

43rd Annual Report

MONTREAL NEUROLOGICAL INSTITUTE

MONTREAL NEUROLOGICAL HOSPITAL



and the

DEPARTMENT

of

NEUROLOGY

and

NEUROSURGERY

of

McGill University

1977-78





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(Le rapport annuel français est disponible sur demande)



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## EDITORIAL NOTE

Because the fiscal year of the Hospital now ends in March rather than January as required by the Department of Social Affairs of the Quebec Government, our Annual Meeting which includes a public report of the financial statement of our hospital operations, was necessarily held at a later date during the past year. Because, also, we arranged a complete research report from our Institute laboratories to be part of the scientific program of the III Foundation in mid-September, the present traditional published report of the Hospital, Institute and Department differs somewhat in coverage from previous years.

The research reports will be in a III Foundation Volume that will bring together the lectures, addresses and scientific papers presented for these special celebrations.

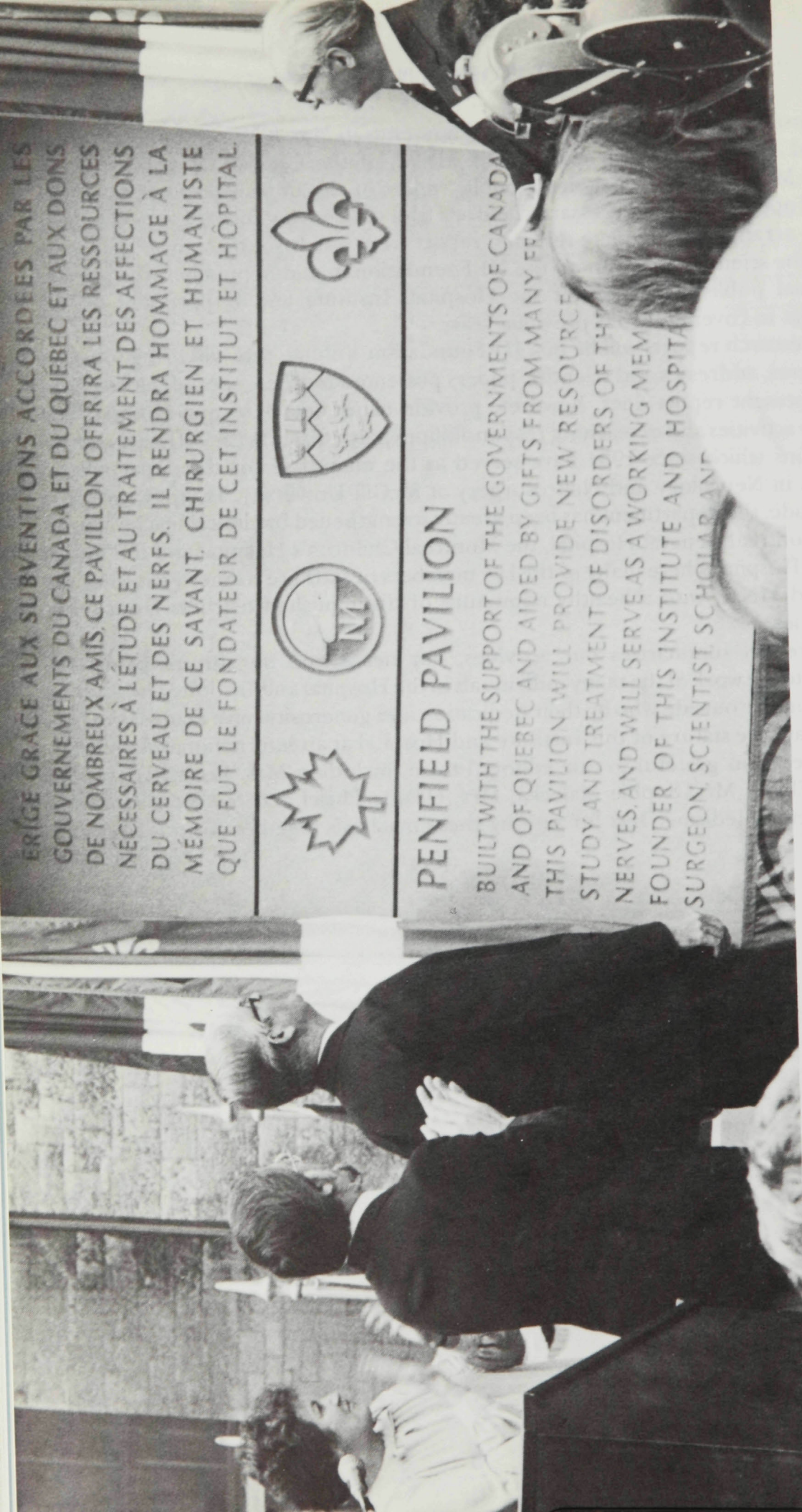
The present report does, however, provide many details of our Hospital and Institute activities and of teaching responsibilities particularly as they affect these two institutions which since 1934 have served as the main base for the departmental activities in Neurology and Neurosurgery at McGill University. Happily, over the past decade, the department has been greatly strengthened by clinical teaching units at the Montreal General Hospital, the Montreal Children's Hospital and the Jewish General Hospital where many of the key members of staff are former Fellows of the MNI and MNH, with a healthy admixture of distinguished teachers from other universities.

This report summarizes our activities, our needs and our future plans. We appreciate the work of the many individuals in the Hospital and Institute and an even larger number outside who by their dedication and generosity have made it possible to maintain the stature of this Institute and Hospital at an international standard.

We are again grateful to our editorial team, including Mrs. Rose Slapack, Dr. K.A.C. Elliott, Mrs. Sophie Malecka, Mrs. Hélène Phisel and our translators Les Traducteurs Médicaux Inc. for putting these materials together for publication.

W.F.





ÉRIGÉ GRACE AUX SUBVENTIONS ACCORDEES PAR LES  
GOUVERNEMENTS DU CANADA ET DU QUÉBEC ET AUX DONS  
DE NOMBREUX AMIS, CE PAVILLON OFFRIRA LES RESSOURCES  
NÉCESSAIRES À L'ÉTUDE ET AU TRAITEMENT DES AFFECTIONS  
DU CERVEAU ET DES NERFS. IL RENDRA HOMMAGE À LA  
MÉMOIRE DE CE SAVANT, CHIRURGIEN ET HUMANISTE  
QUE FUT LE FONDATEUR DE CET INSTITUT ET HÔPITAL.



## PENFIELD PAVILLON

BUILT WITH THE SUPPORT OF THE GOVERNMENTS OF CANADA  
AND OF QUEBEC AND AIDED BY GIFTS FROM MANY FRIENDS,  
THIS PAVILLON WILL PROVIDE NEW RESOURCES FOR THE  
STUDY AND TREATMENT OF DISORDERS OF THE BRAIN AND  
NERVES, AND WILL SERVE AS A WORKING MEMORIAL TO THE  
FOUNDER OF THIS INSTITUTE AND HOSPITAL, DR. PETER  
PENFIELD, SURGEON SCIENTIST SCHOLAR AND

*Unveiling of plaque for the new Penfield Pavilion on Sept. 15, 1978, by His Excellency the Right Honourable Jules Léger, Governor General of Canada. On his left is the Honourable Dr. Denis Lazure, Minister of Social Affairs, Quebec and the Honourable Madame Monique Bégin, Minister of National Health & Welfare, Canada. On the right is Dr. William Feindel, Director, MNH/MNI.*



# Report of the Director

WILLIAM FEINDEL, M.D.

After two years of construction, the new Penfield Pavilion is now beginning to function. The reticular formation of the Neuro as we might call it, our financial and personnel operations, have moved into place on the first floor. They share this with the Social Service Department and Neuropsychology. Nursing Education has taken over their new library and teaching areas on the second floor. The remaining floors will be opened in stages as necessary services become available. At present the water pressure and the electrical power for emergency needs are insufficient to protect the cortical levels of research and hospital laboratories on the upper floors. We also await government approval of equipment which must be installed before the operating rooms and the intensive care unit can be put into action. In the meantime, we have busily continued the time-consuming and tedious negotiations to plan the final Phase IV of the construction and renovation. These are fortunately leading to some resolution. We expect to get into this last stage of our major project by the beginning of next year. All of us will welcome the respite and the opportunity to return to more professional problems and programs after the extraordinary commitment of time and effort necessary to initiate, promote and complete this important addition to the resources of the Hospital and Institute.

All this was celebrated in mid-September on the happy occasion of our III Foundation when many of our former Fellows and nurses, together with distinguished visitors and friends, returned here. The Penfield Pavilion was officially opened by His Excellency the Governor General of Canada, the Right Honourable Jules Léger, with the Federal and Québec Ministers of Health, the Mayor of Montreal as well as the Chancellor and the Principal of McGill University in attendance. A colourful III Foundation Convocation was arranged by the University to honour four distinguished guests. Two of these were former Fellows, Dr. David Hubel, Professor of Neurobiology at Harvard University and Dr. Henri Hécaen, Director of a Neurolinguistic Research Institute in Paris. Dr. Thomas Lambo, Deputy Director General of the World Health Organization and Dr. John Knowles, President of the Rockefeller Foundation were similarly honoured. The highlights of the III Foundation and more detailed reports of scientific sessions and research will be published in a separate volume to commemorate this special occasion as we have done in the past for the First and Second Foundations. This present report comments on some of the main activities of the Montreal Neurological Hospital.

The Penfield Pavilion will serve as a marvellous working memorial for Dr. Penfield's great legacy to neurology. Its splendid new resources will provide us with an opportunity to increase the pace of our treatment, teaching and research programs. The pavilion contains 72,000 square feet of space, a 50% increase over that which we have at present. Each floor will provide an expansion of the services already present at that same level in the two previous buildings. On the upper three floors will be clinical and research laboratories, with new animal quarters and proper housing of special services such as our computer unit and neuroisotope laboratories. On the fifth floor there will be a new operating suite and on the fourth floor, for the

first time, a properly planned neurological and neurosurgical intensive care unit designed to our own specifications, with neuroanaesthesia research and service areas. On the rest of the fourth floor and all of the third floor are patient areas with cheerful rooms and efficient nursing areas. The second floor will function as a teaching area for the post basic nursing course and for students and staff at all levels.

During the past five years we have had wonderful support from many individuals in the Department of Social Affairs of the Quebec Government. They have provided liberally of their time and advice for discussions and reviews of our projects as we have presented them. The staff of the Physical Plant of McGill University has worked hard to give us budgetary and supervisory support. Our professional consultants and contractors have worked effectively to keep the construction going ahead even during the severe winter weather over the past two years. I want to thank particularly all the members of the administrative staff who have carried the extra load of the construction program — Mrs. Howlett whose vigorous loyalty to the MNH has become legendary in government circles, Mr. Harry Marpole who has patiently kept up the momentum, consulting quietly with many members of staff to ensure the transitional changes, and Mr. Brian Malley and his staff who have dealt with literally thousands of items of equipment requested for use in the new building. During these past few years many have had to accept compromises in space, resources and working conditions which were often far below what we would have wished to provide. I am grateful for their understanding and cooperation. I appreciate also the continuing help and interest of the members of the Board of Directors of the Hospital and particularly wish to thank Mr. Peter Leggat, Chairman of our Audit Committee who, with Mr. Taylor Kennedy, our President, and Mr. Colin Webster, gave freely of their time and experience toward our efforts to stabilize the constant strains imposed on our hospital budgetary system.

