosurgery at the MGH dates from the early days of this century – a story which is well-told by Preston Robb in “The Development of Neurology at McGill”.¹ The level of clinical activities varied from decade to decade and from the 1930s was closely linked to the Montreal Neurological Institute (MNI). An MGH Department of Neurology and Neurosurgery was established in the 1940s. Francis McNaughton was the first director and, on his move to become neurologist-in-chief at the MNI in 1951, he was succeeded by Harold Elliott, the neurosurgeon. Preston Robb was then the senior neurologist, assisted over variable periods of time by colleagues Norman Viner, Miller Fisher, William Tatlow,² Bernard Graham, and David Howell. Dr. Robb reluctantly resigned in 1953 after having “met with the authorities to see if a basic research program could be developed. I was told that this was not possible, it was not in the tradition of the hospital, and research was the responsibility of the university.”¹ For a short period in 1955 and 1956, JGS was a junior staff member in neurosurgery before joining Bill Feindel at the University of Saskatchewan. Despite these impressive hospital rosters, neurologists and neurosurgeons at the MGH were not full-time and the bulk of the academic and training activities of the McGill Department of Neurology and Neurosurgery continued at the MNI.

In 1960-61, the Medical Board of the MGH began to debate the future of neurology and neurosurgery. At this time, the neurology staff included Bill Tatlow as the senior neurologist and David Howell, Peter Thomas and Fred Andermann. Harold Elliott and Hugh Samson were the neurosurgeons. The suggestion that the department should be abolished and that neurology and neurosurgery become divisions of the Departments of Medicine and Surgery respectively led to consternation and considerable debate among those involved. These discussions and the decision to abolish the hospital department were among the developments which led Peter Thomas and David Howell to return to Britain. Harold Elliott was shortly to retire and Hugh Samson to relocate.

In 1962, JGS was recruited from Saskatchewan by Rocke Robertson, chairman of the Department of Surgery, to head the division of neurosurgery. In 1963, DWB came from Philadelphia as neurologist-in-chief in the Department of Medicine led by Douglas Cameron. As division heads, we were members of the

MGH Medical Board. Though our hospital appointments were in medicine and surgery, our primary academic appointments were in McGill's Department of Neurology and Neurosurgery and all of our academic activities were to relate to that department. The two decades which followed were to be the most interesting, stimulating and rewarding of our professional careers.

We had earlier worked together for five years at the University of Saskatchewan in the development of neurology and neurosurgery initiated by Allan Bailey and William Feindel. It was there that we first experienced the excitement associated with the building of a new academic department. The ties of personal and professional respect formed at the University Hospital in Saskatoon were to prove of great benefit in our joint undertaking at the Montreal General Hospital and McGill.

In 1963, the MGH created joint office and secretarial facilities for neurology, neurosurgery and electroencephalography. By that time JGS, with the help of John Blundell from the Montreal Children's Hospital, covered the neurosurgical service, while neurology was the responsibility of Bill Tatlow and DWB.

Neurosurgery was assigned an area on the surgical trauma ward with a dedicated observation room while neurological patients were admitted to a general medical ward. In that era patients were still categorized as ‘public’ or ‘private’. Weekly outpatient clinics for public patients were held and only private patients were to be seen in our offices. The standard of care for inpatients of both categories was high and it was encouraging to find that the new arrangements for neurology and neurosurgery were welcomed by most of the clinical staff.

Late in 1963, a letter arrived from George Olszewski,³ a former colleague in both Montreal and Saskatoon, asking if there was anything he could do to help our new venture. George was now the professor of neuropathology at the University of Toronto and in contact with the clinical trainees of the neurology program headed by J.C. Richardson. We replied, without great expectations, that it would be very helpful if he could persuade a neurology trainee to come to the MGH for a full year. A short time later, we learned that John Steele⁴ was interested in such a proposal and would soon come to Montreal to explore the possibility. However, that did not happen and soon we received a further letter saying that Dr. Steele's plans had changed. It went on to say that a young trainee

From the Department of Neurology and Neurosurgery, McGill University, Montreal, QC, Canada

RECEIVED MARCH 31, 1999. ACCEPTED IN FINAL FORM SEPTEMBER 20, 1999
Reprint requests to: DWBaxter, 1321 Sherbrooke St. W. #D-71, Montreal, QC, Canada H3G 1J4

from Argentina might be interested and soon Albert Aguayo came to Montreal to visit. After several days exploring the hospital and talking to other trainees, he agreed to come to the MGH for the final year of his neurology training.