The neurological and neurosurgical staff and the residents' teams from the MNH continue to operate out-patient clinics and polyclinics for the Royal Victoria Hospital and to cover the emergency areas for these specialties. Due to severe RVH budget cuts imposed by the government, it has become increasingly difficult to provide support staff and space for these clinics. We have unfortunately had to consider terminating the brain tumour registry which was run for many years under the supervision of Dr. Elvidge. We have had to provide, from our own hospital, social service support and secretarial help without which the clinics would be inoperable. We are looking at these problems intensively and have reviewed over the past two years in great detail the service and contractual arrangements between the MNH and the RVH. We have had the full support of the RVH staff in these negotiations. The new agreement will clarify many of the areas that were previously somewhat vague.

A continuing concern in regard to budgetary support is the lack of compensation from the University for teaching facilities and resources. The academic departmental budget remains almost entirely a partial salary support for our geographic full-time teachers at the Montreal Neurological Hospital. At the same time the Department of Social Affairs continues to examine every possible hospital expenditure and to restrict certain forms of budget support which were previously available. The quota imposed for non-Canadian residents and Fellows, the overall restriction of the number of residency posts in the Province of Quebec and the increasingly stringent requirements for residency licensure in the Province which operate at the hospital,

university, corporation and government levels, have made the planning for residency programs in neurology and neurosurgery extremely precarious. Fortunately, a fair degree of common sense has been evident in the application of some of these draconian regulations. Up until now we have managed to salvage a training program which over the past 40 years has enjoyed an international reputation. But unless provisions can be made to maintain the calibre of candidates and the universality which are the essential hallmarks of any proper graduate education program, we will have great difficulty in meeting the exacting standards of education for world neurology.

During the past year our residents distinguished themselves by garnering national and international awards. Dr. Howard Blume won the award of the American Academy of Neurological Surgeons for the best essay submitted on a research topic by any neurosurgical resident in North America. He received this for his experimental work on peptides in the hypothalamus which he carried out with Dr. Leo Renaud, Montreal General Hospital Research Institute. All three of the prize awards at the Canadian Congress of Neurological Sciences last year were won by residents from our MNI and McGill training program. Dr. Serge Gauthier in neurology won the Francis McNaughton prize for his work on chemical studies in nervous tissue and cerebral spinal fluid in which he collaborated with Dr. Theodore Sourkes, Director of the Biochemical Laboratory at the Allan Memorial Institute. Dr. Richard Branan who, like Dr. Blume, held an MRC Research Fellowship, won the Kenneth Mackenzie Award in Neurosurgery for his excellent studies using a computer-imaging technique which he has largely developed for quantitating the flow patterns in the epicerebral circulation. Dr. Kenneth Nudleman won the Herbert Jasper Award for his project on cortical evoked potentials that he completed in Dr. Andrew Eisen's laboratory at the MNI. These four young men launching now into their careers in neurology and neurosurgery exemplify the scientist-physician who can bridge the gap between research and the clinical problems of the bedside of the patient with neurological disorders. We are indebted to Dr. Penfield in setting the stage with the founding of the Neurological Institute in 1934 for the resources and the atmosphere to enable young men and women to develop this integrated approach to the study and treatment of the nervous system. Many residents who were trained here over the past 40 years have made outstanding contributions to the neurosciences, as well as to clinical neurology and neurosurgery. This is made clear by the sampling of our former residents who presented scientific lectures and reports at our III Foundation exercises.

One of our immediate targets in strengthening the resources of the Montreal Neurological Hospital and Institute will be to attract funds to provide for scholarships for outstanding candidates who wish to take their special training in neurology, neurosurgery and the brain sciences here but, who would not be eligible under the present restrictive regulations to qualify for the residency posts available through our reduced government support. Our close liaison with the World Health Organization too can be expected to provide some opportunities for keen young people from developing countries who are dedicated to become knowledgeable in neurology so that they can return to fulfill the urgent and widespread needs in their own countries. The establishment of these clinical scholarships, I believe, is of critical importance if we are to continue to recognize our responsibility to world neurology as an international teaching centre.

The staff of the clinical and laboratory departments have continued to make major contributions to our understanding of brain function and disorders of the nervous system. These are best exemplified in the list of some hundred publications contained elsewhere in this report.

Many individuals and groups again deserve our deep appreciation for their support and devotion to this hospital. They can all be assured that it is their dedication and contribution which gives this hospital centre its fine reputation. I wish to thank them all most sincerely and to wish them Godspeed for the coming year.

### *Staff changes*

Dr. R.G.B. Gilbert, who was formerly Neuroanesthetist-in-Chief at the MNH and for many years Chairman of the McGill Department of Anesthesia, resigned after a three-year extension of his statutory appointments. Dr. Gilbert was one of the pioneers in neuroanesthesia and established the high standard of anesthetic support to which our neurosurgical team has become accustomed. The many friends and colleagues of Dr. & Mrs. Gilbert extend warmest tribute to them for their contributions over many years to the Institute.

Dr. Carl Dila resigned from our neurosurgical staff at the end of last year to take up private practice in New England.

Dr. Saul Taylor, who was assistant neuroradiologist, moved to take up an academic appointment in the United States.

Dr. Mary E. Morris resigned as assistant neuroanesthetist in order to devote more time to anesthesia research at the University of Toronto.

Dr. Louise Charron left the Montreal Neurological Institute to join the neurological staff of the Hôtel-Dieu Hospital, Montreal.

Joint appointments were made between the Royal Victoria Hospital and the MNI-MNH of Dr. Yogesh Patel, neuroendocrinologist with the Department of Medicine, and Dr. Robert Dykes, neurophysiologist with Dr. Lloyd MacLean in the Department of Surgery.

Dr. Joseph Martin, Neurologist-in-Chief, MNH and Chairman of the Department of Neurology and Neurosurgery since November of last year is moving to Boston this summer to become Neurologist-in-Chief at the Massachusetts General Hospital and as well the Bullard Professor of Neuropathology at Harvard University. He will join there a distinguished band of MNI and McGill Fellows, including Dr. Nicolas Zervas, Professor of Neurosurgery at the same hospital, Dr. Miller Fisher, an outstanding neurological teacher at one time on the staff of the Montreal General Hospital and Montreal Neurological Institute, Dr. Keasley Welch, Chief of Neurosurgery at the Boston Children's Hospital and the Peter Bent Brigham Hospital and Dr. David Hubel, the distinguished Professor of Neurobiology. We are confident that Dr. Martin will continue to maintain our intellectual ties with the Harvard system. We wish him and his family well in his new academic venture.

We welcome two recent appointees to the MNH, Dr. Jean-Guy Villemure assistant neurosurgeon and Dr. Serge Gauthier assistant neurologist. Both earned distinction in their residency training program here.



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Laughlin Taylor, B.Ed. (Alberta), M.Sc.

*Assistant Neuropsychologist*

Marylin Jones-Gotman, Ph.D.

*Clinical Assistants, Neuropsychology*

Mary Kay Ajersch, M.A. (Western Ont.)

Gabriel Leonard, B.A., D.A.P. (Dublin)

Enda McGovern, B.A., Dip. Psych.

*Clinical Psychologist*

Clara Strauss, M.A.

*Psychiatrist*

Louise Demers-Desrosiers, M.D., C.M., F.R.C.P.(C)

*Assistant Psychiatrists*

Joannis Nestoros, M.D. (Nat. Univ. Athens), F.R.C.P.(C)

Martine Lalinec-Michaud, M.D., (Paris), F.R.C.P.(C)

*Neurophotographer*

C.P. Hodge, R.B.P., F.B.P.A., A.I.M.B.I.

\* Resigned July 1978

\*\* Resigned Dec. 1977

\*\*\* Resigned Apr. 1978



# MONTREAL NEUROLOGICAL HOSPITAL

## CONSULTING AND ADJUNCT STAFF

<i>Consulting Pathologist</i> .....	John B. Richardson M.D., Ph. D. F.R.C.P.(C)
<i>Honorary Consulting Psychiatrist</i> .....	Robert Cleghorn, M.D., D.Sc., F.R.C.P.(C)
<i>Consulting Psychiatrists</i> .....	Maurice Dongier, M.D. Heinz Lehmann, M.D., F.R.C.P.(C)
<i>Honorary Consulting Neurologist</i> .....	Roma Amyot, B.A., M.D.
<i>Consulting Neurologists</i> .....	André Barbeau, B.A., B.P.C.B., M.D., F.R.C.P.(C), F.R.S.C. Edward Bass, B.Sc., M.D., C.M., F.R.C.P.(C) Claude Bélanger, B.A., M.D., F.R.C.P.(C) Guy Courtois, B.A., M.D., M.Sc., F.R.C.P.(C) Jean-Léon Desrochers, B.A., M.D., F.R.C.P.(C) Normand Giard, B.A., M.D., F.R.C.P.(C) Raymond Lafontaine, B.A., M.D. Israel Libman, B.A., M.D., C.M., F.R.C.P.(C) Calvin Melmed, M.D., F.R.C.P.(C) Allan Morton, M.D., C.M., Ph.D., F.R.C.P.(C)
<i>Adjunct Neurologists</i> .....	Albert Aguayo, M.D. F.R.C.P.(C) Donald Baxter, M.D., C.M., M.Sc., F.R.C.P.(C) Sabah Bekhor, M.B., Ch.B., F.R.C.P.(C) Garth Bray, M.D., F.R.C.P.(C) Morrison Finlayson, M.B., Ch.B., F.R.C.P.(C) Peter Humphreys, B.Sc., M.D., C.M. Mortimer Lechter, B.Sc., M.D. Michael Rasminsky, B.A., M.D., Ph.D. Leo Renaud, B.A., M.D., Ph.D. Bernard Rosenblatt, B.Sc., M.D., C.M., F.R.C.P.(C) John Stewart, B.Sc., M.B., B.S., M.R.C.P., F.R.C.P.(C) William Tatlow, M.D., M.R.C.P., F.R.C.P.(C) Danica Venecek, M.D. Gordon Watters, B.A., M.D.