Albert arrived at the MGH in July of 1964. His clinical and interpersonal skills, as well as his interest in research, were evident from the beginning. His first year at the MGH passed quickly. After obtaining his FRCP(C) and winning a fellowship award from Medical Research Council, he was persuaded to remain at the MGH for a further year as a research fellow. His first venture in research was with one of the senior radiologists and JGS attempting a study of cerebrovascular changes in patients with ischaemic stroke.⁵ He also received a MRC grant of \$5000 to study "Morphological and Electrophysiological Changes in Evolving Hemiplegia". Laboratory space was assigned to him in the surgical research area. During this second year, we began to explore the possibility of Albert accepting a staff position at the MGH and McGill. These plans solidified when, in early 1966, he obtained a Samuel McLaughlin Traveling Fellowship, the terms of which required that an academic position be guaranteed on its completion. Albert chose to use this opportunity for further clinical and research study in England at the muscular dystrophy laboratories of John Walton and his group at Newcastle-on-Tyne.

There were other important developments during these early years. In 1965, we took the train to Kingston to seek advice from Harry Botterell about the steps we might take to form a meaningful academic group in neurology and neurosurgery. Dr. Botterell was then Dean of the Faculty of Medicine at Queen's University and the former head of the impressive neurosurgical group at the University of Toronto. He offered many suggestions which were to serve us in good stead over the years. He advised us not to try and form a separate hospital department but to continue as divisions of medicine and surgery. His reasoning was that small hospital departments "risk being separated from the mainstream of medical and surgical activities". However, he urged the development of a joint "clinical or University teaching unit" and that this MGH unit strive to "establish its own identity separate from the MNI". His parting admonition, which we were not always successful in following, was "Don't fight unnecessary battles – most things will just fall in place."

That same year, Robert Ford joined JGS as the second full-time neurosurgeon. Bob brought not only neurosurgical skills acquired in Britain, but also expertise in the new field of diagnostic echoencephalography.⁶ He had particular interests and skills in the surgical management of cerebrovascular disease.

Also in 1965, Matthew Spence joined the MGH University Medical Clinic after completing his training in neurochemistry at the MNI. We were not involved in his recruitment and did not appreciate at that time the important role he would play in creating a neuroscientific program at the MGH. He was a full member of the division of neurology until he left for an appointment at the Isaac Walton Killam Hospital and Dalhousie University in Halifax.

Our need of a neuropathologist to bolster the clinical activities of neurology and neurosurgery was very apparent. This led to negotiations with Morrison Finlayson who, having completed his neurological training at Queen Square, was then studying neuropathology at the MNI and McGill's Pathology

Institute. There was a complication in that the Quebec College of Physicians and Surgeons did not recognize neuropathology as a specialty and "Fin" had not spent the required months in general pathology for full certification. However, after numerous discussions, the College agreed that his activities in pathology would be strictly limited to neuropathology and that he could be recognized as a specialist. There were no such problems with respect to his neurological credentials and Fin joined the MGH neurology group in 1966.

A further major development was the realization of a joint clinical neurology-neurosurgical unit. The hospital had agreed to create a neurosurgical unit during the negotiations which brought JGS as neurosurgeon-in-chief and this concept was later expanded to a joint neurology-neurosurgical ward. We spent many hours during 1965 and 1966 in the meticulous planning of this unit. When it opened in September 1966, it seemed ideal! There were 30 beds for neurological and neurosurgical inpatients, a well-equipped intensive care unit of eight beds, space for EEG and EMG facilities, with limited office and teaching areas. That unit was the first in the MGH where no distinction was made between "public" and "private" beds.