<i>Consulting Neurosurgeons</i> .....	Claude Bertrand, B.A., M.D., F.R.C.S.(C) Maurice Héon, B.A., M.D., F.R.C.S.(C) F.A.C.S. Gérard Leblanc, M.D., F.A.C.S., F.R.C.S.(C) Harold Rosen, B.Sc., M.D., C.M., F.R.C.S.(C), F.A.C.S.
<i>Adjunct Neurosurgeons</i> .....	John Blundell, M.A., M.D., M.R.C.P. (Lond.), F.R.C.S.(Eng.) Robert Ford, B.A., M.D., F.R.C.S.(C) Robert Hollenberg, B.A., M.D., F.R.C.S.(C) Peter Richardson, B.A., M.D., F.R.C.S.(C) Joseph Stratford, M.D., C.M., M.Sc., F.R.C.S.(C)
<i>Honorary Consulting Anaesthetist</i> .....	Harold R. Griffith M.M., B.A., M.D., C.M., F.A.C.A., F.I.C.A., F.F.A.R.C.S.(Eng.), F.R.C.P.(C)
<i>Consulting Anaesthetists</i> .....	Richard Catchlove, M.B., B.S., M.Sc. (Sydney), F.F.A.R.C.S. John W. Sandison, M.B., F.F.A.R.C.S.
<i>Adjunct Neurochemist</i> .....	Bruce Livett, B.Sc., Ph.D.
<i>Adjunct Physiologist (Anaesthesia)</i> .....	Kresimir Krnjevic, B.Sc., M.B., Ch.B., Ph.D., F.R.S.C.
<i>Consulting Radiologists</i> .....	Jean L. Léger, M.D. Jean Vézina, B.A., B.M., M.D.
<i>Adjunct Neuro-Endocrinologist</i> .....	Gloria Tannenbaum, B.Sc., M.Sc., Ph.D.
<i>Consulting Neuro-Otolaryngologist</i> .....	Athanasios Katsarkas, M.D., C.M.R.C.S.(C)
<i>Consulting Neuropsychiatrist</i> .....	Dorothy Stilwell, M.D., A.B.P.M.R., F.R.C.P.(C)
<i>Consulting Radiation Therapist</i> .....	John H. Webster, M.D. (Queens)
<i>Consultant, Employee Health Service</i> .....	Rosalind Hutchison, M.D., F.R.C.P.(C)
<i>Consulting Executive Director</i> .....	Douglas MacDonald, B.Eng.
<i>Consultant in Microbiology</i> .....	S.I. Vas, M.D., Ph.D. C.R.C.P.(C), F.R.C.P.(C)
<i>Consultant in Veterinary Medicine</i> .....	Leslie Lord, B.Sc., M.Sc., D.V.M.
<i>Consulting Neuroparmacist</i> .....	Gordon S. Brooks, B.Sc.†

† Deceased Nov. 11/78

## ADMINISTRATIVE STAFF

<i>President</i> .....	J. Taylor Kennedy, M. Eng.
<i>Director General</i> .....	William Feindel, M.D.
<i>Administrative Consultant</i> .....	Charles S. Gurd
<i>Director, Administrative Services</i> .....	Mrs. Alphonsine Howlett
<i>Director of Nursing</i> .....	Miss Caroline Robertson, N., B.N., M.Sc.A.
<i>Acting Director of Finance</i> .....	Mrs. Gean Pwu, B. Com. (Taiwan)
<i>Director of Personnel</i> .....	Hector Heavysege
<i>Director, Social Service</i> .....	Miss Verna Bound, P.S.W.
<i>Administrative Assistant</i> .....	Winston Rochette
<i>Registrar</i> .....	Bernard Graham, M.D.
<i>Assistant Registrar</i> .....	Danica Venecek, M.D.
<i>Planning Officer</i> .....	Harry G. Marpole

## SUPERVISORY OFFICERS

<i>Admitting</i> .....	Mrs. Margaret Bernard
<i>Dietician</i> .....	Mrs. Oresta Podgurny
<i>Employee Health Service</i> .....	Mrs. Rita Lacombe, P.H.N.
<i>Librarian</i> .....	Mrs. Marina Boski, B.A., B.L.S.
<i>Medical Records</i> .....	Miss Dorothy Lawson
<i>Publications</i> .....	Mrs. Rose Slapack

## NURSING STAFF

<i>Director of Nursing</i> .....	Miss Caroline Robertson, N., B.N., M.Sc.A.
<i>Assistant Director of Nursing (days)</i> .....	Miss Irene MacMillan, B.A., N., M.Sc.A.
<i>Assistant Director of Nursing (nights)</i> .....	Miss Elizabeth Barrowman, N.
<i>Nursing Coordinators (nights)</i> .....	Miss Lillian McAuley, N. Mrs. Margaret Smeaton, N.
<i>Nursing Coordinators (evenings)</i> .....	Miss Cecilia Largo, B.Sc., N. Miss Linda Maruska, N.
<i>Nursing Coordinators (days)</i> .....	Miss Anne Carney, N., B.N. Miss Annie Johnson, N.
<i>Assistant Director of Nursing Education</i> .....	Miss Helena Kryk, N., B.N.
<i>Coordinator Inservice Education</i> .....	Miss Felicia Skretkowicz, N., B.N.
<i>Nurse Clinician Teacher</i> .....	Miss Elizabeth Roll, N., B.N. (until Aug.4, 1978) Miss Marilyn Manchen, N.B.A., B.N. (from Aug.4, 1978)
<i>Nurse Clinician</i> .....	Mrs. Linda Robbins, N., B.N.
<i>Operating Room Supervisor</i> .....	Miss Norma Isaacs, N., B.N.
<i>Liaison Nurse</i> .....	Mrs. Rita Lacombe, P.H.N. (until April 1/78)
<i>Consultants in Education</i> .....	Miss Florence Mackenzie, N., B.N., M.Sc.A. Miss Kathleen Rowat N., B.Sc., N., M.Sc.N.

## HEAD NURSES

Miss Mary Cavanaugh, N.....	Mrs. Frances Murphy, N.
Miss Lucy Dalicandro, N.....	Mrs. Barbara Petrin, N.
Miss Marion Everett, N.....	Miss Ursula Steiner, N.
Miss Kimiko Hinenoya, B.A., N.....	Mrs. Winsome Wason, N.
Mrs. Georgette Jotic, N.	

## ASSISTANT HEAD NURSES

Miss Geraldine Fitzgerald N.....Mrs. Lois Gorman, N.

## THE AUXILIARY OF THE ROYAL VICTORIA HOSPITAL

*President*.....Mrs. G.L. Cheesbrough  
*Chairman, M.N.H. Coffee Shop Committee* .....Mrs. Fred McNeil  
*Treasurer*.....Mrs. Gordon Mathieson

## DEPARTMENT OF VOLUNTEERS OF THE ROYAL VICTORIA HOSPITAL

*Director*.....Mrs. Heather McFarland

## CLERGY

Reverend Lionel Temple-Hill.....Anglican Chaplain  
Rabbi M. Glick.....Hebrew Chaplain  
Pastor Heinz Dahle .....Lutheran Chaplain  
Reverend Father Anthony Gabriel.....Orthodox Priest  
Reverend Mel McDowell.....Protestant Minister  
Sister Brenda Halton .....Roman Catholic  
Reverend Father E. Messier, S.J.....Roman Catholic  
Father George Novotny, S.J. ....Roman Catholic  
Father Noel Rodrigue.....Roman Catholic



# McGILL UNIVERSITY TEACHING STAFF

Department of Neurology and Neurosurgery, Faculty of Medicine

<i>Acting Chairman of Department</i> .....	J. Preston Robb
<i>William Cone Professor of Neurosurgery</i> .....	William Feindel
<i>Professor Emeritus, Neurology</i> .....	Francis McNaughton
<i>Professors, Neurology</i> .....	Albert Aguayo Donald Baxter George Karpati Joseph Martin Gordon Watters
<i>Professors, Neurosurgery</i> .....	Gilles Bertrand Theodore Rasmussen Joseph Stratford
<i>Associate Professors, Neurology</i> .....	Frederick Andermann Garth Bray J.B.R. Cosgrove Andrew Eisen Morrison Finlayson Irving Heller Donald Lawrence Israel Libman Michael Rasminsky Leo Renaud Allan Sherwin Ivan Woods
<i>Assistant Professors, Neurology</i> .....	Eva Andermann Michel Aubé Serge Gauthier Bernard Graham Peter Humphreys Calvin Melmed Allan Morton Sergio Pena Bernard Rosenblatt John Stewart W.F.T. Tatlow
<i>Lecturers, Neurology</i> .....	Edward Bass Sabah Bekhor Mortimer Lechter
<i>Associate Professors, Neurosurgery</i> .....	John Blundell Robert Ford Robert Hansebout André Olivier

<i>Assistant Professors, Neurosurgery</i> .....	Robert Hollenberg John Little Peter Richardson Harold Rosen Jean-Guy Villemure
<i>Associate Professor, Neurosurgical Research</i> .....	Lucas Yamamoto
<i>Professor, Neurophysiology</i> .....	Pierre Gloor
<i>Associate Professor, Neurophysiology</i> .....	Robert Dykes
<i>Associate Professor, Clinical Neurophysiology</i> .....	Katherine Metrakos
<i>Assistant Professor, Neurophysiology</i> .....	Luis Quesney
<i>Assistant Professors, Neuroelectronics</i> .....	Jean Gotman John Richard Ives Christopher Thompson
<i>Lecturer, Neuroelectronics</i> .....	Terence Peters
<i>Professor Emeritus, Neurochemistry</i> .....	K.A.C. Elliott
<i>Professor, Neurochemistry</i> .....	Leonhard Wolfe
<i>Associate Professors, Neurochemistry</i> .....	Bruce Livett Hanna Pappius
<i>Associate Professors, Neuroradiology</i> .....	Roméo Ethier Denis Melançon
<i>Assistant Professor, Neuroradiology</i> .....	Garry Bélanger
<i>Associate Professor, Anaesthesia</i> .....	Davy Trop
<i>Assistant Professors, Anaesthesia</i> .....	Mounir Abou-Madi Luis Cuadrado
<i>Lecturer, Anaesthesia</i> .....	Jennifer Barnes
<i>Professor, Neuropathology</i> .....	Stirling Carpenter
<i>Associate Professor, Neuropathology</i> .....	Gordon Mathieson
<i>Lecturer, Neuropathology</i> .....	Kathleen Meagher-Villemure
<i>Professor, Neuropsychology</i> .....	Brenda Milner
<i>Assistant Professors, Neuropsychology</i> .....	Marilyn Jones-Gotman Laughlin Taylor
<i>Lecturer, Clinical Psychology</i> .....	Clara Strauss
<i>Associate Professor, Neuroanatomy</i> .....	Donald Lawrence
<i>Assistant Professor, Neuroanatomy</i> .....	Barbara Jones
<i>Associate Professor, Neuro-ophthalmology</i> .....	Trevor Kirkham
<i>Assistant Professor, Neuro-ophthalmology</i> .....	Daniel Guitton
<i>Associate Professor, Neuro-endocrinology</i> .....	Yogesh Patel
<i>Assistant Professors, Neuro-endocrinology</i> .....	Paul Brazeau Gloria Tannenbaum

Lecturer, Psychiatry.....Louise Demers-Desrosiers

*Representative to the Council of the Faculty  
of Graduate Studies and Research*  
Professor Pierre Gloor

## EXECUTIVE COMMITTEE OF THE MONTREAL NEUROLOGICAL INSTITUTE

William Feindel, M.D., *Chairman*

Gilles Bertrand, M.D.	Gordon Mathieson, M.D.
Roméo Ethier, M.D.	Joseph Martin, M.D.*
Pierre Gloor, M.D.	Leonhard Wolfe, M.D.
Francis McNaughton, M.D.	Mrs. Rose Slapack (Secretary)

## EXECUTIVE STAFF OF THE MONTREAL NEUROLOGICAL INSTITUTE

*Director* .....William Feindel, M.D.  
*Associate Director (Neurosurgery)*.....Gilles Bertrand, M.D.  
*Associate Director (Neurosciences)* .....Pierre Gloor, M.D.  
*Associate Director (Neurology)* .....Joseph Martin, M.D.\*  
*Associate Director (Finance & Development)* .Norman A. Bleakley, F.C.M.A.(Eng.)  
*Executive Secretary*.....Mrs. Sophie Malecka

\* Resigned July 1978

## RESIDENT STAFF — JULY 1977 THROUGH JUNE 1978

*Senior Residents* ..... J. Martinez-Leyva, M.D. (Mexico)  
J. Wells, M.D. (Tulane)

## NEUROLOGICAL SERVICES

### *Residents: 6 mos. on this service*

W. Becker, M.D. (Manitoba)*	S. Prelevic, M.D. (Belgrade)
J. Carlton, M.D. (Johns Hopkins)*	L. Ridsdale, M.D. (McMaster)*
A. Hakim, M.D. (Albany Medical College)	K. Silver, M.D. (Saskatchewan)
S. Jiaravuthisan, M.D. (Mahidol Univ.)	D. Stowens, M.D. (State University, N.Y.)*

### *Assistant Residents: 6 mos. on this service*

G. Elleker, M.D. (Alberta)	D. Keene, M.D. (Saskatchewan)
G. Francis, M.D. (Queen's)	J. Nelson, M.D. (Howard)
A. Granich, M.D. (McGill)*	K. Odusote, M.D. (Ibadan, Nigeria)
P. Herscovitch, M.D. (McGill)	D. Stowens, M.D.

### *Resident Consults to RVH: 3 mos. on this service*

W. Becker, M.D.	D. Katz, M.D. (Pennsylvania)
J. Carlton, M.D.	H. Markley, M.D.
A. Granich, M.D.	(Maryland School of Medicine)

*R.V.H. Rotators*

B. Beaudry, M.D.  
A. Binette, M.D.  
S. Butman, M.D.  
J. Calles, M.D.  
D. Dawson, M.D.  
P. Rene DeCotret, M.D.  
E. Echenberg, M.D.  
F. Friedman, M.D.  
O.-L. Kon, M.D.  
T. Kovacs, M.D.  
A. Langleben, M.D.  
D. Langleben, M.D.  
J. Leclerc, M.D.  
J. Leech, M.D.

D. McGraw, M.D.  
S. Nadler, M.D.  
C. Psihrams, M.D.  
D. Roden, M.D.  
R. Schlesinger, M.D.  
E. Shen, M.D.  
M. Sourkes, M.D.  
U. Steinbrecher, M.D.  
E. Sternberg, M.D.  
S. Tam, M.D.  
E. Stanton, M.D.  
B. Unikowsky, M.D.  
J. Wiseman, M.D.  
C. Yeadon, M.D.

*Montreal General Hospital: 6 mos. on this service*

P. Herscovitch, M.D.  
S. Jiaravuthisan, M.D.

L. Ridsdale, M.D.  
L. Prescott, M.D. (U. of Montréal) (E.E.G.)

*Montreal General Hospital Assistant Residents: 6 mos. on this service*

S. Chayasirisobhon, M.D. (Mahidol Univ.)  
G. Elleker, M.D.  
Redda Tekle Haimanot, M.D.  
(Hebrew Univ.)

J. Nelson, M.D.  
S. Prelevic, M.D.

*Montreal Children's Hospital Residents: 6 mos. on this service*

K. Nudleman, M.D. (Queen's)  
J.-P. Bernier, M.D.  
R. Filiatrault, M.D.  
E. Kratzenberg, M.D.

J. Stewart, M.D. (U. of West Indies)  
(U. of Montréal) (E.E.G.)\*  
(U. of Montréal) (EEG)\*  
(U. of Nancy) (EEG)\*

*Montreal Children's Hospital Assistant Residents: 6 mos. on this service*

S. Chayasirisobhon, M.D.  
W. Barkas, M.D. (McGill)  
D. Katz, M.D.\*  
D. Keene, M.D.

H. Markley, M.D.\*  
K. Silver, M.D.  
B. Zifkin, M.D. (McGill)

*Jewish General Hospital: 6 mos. on this service*

J. Carlton, M.D.  
\* 3 mos. on this service

D. Stowens, M.D.

**NEUROSURGICAL SERVICES**

*Residents: 6 mos. on this service*

E.J. Arpin, M.D. (Manitoba)  
G. Blomquist, M.D. (Vanderbilt)  
J. Martinez-Leyva, M.D. (Mexico)

V. Smart-Abbey, M.D. (McGill)  
J.-G. Villemure, M.D. (Laval)  
J. Wells, M.D. (Tulane)

*Assistant Residents: 6 mos. on this service*

B. Dial, M.D. (South Carolina)  
D. Dubuisson, M.D. (McGill)  
A. Joern, M.D. (Oklahoma)

H. Milam, M.D. (Meharry)  
J. Montes, M.D. (San Luis Potosi)  
H.-S. Yeh, M.D.  
(National Defense Medical Center)

*Montreal General Hospital Residents: 6 mos. on this service*

E.J. Arpin, M.D.\*

J. Martinez-Leyva, M.D.\*

G. Blomquist, M.D.\*

J. Montes, M.D.

A. Joern, M.D.

V. Smart-Abbey, M.D.

*Montreal Children's Hospital Residents: 6 mos. on this service*

G. Blomquist, M.D.\*

B. Dial, M.D.\*

H. Milam, M.D.\*

A. Salloum, M.D.

(Rotator, Centre Hospitalier

Universitaire de Sherbrooke)

J. Martinez-Leyva, M.D.\*

*R.V.H. Rotators (Neurosurgery)*

B. Dial, M.D.

J. Shindman, M.D.

J. Findlater, M.D.

A. Taylor, M.D.

J. Moorhead, M.D.

\* 3 mos. on this service

**NEUROSURGICAL RESEARCH:**

*Cone Laboratory*

R. Branan, M.D. (Colorado) M.R.C. Fellow

Ernst Meyer, M.Sc. (U. of Montréal) Killam Scholar

M. Motomiya, M.D. (Hokkaido Univ.) Cone Fellow

H. Nukui, M.D. (Gunma Univ.) Japan Government Fellow

H. Ortegón, M.D. (Yucantan, Mexico) M.R.C. Research Trainee

V. Smart-Abbey, M.D. (McGill) M.N.F. Fellow

**DEPARTMENT OF NURSING EDUCATION  
POST BASIC CLINICAL PROGRAM IN  
NEUROLOGICAL AND NEUROSURGICAL NURSING**

*Class from Sept. 1977 — Feb. 1978*

Bierece, Miss Pamel

Christensen, Miss Bente

Fontanella, Miss Mary K.

Hylands, Mrs. June

Kerby, Miss Leslie G.

Lim, Miss Anna Oon Geck

Lockwood, Miss Heather Ann

Piasecki, Miss Janet F.

Shaw, Miss Leslie

Tay, Miss Lay Lian

*Class from March — Aug. 1978*

Engbretsen, Jean-Louise

Lepire, Jean-Marie (Mr.)

Ling, Bee Sian

Lusengo, Machu Andrine

Mitchell, Heather

Natucci, Berta

Paquette, Yolande

Pulman, Joann M.

Seet, Siew Kim

Sloan, Dinah

Suyama, Keiko

Tan, Guat Choo

Tanguay, Michel (Mr.)

Van Veen, Trudy

Zeidelman, Cheryl

# Neurology

Dr. Joseph B. Martin

The past year has been a productive and fruitful one for Neurology at the Montreal Neurological Institute and McGill University. Activities of patient care, teaching and research have continued apace.

*CLINICAL SERVICES:* There were 1,126 patients admitted to the Neurology Services at the Montreal Neurological Hospital during this period. I believe that the quality of patient care has been superb, although the staff may not always have been completely successful in diagnosing or alleviating the various neurologic disorders that bring patients from all over North America and, indeed, the world. The Neurological Hospital is frequently a court of last resort for difficult clinical problems and I believe we continue to demonstrate our expertise and special skills. Together with the nursing and other paramedical staff we have succeeded in showing both our knowledge and our compassion and concern. I would like to thank Miss Robertson and her staff for the excellent assistance that they have provided to the neurological staff. We are aware that their contributions are fundamental to any achievements that have been made. The cooperation between her staff and those of other hospital departments related directly to patient care has been most appreciated. I would also like to thank Miss Vera Bound for the assistance provided by Social Service and Miss Kryk and Miss Roll for their help when patients are required for teaching purposes.

We have continued to operate active neurological out-patient clinics at the Royal Victoria Hospital. These clinics have been available to patients from the emergency room and the community, eight half days each week, each clinic being staffed by one neurologist and a resident. In the general neurology clinics 1,816 patients were seen. Special clinics for multiple sclerosis and epilepsy have continued to be active. The epilepsy clinic alone had 1,692 patient visits. We are grateful to Drs. Venecek and Remillard who assist in the operation of these clinics.

I am pleased to announce that Dr. Serge Gauthier has joined the Neurology Staff at the Montreal Neurological Hospital effective July 1st. Dr. Gauthier is a graduate of our neurology training program and will be active in research activities related to the neuropharmacology of neurologic disease. We accepted with regret the resignation of Dr. Louise Charron who found it necessary to undertake increased clinical responsibilities at Hôtel Dieu and the Université de Montréal.

*TEACHING:* Our responsibilities for undergraduate student teaching have increased. We have usually found it necessary to accept two medical students to each of our three clinical services for one or two month rotations. In addition, we have assigned a medical student to the consultation service at the Royal Victoria Hospital when needed. We continue to receive many applications from medical students throughout Canada, the United States and Europe and we have made every effort to accept these representatives of other schools in order to enrich and broaden our experience and exchange. The Central Nervous System Course, directed by Dr. Donald Lawrence, has continued to be an outstanding and highly favored presentation to the first year medical school class.

The residency training program in Neurology is vigorous and healthy despite cutbacks in residency posts for non-Canadian graduates to 15% of the total. We have succeeded in attracting a first rate group for the current year. The residents rotate

through the teaching hospitals of McGill University, namely, the Montreal General Hospital, the Montreal Children's Hospital and the Jewish General Hospital, in addition to the Montreal Neurological Hospital which serves as the main base of clinical and basic neuroscience teaching. A further reduction in training posts for 1979 is expected but we will protect our training program in every way possible.

We congratulate Dr. John D. Stewart who received the Penfield Award in Neurology this year. We were pleased and proud that two of the national awards of the Canadian Congress of Neurological Sciences went to our residents and Fellows. Dr. Serge Gauthier was awarded the Francis McNaughton Prize for his essay on "Neural regulation of adrenal tyrosine hydroxylase". Dr. Ken Nudleman received the Herbert Jasper Prize for his paper entitled "Cortical and cervical somatosensory responses in suspected multiple sclerosis". Both papers were presented at the Annual Meeting held in Vancouver in June 1978.

*RESEARCH:* Research activities by the neurology group at each of the teaching hospitals have been strong. Here at the Montreal Neurological Institute, the neuromuscular group comprised of Dr. George Karpati, Dr. Andrew Eisen and Dr. Stirling Carpenter has continued analysis of a variety of disorders affecting muscle and nerve. Dr. Allan Sherwin has continued experimental studies on mechanisms of epilepsy and the action of anticonvulsant drugs. Dr. Eva Andermann and Dr. Fred Andermann have continued their stimulating studies on the inborn errors of metabolism and heredo-familial disorders affecting French Canadian patients and have published several fascinating reports concerning these disorders. These studies will be described in the publication of the proceedings of the III Foundation of the MNI.

At the Montreal General Hospital, Drs. Albert Aguayo, Garth Bray, Michael Rasminsky and Bruce Livett have been intensely active in the study of electronmicroscopic, electrophysiologic and biochemical disorders of peripheral nerve. Dr. Aguayo and Dr. Bray were given the Weil Award of the American Neuropathological Association for 1977. Dr. Leo Renaud and Dr. Paul Brazeau together with my own research team have been active in the study of neuroendocrine mechanisms of hypothalamic regulatory control and of the effects of peptide hormones on brain function. A number of clinical studies have been on-going at the Montreal Children's Hospital and at the Jewish General Hospital.