Albert Aguayo returned to Montreal in September 1967 as an assistant professor in the Department of Neurology and Neurosurgery at McGill and as director of the Section on Diseases of Nerve and Muscle at the MGH. He rapidly established his place as a neurological consultant, teacher and imaginative investigator. His initial clinical research interests concerned thyrotoxic myopathy but these soon gave way to more basic neuroscientific projects. With the active participation of Matthew Spence and Morrison Finlayson, he obtained Medical Research Council support for a study defining the electrophysiological, pathological and chemical changes occurring with experimental sciatic nerve compression.

A defined hospital area for neuroradiology with new equipment for cerebral angiography and pneumoencephalography also appeared in 1967. This new "head room" was located adjacent to a radioisotope unit where brain scans could be performed. These neuroradiological developments were initially supervised by Martha Grymaloski and later by Jack Chan and Roberto Wee.

Shortly after Albert Aguayo's return, Maurice Victor told us of a young neurologist in Winnipeg and suggested that we persuade him to join our fledgling group. Garth Bray, after graduating from the University of Manitoba, had trained in neurology with Maurice Victor and Betty Q. Banker at the Cleveland Metropolitan Hospital of Case Western Reserve University. From there he had returned to Winnipeg as a staff neurologist and was attempting to carry on the research activities initiated during his years with Betty Banker. We invited Garth to visit Montreal in early 1968 and, when it was clear that he was interested, set about to obtain the appropriate academic and clinical appointments, financial support and space for his laboratory. In the conversations concerning Garth's academic role, Francis McNaughton mused whether "diseases of muscle would be an important interest for neurologists in the future." JGS found the research space. We had roamed the hospital together hoping to locate an uncommitted room when he tapped on a wall beneath the hospital's amphitheatre and correctly predicted that there was empty space behind. That subterranean area, light and air starved, was transformed into Garth's crowded

but efficient Muscular Dystrophy Laboratory. It was the unit's first identifiable research laboratory. Garth joined us in Montreal in December of 1968.

The longer term goals of the neurology group were now being slowly defined by informal discussions between Garth Bray, Albert Aguayo and DWB.⁷ We clearly wanted to form a group that was more than a clinical appendage to the academic activities of the MNI. The concept of the "physician scientist" was not widespread in the early 1960s, but it was one which policies of the Medical Research Council fostered. We decided that our only hope of obtaining base salary support for new colleagues was to attract those who would be candidates for MRC scholarship awards. Since MRC required scholars to devote at least 80% of their time to research activities, this pattern became our model. New members of the neurology group would be asked to spend one or two months of each year supervising the care of inpatients and one half day a week seeing outpatient consultations or participating in teaching programs. The remainder of their time would be rigorously protected for research. To further foster this goal, we agreed to pool all academic, clinical, EEG, EMG and professional earnings from any other source. Initially, DWB was the only neurologist with a university base salary but every one of the new members obtained comparable salary support from MRC or other sources, including funds for travel and their research projects. We were convinced that with common goals the accomplishments of such a team would be greater than could be achieved by individual efforts. This scheme fully met our expectations. Finlayson and Tatlow did not participate in these arrangements since the major part of their limited clinical activities was carried out at the Queen Mary Veterans' Hospital. They were active members of the group in all other respects.

We first heard of Joe Martin from Garth Bray. Their paths had crossed when Joe, then a trainee in Joseph Foley's neurology program at Case Western Reserve's University Hospital, chose to rotate through Betty Banker's neuropathology laboratory at Cleveland Metropolitan Hospital. By the time Garth had joined us in Montreal, Joe had also completed his clinical training and was in the final year of his PhD program in neuroendocrinology at the University of Rochester. Soon after he arrived in Montreal, Garth suggested that we try to recruit Joe. We arranged for him to visit and to our delight found he was interested in the structure and goals of the unit. A few weeks later Joe phoned to say that he had decided to join us rather than return to Edmonton as previously planned. Joe arrived at McGill in the early fall of 1970 only a few weeks before the FLQ October crisis and the doctors' strike over the government's plans for Medicare. For a time we all wondered if he had made a wise career decision.