As in former years, the Faculty at McGill was strongly represented at the Annual Meeting of the American Academy of Neurology which was held in Los Angeles in April of this year.

In summary, Neurology at the Montreal Neurological Hospital and in the Department at McGill remains vigorous. I can report with confidence that we have successfully balanced each of the components of the traditional three-legged stool, i.e. patient care, teaching and research which are the combined responsibility of every university teaching hospital.

I would like to add my personal thanks to the members of the Department of Neurology and Neurosurgery at McGill University, to the staff at the Montreal Neurological Hospital and Institute, and to my many friends and acquaintances for their assistance and help during the past two years. I leave McGill and Montreal with deep regret but with the confidence that things will continue to move ahead here and that the future will hold many outstanding rewards and accomplishments for the Medical Faculty of McGill.



# Neurosurgery

Dr. Gilles Bertrand

During the twelve-month period between April 1977 and March 1978, 791 surgical operations were carried out in our operating theatres. Of these, 622 were major procedures. This represents a slight decrease (19 cases) from 1976 but is still well above the accomplishments of other recent years.

As usual there were a large number of operations for epilepsy (67) and for brain tumours (74) and there was an increase in the number of procedures for cerebral vascular disease (8 external carotid to internal carotid bypasses and 22 carotid endarterectomies). There was also an increase in the number of lumbar discectomies from a low of 55 in 1976 to 76 this year. There was also an increase in pituitary tumours to 36 which reflects the keen interest and cooperation of the Department of Endocrinology of the Royal Victoria Hospital. There were fewer operations for hydrocephalus, for trauma and for pain.

Only four infections occurred as a result of surgery, a rate of 0.5 which is a tribute to the efficiency and meticulous care of our operating room staff directed by Miss Norma Isaacs and of the infection committee, now headed by Dr. John Little. Dr. Little succeeds Dr. Robert Hansebout who chaired this committee for many years and to whom we are all indebted for having established a strict reporting and control procedure for all types of infections in the hospital.

The surgical workload has been heavier for us since the departure of Dr. Carl Dila last December. Dr. Dila started his residency training here in July 1966 and joined our staff in 1971. He is now engaged in private practice in Bridgeport, Connecticut, where he has joined a group of neurosurgeons. We all miss his calm efficiency and wish him success in his continuing career.

Fortunately, we were able to recruit Dr. Jean-Guy Villemure to fill this gap in our ranks and to strengthen our department. Dr. Villemure finished his training in Neurosurgery at the Institute last July, having won the "Wilder Penfield Award for Excellence" during his residency. He is also to be congratulated for having successfully passed the specialty examination of the Corporation of Physicians and Surgeons of the Province of Quebec, as well as the Fellowship examination of the Royal College of Physicians and Surgeons of Canada. We welcome him back to our midst, together with his wife Kathleen, who is also joining our staff in the Department of Neuropathology.

The surgical workload has made almost unreasonable demands on our anaesthetists, Dr. Davy Trop and his assistants, Dr. Mounir Abou-Madi, Dr. Jennifer Barnes and Dr. Luis Cuadrado. This pressure has been felt particularly since Dr. Richard Gilbert's departure. Dr. Gilbert had been at the Institute since 1950 and had become Chief of Anaesthesia in 1955 and Chairman of the Department of Anaesthesia of McGill University in 1957. He has now officially retired to a more bucolic life in Cowansville but he may be getting his "second wind", if I may apply this most unscientific term to a world-renowned respirologist. My spies tell me that his six-foot plus frame has been seen on occasion crouching under the drapes at the Montreal General Hospital. Dr. Gilbert did much to create and develop the science of

Neuroanaesthesia which had come a long way from the days of rectally-administered Avertin. Modern anaesthesia is now very complex applied pharmacology and cardiorespiratory physiology. Neurosurgeons are well aware that they could not do much without specially competent anaesthetists.

Great demands have also been made on our resident staff. Former residents have always boasted of how tough things were in the old days under the tutorship of the founding neurosurgeons of this Institute but, with a diminishing quota of residents and a larger number of staff surgeons, life has not been easy for modern trainees either. I am sure that I express the sentiment of all my colleagues in thanking all our residents on the first neurosurgical service, and Dr. Joy Arpin and Dr. Gustav Blomquist, the senior residents on the second service for their devotion and keen interest in the care of our many patients and thoughtful management of their respective services.

This year, the "Wilder Penfield Award for Excellence in Neurosurgery" went to Dr. John Wells. Two former residents should also be congratulated for their research accomplishments; Dr. Howard Blume, who received the "American Academy of Neurological Surgery Award" for his work on the physiology of the hypothalamus, and Dr. Richard Branan who was given the "K.C. McKenzie Memorial Award" of the Canadian Neurosurgical Society for his studies on computer imaging of cerebral blood flow.

Apart from their clinical activities, the neurosurgeons have all been involved, to various degrees, in administrative duties, clinical research and many extramural academic activities.

Dr. Theodore Rasmussen is still engaged in the long-term follow-up of the surgically treated epilepsies. He chaired the Inaugural Symposium on Functional Neurosurgery at the "Hospital das Clinicas" of the University of Sao Paulo Medical School in Brazil. He was Co-chairman of the Neurosciences Symposium for the 50th Anniversary of the University of Chicago Medical Center. He was Visiting Professor at the Down State Medical Center of the State University of New York, in Brooklyn. He was Guest Lecturer at the International Congress of the World Society for Stereotactic and Functional Neurosurgery in Sao Paulo, Brazil, and was elected to honorary membership of this Society. He is a member of the "Seizure Disorder Panel" of the American Medical Association-Federal Aviation Administration Study and Report project. He serves on the council of the Eastern Association of Electroencephalography. He continues as a consultant to the Epilepsy Branch of N.I.N.C.O.S. Neurological Disorders Program and Sensory Neural Prosthesis Committee.

Dr. William Feindel continues his studies of temporal lobe epilepsy and his experimental and clinical observations on cerebral circulation, using fluorescein angiography, C.B.F. measurements, positron tomography and x-ray microscope. He is also studying the role of C.T. scanning in the clinical neurosurgery of epilepsy and is making an analysis of speech mechanisms from cortical stimulation in man. He is engaged in a biographical study of Wilder Penfield's work and legacy to neurology. Dr. Feindel was elected Vice-President of the Society of Neurological Surgeons. He serves on the Medical Research Council Neurosciences Committee, the National Institutes of Health Monitoring Committee for Cerebrovascular projects, the Royal College Committee on Neurosurgery and the Editorial Board of *Excerpta Medica*. He was the "Allan Bailey Memorial" Visiting Professor and Lecturer at the University of

Saskatchewan and Visiting Lecturer to the University of Milan and to the University of Padua in Italy. He is a member of the Conseil de la politique scientifique du Québec.

Dr. Robert Hansebout is now assistant to the Director of Professional Services of the Montreal Neurological Hospital and has been re-elected as Vice-President of the Association of Neurosurgeons of the Province of Quebec. His experimental study of the effect of spinal cord cooling in the treatment of spinal cord trauma is now finding an application to human patients.

Dr. André Olivier remains on the Council of the Association of Neurosurgeons of the Province of Québec and is now Chairman of the Committee of Continuing Medical Education of that Association. He continues to adapt the stereotactic method to the investigation of seizures and the diagnosis of cerebral tumours and is pursuing his work on the anatomical connections of the limbic system and the structures of the thalamus.

Dr. John Little, now a Fellow of the American College of Surgeons, continues his research on cerebral blood flow of brain revascularization procedures such as E.C.-I.C. bypass and carotid endarterectomy in patients and, on the experimental animal, the protective effect of certain drugs on cerebral infarction.

Dr. Gilles Bertrand was Visiting Professor to the University of Vermont Medical School in Burlington and a Guest Speaker to the Inaugural Symposium on Functional Neurosurgery of the "Hospital das Clinicas" of the University of Sao Paulo Medical School in Brazil. He was elected to the Society of Neurological Surgeons and remains on the Council of the World Society for Stereotactic and Functional Neurosurgery. He attended the International Congress of Neurosurgery in Sao Paulo as delegate of the American Academy of Neurological Surgery. His research interests are centred on the evaluation of the surgical treatment of pituitary tumours on syringomyelia and on means of adapting computerized tomography to stereotactic localization of intracranial structures.

# Administration

Mrs. Alphonsine Howlett

The year 1977-78 has been the year of construction. No one in the hospital was unaffected by it. Although everyone knows that Mr. Jean-Paul Tremblay, our construction superintendent, is the best there is on any construction site, he could not eliminate the noise and the dust. Those most affected were on the south end of the hospital and I would like to offer them my congratulations on the stoical way they accepted the situation. In spite of everything, patient care under the able guidance of Miss Robertson received the same high quality as ever.

An enormous amount of my time as administrator has been taken up with the back and forth exchange between McGill Physical Plant which acts as the general contract administrator of the construction, and the Ministry of Social Affairs which controls every cent we spend. The workload became heavier and heavier as the Ministry's request to have all communication written in French became more insistent. However, help came in the person of Madame Lise Cattaert who came on staff as my secretary last September. Our acting Director of Finance, Mrs. Gean Pwu and her hard working staff had to cope with the increased flow of directives from the Ministry.

In the three years that I have been Administrator, we have had only one arbitration case. This is due to the ability and concern of Mr. Heavysage and his staff. He always takes the time to sit down and discuss a problem in spite of his busy work load. He also negotiated staff classification with the Montreal Council of Hospital Syndicates, struggling to maintain our best interests.

Mr. Rochette and his housekeeping and maintenance staff deserve the gratitude of all for their unfailing good humour while increasing their efforts to keep things normal during this difficult year.

When Mr. Gurd, our consultant in charge of the purchase of equipment for the Penfield Wing became ill at a critical time, Mr. Malley, our Materials Manager, valiantly took over his work on top of his own. It was a gigantic task. Mr. Malley was ably supported by Mr. Birkett and his staff who kept up the on-going day to day work.

To Mrs. Podgurny and the Dietary Department go our special thanks for a splendid day to day job.

Mrs. Boski and her assistant kept the library functioning to everyone's satisfaction. She was very happy to have a qualified volunteer in the person of a Notre Dame Sister, Sister Elsie.

The Clinical Advisory Council had an active year, adding two new ad hoc committees, the Environment Committee and the Newsletter, to its frame of responsibilities. We owe a great deal to the effort put out by the staff of the Newsletter "The Fifth Ventricle" under the able direction of Miss Skretkowicz.

The Annual Reitman Luncheon was again enjoyed by the staff this year. There was one sad note. Mrs. Sara Salomon, Mrs. Reitman's mother was not with us this year as she has been in the past three years.

Finally I would like to compliment our staff on the impressive effort they are making to learn French.

It has been a difficult year of readjustments but as always at the Neuro, an active and productive one.

# Financial report

Mrs. Gean Pwu

Because hospitals are labour-intensive organizations, salary and wages this year as always, represented the largest expenditures. Of the total expenditures 74% was consumed by salaries. Medical and surgical supplies used up 2%; drugs 1.5%; fringe benefits 5% and other supplies and expenditures 17.5%.

The operational cost for 1976-77 was \$9,287,068 compared to the 1977-78 figure of \$9,547,828, an increase of 2.8%. Revenue received in 1976-77 was \$8,961,175 compared to the 1977-78 figure of \$9,769,289, an increase of 9.01%, resulting in an accounting surplus of \$392,420. Due to a new directive issued by the Government, however, hospitals must now return any excess revenue or unspent expenses in certain areas. Therefore we shall have to return \$170,960, reducing our net surplus to \$221,461.

It is most encouraging to note that despite the difficult economic times, we have been able to work together to reduce our expenses while maintaining the quality of care for our patients. I would like to emphasize the fact that, even though we have had a surplus for this year, we must intensify our efforts to further reduce our expenses and to function within the approved budget for the coming year.

I wish to express my thanks to the members of the Board of Directors, to Dr. Feindel, Mrs. Howlett, to my staff for their loyalty and support, and to all the department heads and other members who gave me encouragement and help during the past year.

## Nursing Department

Miss Caroline Robertson

It gives me great pleasure to say that this has been a year of progress in the Nursing Department.

We still had an old building with its plumbing, electrical and space problems, we still had 1950 equipment to do a 1970 job. Our financial budget just does not cover our patient requirements for staffing or equipment. In spite of this I can report with satisfaction that we have learned to plan our care and choose our priorities more effectively. It has been a very good year for team work. Using the sub-committee approach to initiate changes we have accomplished a great deal as a team.

In liaison with the medical staff we have changed to problem-solving charting and all clinical departments are beginning to use this method of communication. We have also used the liaison system to individualize seizure precautions. The multi-discipline groups have used the problem-solving method to prepare patients for discharge home or referral to other facilities. The stay committee employs this method as well and the success in reducing the long stay list is considerable.

A multi-discipline spinal team is coordinating the care of these patients effectively.

The weekly round which includes the patient is an old liaison method with a new spark of interest.

The operating room — intensive care committee has agreed on several procedures that are now done by the nursing staff rather than the doctors.

Infection control has changed the isolation procedure guide to suit the specific groups of bacteria, rather than blanket isolation for all.

Nursing practice has set standards for caring for the confused and aggressive patient and for post-operative care of the seizure patient. We are beginning to practice the concurrent audit for evaluation of basic patient care. Our next step will be to set standards for patient health and prevention of disease so that we can improve our ability to help the patients to learn health care.

The head nurse group in conjunction with the palliative care committee have set up a working paper on standards for care of the terminally ill at our hospital.

Nursing grand rounds now take place on a monthly basis. We concentrate on demonstrating the nursing process, describe our standards for care and look at solutions for nursing and patient problems. The format is the medical model but the content is nursing.

The Clinical Staff Advisory Committee liaison is growing as well and our "Fifth Ventricle" is a lively way of finding out what's new at the Neuro.

Another step we have taken this year was to study in depth the activities of nursing personnel. With Miss Barbara Kuhn, Nursing Consultant, we completed a three-week activity sampling study on 4N, 4E and 3N.E. wards. Meanwhile all the patients were classified according to their basic care requirements over a three-month period. From the regression analysis, Miss Kuhn developed a formula to predict patients' nursing requirements in intensive care and a different formula for the other units. We now can predict the numbers of staff we need and are also able to demonstrate the days on which we do not have adequate staff to match the patient care requirements for the day. This material is now ready for presentation to the Ministry of Social Affairs regarding our budget needs for neurological nursing. This study was supported by The Penfield Research Fund.

It has been another good year for our post basic education program. We had the usual two classes and a total of 17 students from seven different countries. The present class now numbers 16 students.

Our education committee has met monthly to study our philosophy and objectives. Miss Florence MacKenzie and Miss Kathleen Rowat, Education Consultants from the McGill School of Nursing, share in our self-evaluation methods. Miss Helena Kryk has developed a model for neurological nursing that is adaptable to all functions of our department.

The Auxiliary of the Royal Victoria Hospital has made it possible for Mrs. F. Murphy, Head Nurse, to complete the extension course in Nursing Unit Administration and also has provided funds for an I-Med machine to help regulate intravenous fluid more accurately and a medication cart. For these symbols of progress we are truly grateful.

I do not plan to thank individual people this year because so many persons have been involved that I would want to name everyone.

We were delighted that Miss Eileen Flanagan, Director of Nursing for many years at the Neuro, received the greatly deserved honour of Doctor of Laws from McGill University.

In summary, this has been a satisfying year; one in which we progressed with more in-depth learning programs, achieved more changes to better patient care through liaison and started a system of objective evaluation of patient care.

# Social Service Department

*Director* ..... Verna Bound, B.S.W., M.S.W. (P.S.W.)

*Clinical Staff*

- Vivian Gold, B.A., M.S.W. (P.S.W.)
- Saroj Gupta, B.A., M.S.W. (P.S.W.)
- Irene Liebich, B.A., M.S.W., (P.S.W.)
- Kathleen Macdonald, B.A., B.S.W. (P.S.W.)
- Monica Wilde, B.A., M.S.W. (P.S.W.)

*Consultant Multiple Sclerosis Project*

- Carol Kremer, B.A., M.S.W. (P.S.W.)

This has been a year of many changes for the Social Service Department including the appointment of myself as the new Director. Noella Vaillancourt’s death came as a shock to both the hospital and the medical labour bargaining unit of Montreal. Cynthia Griffin (Wardwell) retired, following 20 years of service to the MNH. Additions to the department were Vivian Gold from the RVH and Christine Marksteiner, secretary. Through the generosity of the Montreal Association for Multiple Sclerosis we were also able to temporarily hire Carol Kremer to conduct a research proposal for a home care programme as well as to give direct social services to MS patients and their families.

In spite of these staff changes and the onslaught of construction noise, the department expanded both in programs and number of patients served. Of the total of 2,137 patients actively treated during the year (excluding families), half are being followed as out-patients. This constitutes a problem as the hospital priorities are the in-patient population, and we do not have the staff or budget to meet all these needs.

The demand for services from the MS clinic and seizure clinic continues to increase. These are long-term patients requiring continuous intervention because of complex emotional and social problems. There is no other facility in Montreal to provide this comprehensive treatment approach. Irene Liebich and Saroj Gupta devote three quarters of their time to the seizure population and Vivian Gold almost half her time with the MS patients.

Direct services given to patients and families range from crisis intervention, counselling and diagnostic psychosocial assessments to a variety of concrete services around finances, discharge planning and resource coordination. Considerable time is also spent on indirect services. These include the planning aspects of care such as spinal rounds, collaboration with other disciplines, various conferences and committee work. Besides serving on the committees on stay, on terminally ill, nursing liaison, Monica Wilde is serving also on the executive of CSAC. Outside the hospital we are involved in many community activities such as speaking engagements, liaison with social agencies and public associations, assessments of resources and, of course, our ongoing participation with our employer - Ville Marie Social Service Centre.

Some of the new programs initiated have been in the form of group activities a



self-help group of MS patients, a volunteer group helping with the MS research, a weekly group of seizure patients, the beginnings of an official volunteer program and the beginnings of an educational group for families of MS patients.

Our teaching affiliation with McGill School of Social Work continues. Saroj Gupta supervised three students this past year and we have agreed to supervise three others in September.

Our busy department could not function without the diligent efforts of our secretarial staff and the many contributions by volunteers and voluntary organizations.

I would like to give special thanks to Kathleen Macdonald who ran the department during my unexpected absence and to the staff, in general, for their support during my first year as Director.

# Neuro-Anaesthesia

<i>Anaesthetist</i> .....	Davy Trop, M.A., M.D., M.Sc., F.R.C.P.(C), F.A.C.A.
<i>Assistant anaesthetists</i> .....	Mounir N. Abou-Madi, M.B., Ch.B., F.R.C.P.(C), D.A.B.A., F.A.C.A. Jennifer A. Barnes, M.B., Ch.B. Luis F. Cuadrado, M.D., D.A.B.A.

Important changes did occur during the year in the staffing of the department. Early in 1977, Dr. R.F.H. Catchlove resigned to devote all his time to the Pain Unit at the Royal Victoria Hospital. Dr. A.R. Ramsay, who is the psychiatric consultant to the pain unit, joined him at the time. Dr. M.E. Morris resigned in the summer from her clinical activities and returned full time to her research commitments with the Anaesthesia Research Department. In September, Dr. R.G.B. Gilbert left the department to enter into private anaesthesia practice at the Brome-Mississquoi-Perkins Hospital in Cowansville. We were sad to realize that this familiar figure would no longer haunt the corridors and operating rooms of the hospital but we wish him the best in his second career.

With a reduced staff the work of the department was strictly restricted to clinical activities and research. For the first time, during one year, three papers were presented at the annual meeting of the Association of Anaesthetists of Quebec, while several others were presented at European and international meetings.

# Neuroradiology

<i>Chief Radiologist</i> .....	Roméo Ethier, M.D.
<i>Associate Radiologists</i> .....	Denis Melançon, M.D. Garry Bélanger, M.D.
<i>Clinical Fellows (6 mos. on this service)</i>	
Fernand Bédard, M.D. (Laval)	Antoine Scherrer, M.D. (Paris)
André Laberge, M.D. (Laval)	
<i>Neurology Resident</i> .....	Ernest Kratzenberg, M.D.
<i>Neurosurgery Residents</i> .....	Albert Joern, M.D. Jose Montes, M.D.
<i>Electives:</i>	
Dennis Graham, M.D.	Gustavo Roman-Campos, M.D.
Lawrence Palladino	
<i>Radiology Rotators (4 mos. on this service)</i>	
Jean Brabant, M.D.	Gordon Campbell, M.D.
Raquel Del Carpio, M.D.	Jack Glay, M.D.
Vilma Derbekyan, M.D.	
<i>Observers:</i>	
Richard Keogh, M.D.	Jacques Lavoie, M.D.
Réginald Langelier, M.D.	Hector Ma, M.D.

Reviewing the annual statistics, one sees that the work load has temporarily decreased related to the fact that both the head and body scanners have been completely changed during the early part of the year. Both rooms were shut down for major renovations. Therefore, we should expect a busier year next year.

With the assistance of the EMI Company, the body scanner was modified to allow visualization of the spinal cord and spinal canal. Remarkable results were obtained following the modifications and at present, we can detect lesions of all kinds affecting the spinal cord and demonstrate with an astonishing precision the various elements forming the spine and the spinal canal. We are planning to apply this new technique to other parts of the body mainly the posterior fossa, the sella turcica and the orbits. In addition, we are looking very much forward to the arrival of Terence Peters, who is a computer expert and a physicist. He will be extremely valuable in developing new computer applications for the spine, mainly in the field of multiplanar reconstruction.

It is easily predictable that computerized tomography of the spine and of the spinal cord will bring the same impact to that particular section of the nervous system as cranial C.T. has already done for the brain.

As in the past, teaching has been an important contribution of the department. Both here and abroad papers were presented at all meetings attended.

It has been a productive year where clinical work has been mixed with research, the latter mainly concerned with the development of computed tomography of the spinal cord.