Joe was welcomed into the Department of Medicine's University Clinic where his work on the pulsatile release of growth hormone flourished. His ability to handle a variety of projects at the same time with extraordinary competence soon became evident. Within a few years his research productivity was impressive. In addition, he was writing the classic book on neuroendocrinology with Seymour Reichlin, directing community projects, running the offices of the Canadian Society for Clinical Investigation, conducting an active practice and teaching, all at the same time. Joe, Garth and Albert formed strong bonds of friendship which persist to this day.

Meanwhile, Albert and Garth's research interests were merging and expanding. A significant event may have been Gordon Watters' presentation of a boy with Riley-Day syndrome at medical grand rounds and Albert agreed to be the discussant.⁸ Their reading about this syndrome, and the emerging concepts of nerve growth factors, may have triggered their curiosity in understanding factors controlling embryogenesis and regenerative phenomena in the peripheral nervous system. Their research activities received a major impetus in the early 1970s, when Mr. Robert Hewitt, a successful businessman and a member of the MGH Board of Management, donated funds to acquire a dedicated electron microscope. It was only late in the 1970s that their focus changed from the peripheral nervous system to the phenomenon of central nervous system regeneration.

None of these developments in neurology could have occurred without the enthusiastic support of Douglas Cameron, then chairman of the Department of Medicine in both the hospital and the McGill Faculty of Medicine. He readily accepted the proposition that, while our day-to-day activities would be carried out in the hospital department of medicine, our academic loyalties were to the McGill Department of Neurology and Neurosurgery. He provided a base salary and start-up laboratory funds which we managed to move from one recruit to the next as extramural resources were obtained. He ensured that his departmental members cooperated when we proposed that all inpatient consultations would be directed to a single neurologist. In addition, he facilitated in every possible way our discussions concerning space and academic appointments with the hospital and the university. Further, the policies of McGill's Faculty of Medicine made it possible for us to assure potential recruits that, once they had obtained extramural salary support, they would enter the university tenure stream.

Although it would have been possible to recruit trainees to hospital-funded residency posts in both neurology and neurosurgery, none of these positions were filled when we arrived. However, single trainees from the MNI programs were intermittently assigned to the MGH. In the mid-1960s university-wide clinical training programs in neurology and neurosurgery were developed and those of the Montreal Neurological Institute, the Montreal General Hospital and the Montreal Children's Hospital were amalgamated. During the remainder of the 1960s the academic and the residency training programs of the university department were headed by Francis McNaughton in neurology and by Theodore Rasmussen in neurosurgery. In the 1970s, Preston Robb and William Feindel assumed these responsibilities. In most instances, they were supportive when we sought academic positions for the MGH in the Department of Neurology and Neurosurgery and we were reasonably assured of a steady flow of very competent clinical trainees. Graduate and post-doctoral students in neuroscience based at the MGH also began to appear.

Clinical research was not a major preoccupation of either the neurology or neurosurgical group at the MGH. We were, however, one of the units participating in the "Aspirin and TIA" study organized by Henry Barnett from the University of Western Ontario. Later, we were involved in the "Mercury Study in Northwest Quebec" directed by Walter Spitzer from McGill's Department of Epidemiology. The major clinical input to the latter study was provided by John Willoughby, an

Australian neurologist, then completing his PhD studies with Joe Martin.

In 1972, Donald Lawrence returned to Montreal in charge of the department of neuroanatomy at the MNI. In previous years we had tried to entice Don to the MGH but he had chosen to spend a further period in neurophysiological and anatomical studies in Great Britain and the Netherlands. Despite his primary appointment at the MNI, his clinical activities were conducted at the MGH and we considered him a full member of our group.

That same year, Paul Brazeau, fresh from post-doctoral studies with the Nobel prize winner Roger Guillemin, joined the group to work in association with Joe Martin. Paul was the first group member without clinical qualifications. He remained an active and productive member of the group until 1977.