1. Isolation and chemical characterization of the neuronal storage material in the infantile, late infantile and juvenile forms of neuronal-ceroid-lipofuscinosis.
2. The relation between oxidation products of Vitamin A and the autofluorescence of age pigment.
3. Biochemical studies on sialidosis, fucosidosis, mannosidosis and other inherited neurological diseases with enzyme defects affecting the degradation of glycoproteins and glycolipids.
4. The prostaglandin system in brain.
5. The involvement of the prostacyclin and thromboxane pathways in cerebral vascular activity with particular relevance to cerebral ischemia and cerebral vasospasm.
6. Development of the autoradiographic deoxyglucose method for measurement of local cerebral glucose utilization.
7. Studies of the effects of manipulation of the blood-brain barrier on cerebral electrolytes and glucose metabolism.
8. Continuing studies on cerebral edema and experimental models of stroke.

#### *Miscellaneous*

Dr. Wolfe continues as a member of the Board of Scientific Counselors of the National Institute of Neurological Communicative Disorders and Stroke and of the Advisory Council of the Eunice Kennedy Shriver Center for Mental Retardation, Waltham, Massachusetts. He was a Commissioner and participant in the annual meeting of the Association for Research in Nervous and Mental Diseases. Dr. Wolfe remains as Deputy Chief Editor of the *Journal of Neurochemistry*. He is a member of the Program Committee for the International Congress of Biochemistry to be held in Toronto in July 1979, and a member of the Program Advisory Committee of the International Prostaglandin Conference to be held in Washington in 1979.

Dr. Pappius became a member of the Editorial Board of the *Journal of Neurochemistry*. She is also a member of the American Society for Neurochemistry Program Committee for the 1979 Annual Meeting.

# Electroencephalography and Clinical Neurophysiology

<i>Consultant</i> .....	Herbert Jasper, O.C., Ph.D., D. ès Sci., M.D., C.M., F.R.S.C., Hon.D.Sc. (Western Ontario)
<i>Electroencephalographer and Clinical Neurophysiologist</i> .....	Pierre Gloor, M.D., Ph.D., F.R.C.P. (C)
<i>Associate Electroencephalographer</i> .....	Frederick Andermann, B.Sc., M.D., F.R.C.P.(C)
<i>Assistant Electroencephalographers</i> .....	Eva Andermann, M.D., C.M., M.Sc., Ph.D. Michel Aubé, B.A., M.D., F.R.C.P. (C) Luis Felipe Quesney, M.D., Ph.D. Ivan Woods, M.B., B.Ch., B.A.O., M.Sc., F.R.C.P. (C)
<i>Biomedical Engineer</i> .....	John Ives, M.Sc.
<i>Computer Systems Engineer</i> .....	Christopher Thompson, M.Sc.
<i>Assistant Computer Systems Engineer</i> .....	Jean Gotman, E.S.E., M.E., Ph.D.
<i>Fellows: 6 mos. on this Service</i>	
Werner Becker, M.D. (Manitoba)	Paolo Ragazzo, M.D. (Sao Paulo)*
Jean-Pierre Bernier, M.D. (Montréal)	Bernard Rosenblatt, M.D. (McGill)
Sirichai Chayasirisobhon, M.D. (Thailand)	Henry Sadowski, M.D. (Toronto)
Robert Filiatrault, M.D. (Montréal)	John Sturman, M.D. (Indiana)
Ernest Kratzenberg, M.D. (Nancy)	Haw-Shain Yeh, M.D. (Taiwan)
Kenneth Nudleman, M.D. (Kingston)	Robert Yufe, M.D. (McGill)
<i>Chief Technician</i> .....	Mrs. K. Crystal, R.N.

\* One year on this service:

## *Clinical service:*

During the fiscal year from April 1st 1977 to March 31st 1978, 4,013 examinations were carried out in the EEG Laboratory. Of these 2,206 were performed on patients who were hospitalized at the Montreal Neurological Hospital, and 506 on patients referred from the Royal Victoria Hospital. The remainder were examinations on out-patients referred either from the out-patient clinic or from physicians' private offices. Among the total examination, 69 were electrocorticograms recorded in the operating room during neurosurgical procedures for the relief of medically intractable epilepsy, and 21 were recordings taken during carotid endarterectomies. As has been the case in recent years, highly specialized procedures including recordings with stereotaxically implanted chronic electrodes, cable telemetry recordings and 4-channel cassette recordings were carried out on many epileptic patients. EEG records taken with the 16-channel cable telemetry system were often supplemented by the simultaneous automatic recording of clinical seizure manifestations on audio-videotape.

We are happy to report that we were able to start in a modest way to introduce a new and much needed service, namely the recording of visual evoked potentials. This is a valuable diagnostic tool in a number of neurological disorders and is a particularly useful test in patients with suspected multiple sclerosis. Dr. F. Quesney and Dr. R. Hansebout have been involved in developing this service. Up to the end of March we have recorded 118 visual evoked potentials in patients. This number is over and above the total number of examinations listed at the beginning of this report. Our visual evoked potential techniques still need considerable improvement.

#### *Research activities:*

A number of research projects were pursued. They will be listed only briefly below. A more detailed description of these will be available in the report on research activities in Neurophysiology to be published in the III Foundation volume of the Montreal Neurological Institute.

Work on the following research projects was undertaken during the period covered by this annual report.

- 1) Computer analysis of clinical electroencephalograms (J. Gotman, J. Ives, C.J. Thompson and P. Gloor).
- 2) Further development and applications of seizure monitoring systems using the 16-channel cable telemetry system in conjunction with automatic timelapse video-audio monitoring, or the 4-channel portable cassette recorder (J. Ives, P. Gloor and I. Woods).
- 3) A retrospective study on EEG changes encountered in destructive lesions of the diencephalon, brainstem and posterior fossa (N. Schaul and P. Gloor).
- 4) Investigation of possible involvement of dopaminergic mechanism in generalized photosensitive epilepsy in man by the use of apomorphine (L.F. Quesney, S. Prelevic, F. Andermann and S. Lal).
- 5) Genetic, clinical and EEG studies on a variety of heredofamilial disorders, including cerebro-macular degeneration, Friedreich's ataxia, familial agenesis of the corpus callosum and others (E. Andermann, F. Andermann and collaborators).
- 6) Studies of neuroendocrine function in patients with various forms of epilepsy (J.F. Woods and G. Tolis).

#### *Miscellaneous:*

In June 1977 Dr. Pierre Gloor became President-Elect of the American Electroencephalographic Society. He was invited to give a Didactic Lecture on the Differential Diagnosis of Epilepsy at the 9th International Congress of Electroencephalography and Clinical Neurophysiology held in September 1977 in Amsterdam; in December 1977 he presented the William G. Lennox Lecture at the Annual Meeting of the American Epilepsy Society in New York.

Dr. Frederick Andermann was elected President of the Canadian Neurological Society. Dr. Michel Aubé was elected Councillor of the Association des Neurologues de la Province de Québec.

#### *Acknowledgements:*

We wish to express our gratitude to all those who have helped to make our work successful and meaningful, particularly our EEG technologists under the guidance of Mrs. Katherine Crystal as well as the staff of the Neuro-Electronics and Computer Laboratories under the leadership of Mr. John Ives, Mr. Christopher Thompson and Dr. Jean Gotman.

# Electromyography

<i>Head</i> .....	Andrew A. Eisen, M.D., M.R.C.S., L.R.C.P., F.R.C.P. (C)
<i>Fellows</i> .....	Kenneth Nudleman, M.D. (Queen's) July — December John Stewart, M.D. (West Indies) January — June
<i>Technicians</i> .....	Margo Henderson Maureen Hoirch

This year includes the 10th Anniversary of Dr. Eisen's directorship of this laboratory. Space does not allow for adequate reflection on achievements (as well as misfortunes) that have occurred over the ten year period. The decade has, however, been happy, progressive and successful.

The long awaited arrival of new equipment (the Disa 1500 series) and updating of old equipment has allowed for the necessary expansion to cope with the seemingly inexhaustible demand for EMGs. In the 12 month period, a record number of 1,357 examinations were performed. Part of this increase has resulted from the now routine use of somatosensory evoked potential studies, commenced a year ago as a research effort (supported by the Multiple Sclerosis Society of Canada). In collaboration with Drs. Nudleman, Stewart and Cosgrove, three full length papers describing the value of SEPs in MS have now been published. Part of this work won the Jasper prize essay, presented by Kenneth Nudleman in Vancouver at the Canadian Congress of Neurological Sciences.

Special thanks are due to Miss Margo Henderson who has done so much in helping the laboratory grow and mature in the last 8 years. We welcome Miss Maureen Hoirch who at the time of writing has completed 15 months in the department.

## Experimental Neurophysiology

<i>Consultant</i> .....	Herbert Jasper, O.C., Ph.D., D.ès Sc., M.D., C.M., F.R.S.C.
<i>Neurophysiologist</i> .....	Pierre Gloor, M.D., Ph.D., F.R.C.P.(C)
<i>Assistant Neurophysiologists</i> .....	Daniel Guitton, M. Eng., Ph.D. Luis Felipe Quesney, M.D., Ph.D.
<i>Biochemical Engineer</i> .....	John Ives, M.Sc.
<i>Computer Systems Engineer</i> .....	Christopher Thompson, M.Sc.
<i>Assistant Computer Systems Engineer</i> .....	Jean Gotman, E.S.E., M.E., Ph.D., Killam Scholar



*Fellows:*

- George Kostopoulos, M.D. (Athens), Ph.D. (Saskatchewan)
- John Musgrave, M.D. (Queen's University, Belfast)
- Andrea Pellegrini, M.D. (Padua)
- Paolo Ragazzo, M.D. (Brazil)
- Ioannis Siatitsas, M.D. (Athens)

<i>Laboratory Supervisor</i> .....	Suzanne Schiller, R.N.
<i>Chief Electronics Technician</i> .....	Edward Puodziunas
<i>Assistant Electronics Technicians</i> .....	Gordon Evans
	David Fitzpatrick

The work done in the Laboratory of Experimental Neurophysiology has dealt particularly with the further elucidation of the mechanism of generalized bilaterally synchronous epileptic discharge in generalized penicillin epilepsy of the cat. In particular, two aspects of this problem were investigated:

- 1) The extracellular microphysiology of the transition of spindle wave activity to generalized epileptic discharge under the influence of intramuscular penicillin (Drs. A. Pellegrini, G. Kostopoulos and P. Gloor).
- 2) The mechanisms of synchronization of discharges in the two hemispheres by means of the corpus callosum and anterior commissure (Dr. J. Musgrave and Dr. P. Gloor). A more detailed description of the findings obtained in these studies will be given in the report on research activities in Neurophysiology to be published in the III Foundation Volume of the Montreal Neurological Institute.

At the end of 1977, Dr. Andrea Pellegrini returned to Padua where he will pursue clinical work in Neurology and Experimental work in Neurophysiology. We regret his departure, but are glad to know that he will be able to continue his research activity at his home University in Padua, where he will work with a former MNI Neurophysiology Fellow, Dr. Gianfranco Testa.

We are pleased that in the early Spring of 1978, Dr. Ioannis Siatitsas joined our Research Team. Dr. Siatitsas who had previous research experience in Neurophysiology at the University of Athens and at the Collège de France in Paris will collaborate with us in our studies on the mechanism of generalized penicillin epilepsy in the cat.

Dr. Daniel Guitton has joined our staff and will work in our new Neurophysiology Laboratory in the Penfield Wing. Dr. Guitton who is both an engineer and neurophysiologist will continue his research on the control of eye movements in our Laboratory.