We first heard of Michael Rasminsky from Eli Rabin, then a senior resident in medicine at the MGH. We knew only that Mike was a Canadian, had graduated from Harvard, trained in neurology in New York, was working in neurophysiology at Queen Square and had tentative plans to return to Toronto. We wrote to him on the off-chance that he might be interested in joining our group. On his next trip to Canada he came to meet us and assess the potential of the group. Eventually, he too decided to join us and arrived at the MGH in 1973. Mike brought neurophysiological expertise to complement and expand the potential of Garth and Albert's morphological studies.

That same year Leo Renaud was also recruited. Leo, a graduate of the University of Ottawa, had a very impressive background in neuroanatomy, neurophysiology and electroencephalography acquired in MNI and other McGill laboratories. Initially his research interests were centered on acetylcholine cortical mechanisms but over time, probably the consequence of Joe Martin's activities, he became increasingly interested in hypothalamic function. However, Leo's laboratory maintained quite independent interests and projects.

By 1976, a new MGH Research Building had been constructed. For the first time it was possible to consolidate all of the neuroscience research laboratories. Garth, Albert, Mike, Leo, Paul and later Bruce Livett all moved to contiguous research space. Bruce, an Australian biochemist, had joined the group in 1977, adding his biological and biochemical expertise to the experiments on neural regeneration. The integration of neurology and neurosurgery was further enhanced when all of our clinical offices moved to a newly renovated area in Livingston Hall, the former nurses' residence. We were then able to totally abolish "clinics" and had much improved facilities for the training of residents. When Duncan Anderson moved his neuro-ophthalmological activities to the same area, we and our patients benefitted greatly.

Malcolm Brown, then head of the Medical Research Council, contributed to the stability of our group not only through the policies he fostered at the MRC but also through one generous personal gesture. This was one of the eras when research funding seemed inadequate and many investigators at McGill were questioning the future of research careers. In early 1974, Dr. Brown came to address a meeting of the Faculty of Medicine and, in response to a question about how to be reasonably sure of continued MRC support, he answered in his typical abrupt fashion "discover something!" The neurologists in our group were among many at McGill who were profoundly disappointed

and discouraged by his presentation. Since one of us had once been Dr. Brown's clinical resident at the Kingston General Hospital, we had the temerity to ask for an interview to tell him how our colleagues had reacted. With hesitation we suggested that he might repair some of the damage by meeting with our group. To our surprise he agreed and on his next visit to Montreal our group arranged to have a dinner meeting with him. That evening was a great success. Dr. Brown was the charming self he rarely displayed at public gatherings, answered many questions freely and succeeded in allaying most, if not all, of our apprehensions.

In 1977, Peter Richardson became the third full-time member of the division of neurosurgery. Peter had graduated in medicine and trained in neurosurgery at the University of Toronto. He then spent some time as a neurosurgeon in Kuala Lumpur, Malaysia before returning to Canada as a neurosurgeon at Sacre-Coeur Hospital in Montreal. The year prior to his MGH appointment had been spent clarifying and developing his research skills with Peter Thomas at the Royal Free Hospital in London, England, and with M.G. Yasargil in Zurich, Switzerland. Peter's arrival greatly strengthened both the clinical and the research potential of the division of neurosurgery.

Looking back, it seems remarkable that we encountered so few obstacles to the formation of this neurological-neurosurgical group. In the first few years there were minor conflicts regarding the 'part-time vs. full-time' designations of our university appointments and, for some reason, we objected to being categorized as 'adjunct neurologists and neurosurgeons' to the MNI. Not all of our recruitment efforts were successful, particularly in the early years. Later, there were intermittent efforts by other centres to attract individual members of the group and, on one occasion, an attempt to move the entire core group of investigators. Fortunately none of these initiatives were successful.

However, by the late 1970s it became evident that organizational changes were inevitable if individual members of the group were to achieve their full potential. In retrospect, it now seems that the difficult personal and professional decisions taken in those years were appropriate and that they opened the way to the remarkable achievements of the next two decades at the MGH. That development, led by Albert Aguayo, Garth Bray and Peter Richardson is another story and for others to record.

WHERE THEY ARE NOW:

1. Albert Aguayo, Garth Bray, Mike Rasminsky and Don Lawrence remain at the MGH. With Albert Aguayo as leader, they created the MGH Centre for Research in Neuroscience.
2. Garth Bray is the Director of the MGH Division of Neurology with nine active clinical neurologists.
3. Peter Richardson was the MGH Director of the Division of Neurosurgery until September 1999 when he was appointed to the Chair of Neurosurgery, Queen Mary and Westfield College, University of London, England.
4. John Steele lives and works in Guam from where he has made significant contributions to the clinical features and epidemiology of the atypical motor neurone disease syndromes endemic in that region.

5. Matthew Spence now heads the Alberta Heritage Foundation for Medical Research.
6. George Olszewski died in Toronto in 1964.
7. Morrison Finlayson died in 1982 having taught us all a remarkable lesson in courage.
8. Bill Tatlow's primary activity now is as an investment counsellor. He continues to interpret EEGs and, until recently sold eggs from his farm, at the MGH.
9. Joe Martin left the group in 1977 to become successively the neurologist-in-chief at the MNI, chairman of the Department of Neurology and Neurosurgery at McGill, neurologist-in-chief at the Massachusetts General Hospital, James Jackson Putnam professor of neurology at Harvard, and Chancellor of the University of California at San Francisco. He is currently the Dean of the Faculty of Medicine at Harvard.
10. Leo Renaud is professor of neurology and head of the neuroscience group at the Loeb Research Institute of the University of Ottawa.
11. Paul Brazeau is professor of medicine at the University of Montreal.
12. Bruce Livett is professor in the Department of Biochemistry at the University of Melbourne in Australia.
13. John Willoughby is professor of neurology, School of Medicine, Flinders University of South Australia.
14. Bob Ford retired in 1997 for medical reasons.
15. John Blundell retired in 1990 as neurosurgeon-in-chief at the Montreal Children's Hospital.
16. Donald W. Baxter left the Montreal General in 1979 to

become neurologist-in-chief at the MNI and chairman of the McGill Department of Neurology and Neurosurgery and later, the director of the Montreal Neurological Institute. He has since retired.

17. J.G. Stratford retired in 1993 as neurosurgeon-in-chief but remains active in the McGill-MGH Pain Centre and in the development of an MGH palliative care unit.

REFERENCES

1. Preston Robb. Montreal General Hospital. In: The Development of Neurology at McGill. Private publication. 1989: 9-17.
2. W. Tissington Tatlow. 100 Years of Doctoring. Private publication. 1996.
3. Baxter DW, Buettner-Ennever JA, Sharpe JA, et al. Cartographer of the brain stem reticular formation. *Neurology* 1987; 37:1881-1882.
4. Steele JC, Richardson JC, Olszewski J. Progressive supranuclear palsy: a heterogeneous degeneration involving brainstem, basal ganglia and cerebellum with vertical gaze and pseudobulbar palsy, nuchal dystonia and dementia. *Arch Neurol* 1964;10:333-359.
5. Rosenthal L, Aguayo A, Stratford J. A clinical assessment of carotid and vertebral artery injection of macroaggregates of radioiodinated albumin (MARIA) for brain scanning. *Radiology* 1966; 86:499-505.
6. Ford R, Ambrose J. Echoencephalography – the measurement of the position of midline structures in the skull with high frequency pulsed ultrasound. *Brain* 1963; 86: 189-196.
7. Baxter DW. Prospects for Canadian Medical Neurology. The JC Richardson Lecture. *Can J Neurol Sci* 1977; 2(2): 101-107.
8. Aguayo A, Nair CPV, Bray GM. Peripheral nerve abnormalities in the Riley-Day syndrome. *Arch Neurol* 1971; 24:106-116.