As in the past, we have always received generous help and support in our work from Mr. John Ives, our Biomedical Engineer, Mr. Eddy Puodziunas, Mr. Gordon Evans and Mr. David Fitzpatrick of the Neuro-Electronics Department, and from Mr. Christopher Thompson and Dr. Jean Gotman from the Computer Laboratory. Daily work in the Laboratory could not have been carried out without the continuous dedicated assistance we have received from Mrs. Suzanne Schiller, our Laboratory Supervisor, and from Miss Carmela Corrado and Mrs. Janet Prévost. We gratefully acknowledge all the help we received from them.

# Neuropathology

Stirling Carpenter, A.B., M.D.

G. Mathieson M.B., Ch.B. M.Sc.,  
F.R.C.P.(C)

## *Fellows:*

Gustav Blomquist M.D. (Vanderbilt)  
Antoine Hakim M.D. (Albany)  
Herbert Markley M.D. (Maryland)  
Zoltan Nagy M.D.  
(Semmelweis, Budapest)  
Benjamin Zifkin M.D. (McGill)

Scott Brown M.D. (McGill) (2 months)  
David Katz M.D. (Pennsylvania)  
Henry Milam M.D. (Meharry)  
Lothar Resch M.D. (Dalhousie)

## *Chief Technicians:*

Barbara Nuttall, B.A., A.R.T.

John Gilbert, R.T.

Service work by the Laboratory of Neuropathology during the past year has included examination of 576 surgical specimens. Of these 118 were muscle biopsies; with many of these nerve biopsies were obtained. The numbers of specimens from pituitary adenomas has increased. In many of these cases, multiple frozen sections were carried out to differentiate adenomas from normal glands. A total of 97 brains obtained at autopsy was examined in the department; of these 40 were from patients dying in the Montreal Neurological Hospital while the others were from patients from the Royal Victoria Hospital or the Douglas Hospital.

Dr. Mathieson taught in the Second Year Pathology Course for medical students. Dr. Carpenter gave a Basic Science Option Course in Neuropathology for fourth year students. The Residents were treated as usual to biweekly slide sessions. Late in the spring of 1978 Clinicopathological Conferences were moved to a once-a-month Monday morning position at the time of Grand Rounds. Two neurologists, Dr. Jak Danon, from the University of Illinois, and Dr. Santiago Gimenez Roldan, from Madrid, spent three months with us, studying the electron microscopic aspects of muscle biopsies.

Research has been active, particularly in neuromuscular disease in collaboration with Dr. George Karpati. Studies on the pathology of inflammatory myopathies continue. An electron microscopic study of the initiation of necrosis in Duchenne dystrophy has consumed much time. Studies on hamster dystrophy are underway, with a comparison with the human disease. A study of the retina in Sandhoff's disease was undertaken in collaboration with Dr. Brownstein from the department of ophthalmology. Studies with Dr. Karpati are being initiated into the effects of microscopic punctures of rat muscle fibers *in vivo*. Work on a newly recognized disease, polyglucosan body axonopathy, is progressing in collaboration with Dr. Yves Robitaille of the Jewish General Hospital. We are grateful to the Medical Research Council of Canada and The Muscular Dystrophy Association of Canada for their continuing support. Work from this Department was presented at the American Academy of Neurology, and at the International Congress of Neuropathology.

We are happy to welcome Dr. Kathleen Villemure, as a new member of the Department. We wish to express our appreciation for the support of the technical and secretarial staff.

# Neuro-Isotope Laboratories

## BRAIN SCAN DEPARTMENT

<i>Senior Consultant</i> .....	William H. Feindel, M.D., D.Phil., F.R.C.S.(C), F.A.C.S., F.R.S.C.
<i>Director</i> .....	Y. Lucas Yamamoto, M.D., Ph.D., A.B.N.M.
<i>Senior Brain Scan Technician</i> .....	Cornelia Schofield, R.T.N.M.
<i>Brain Scan Technician</i> .....	Nicole Corbin, R.T.N.M.
<i>Medical Secretary</i> .....	Pamela Bottomley

During the period of April 1, 1977 to March 31, 1978, 3,454 patients received radionuclide investigation in the brain scan department, an increase of 19% from the previous year. The gamma camera with the Med II computer system and the newly established dynamic positron tomography are now providing valuable information for assessment of cerebral hemodynamics in humans. Because of this, there has been a great increase in diagnostic work for patients with occlusive cerebrovascular disease.

Research and development of the dynamic positron emission tomography device through the joint effort of our research group and the Foster Radiation Laboratory has resulted in pioneer application of this new method. Highlights of research activity in our department are summarized as follows:

1. Development of the high efficiency positron device using sixty-four bismuth germanate detectors.

This new positron device was found to have twenty times better counting efficiency and improved the spatial resolution to less than half of that of the previous 32 NaI crystals positron device which was built in collaboration with Brookhaven National Laboratory, U.S.A. Our present new system is the most efficient positron device available.

2. Krypton-77 positron emission tomography for evaluation of hemodynamic changes before and after medical and surgical treatments in patients with cerebrovascular disease.

Using the Fick principle, each topographical and quantitative regional cerebral blood flow value in every cm<sup>2</sup> of the cross section of the head is calculated from an individual krypton clearance curve in each pixel (cm<sup>2</sup>) which is obtained after two-dimension reconstruction of Krypton-77 distribution at 15 to 30 second intervals for 6 to 8 minutes following the non-invasive technique of bolus inhalation of Krypton-77.

Over the last 3.5 years, we have appraised this positron emission tomography in over 500 patients and have obtained unique and useful information for evaluating cerebrovascular patients, particularly cases of transient ischemic attack, mild stroke

or localization of intracerebral steal phenomena in arteriovenous malformation cases, for which we may not obtain adequate information from other diagnostic procedures.

Various types of positron devices have been developed in several major institutes throughout the world over the last 3 years. The First International Symposium on Positron Emission Tomography was held at our Institute, June 1 to June 3, 1978. Over 100 people attended to discuss this most exciting new field of medical investigation.

Great credit is due to our technical and clinical staff for their devoted work over the past year.

# The William Cone Laboratory for Neurosurgical research

<i>Director</i> .....	William H. Feindel, M.D., D. Phil., F.R.S.C. (C), F.A.C.S., F.R.S.C.
<i>Assistant Director</i> .....	Y. Lucas Yamamoto, M.D., Ph.D., A.B.N.M.
<i>Physicist</i> .....	Ernst Meyer, M.Sc., Killam Scholar
<i>Research Fellows</i> .....	Yoku Nakagawa, M.D. (Hokkaido, Japan) Hector Ortegon, M.D. (Yucatan, Mexico) Richard Branan, M.D. (Colorado, U.S.A.) Victor Smart-Abbey, M.D. (McGill) Hikdeaki Nukui, M.D. (Gumma, Japan) Mineo Motomiya, M.D. (Hokkaido, Japan)
<i>Research Assistant</i> .....	Andrea Duszczyszyn, B.Sc.
<i>Technicians</i> .....	Janet Arts, B.Sc. Patricia O'Reilly
<i>Electronic Technician</i> .....	George Lootus
<i>Medical Secretary</i> .....	Sonia Vivian

Investigation of cerebral hemodynamic changes at the micro-circulatory level in experimental ischemia and cerebral vasospasm was continued, using techniques developed in our laboratory during the past decade, namely fluorescein angiography, which provides accurate information of anatomical flow patterns in the cortical microcirculation as well as slight permeability changes in the cortical vessels and on-line computer analysis of cortical and miniregional cerebral blood flow by radioactive inert gas clearance techniques using multi-channel semiconductor detectors. Beta emitting Krypton-85 was used for cortical flow and gamma emitting Xenon-133 was used for miniregional cerebral blood flow. These techniques provide a unique and combined anatomical and quantitative analysis of the cortical microcirculation *in vivo*.

Our research projects for 1977 were as follows:

## 1. Experimental focal cerebral ischemia

The dynamic aspect of cerebral vessel behaviour, and the development of collateral flow in experimental cerebral ischemia created by transorbital occlusion of the middle cerebral artery were further investigated by Dr. Y. Nakagawa in relation to the various methods proposed for treatment of cerebral ischemia, particularly manipulation of the arterial CO<sub>2</sub> level and intravenous hypertonic mannitol infusion.

The effectiveness of collateral flow into the ischemia zone has been investigated by Dr. H. Nukui with intracarotid injection of various sizes of microspheres to block different levels of collateral vessels. The amount of reduction in cortical blood and anatomical flow pattern changes are now under investigation after intra-arterial

- injection of microspheres and followed by hypercapnia to define the critical level of development of collateral flow into the ischemic zone.
2. Cerebral hemodynamic changes following external and internal carotid anastomosis at the intracranial level in the chronic model of experimental cerebral ischemia. The effectiveness of microvascular bypass surgery between the ipsilateral superficial temporal artery and a branch of the middle cerebral artery after transorbital occlusion of the middle cerebral artery in dogs has been further studied by Drs. H. Ortegon and V. Smart-Abbey in the chronic model, 24 hours after occlusion, which is closely related to practical clinical conditions. Focal neurological defects, various degrees of brain edema and marked reduction of cortical flow measured by Krypton-85 clearance technique are observed prior to bypass surgery in this chronic model. We have observed a significant increase (20 to 300%) in cortical blood flow with re-establishment of flow in the territory of the occluded middle cerebral artery which was observed by cortical fluorescein angiography following anastomosis.  
The degree of loss of autoregulation before bypass surgery and the role of hypercapnia and mild hypertension after anastomosis are now under investigation.
  3. Cerebral vasospasm and mechanism of physiological autoregulation of regional cerebral blood flow.  
Recent literature and our own findings in collaboration with Dr. Wolfe's group, indicate that biogenic amines and prostaglandin derivatives play an important role in the physiological regulation of regional cerebral blood flow as well as in clinical cerebral vasospasm.  
This study progressed further with the development of a new technique to measure rapid changes in microcirculation using computer assisted velocity frequency profile analysis on fluorescein angiography by Dr. R. Branan in collaboration with the MacDonald-Stewart Image Processing Laboratory of the Institute of Pathology. For this project, Dr. Branan received a K.G. McKenzie Memorial award, from the Canadian Congress of Neurological Sciences, 1978.

## Laboratory for Neuromuscular research

<i>Director</i> .....	George Karpati, M.D., F.R.C.P. (C)
<i>Research Associate</i> .....	Kayode Odusote, M.D.
<i>Technicians</i> .....	Carol Allen, B.Sc.
	Steven Prescott
	Priscilla Buenaventura

During the sixteen months from April 1st, 1977 to July 31st, 1978, 168 muscle, 86 peripheral nerve and 35 skin biopsies have been received for histochemical processing and study from the Montreal Neurological Hospital, as well as from the Montreal Children's Hospital, the Hôpital Sacré-Coeur and some from Newfoundland.

1. Continued study of muscle biopsies from Duchenne muscular dystrophy revealed direct morphological evidence of failure of regeneration in this disease which explains the progressive loss of muscle fibers. We have also obtained evidence that the failure of regeneration leads to appearance of basement membrane ghosts in which collagen fibers become deposited. This is the basis of progressive connective tissue accumulation in between muscle fibers in this disease.

2. We have studied an unusual infantile inflammatory myopathy in two patients. In one patient, it has been successfully treated with corticosteroids. Another unusual muscle disease: late onset rod myopathy was also studied.

3. We have started a program of plasmapheresis for myasthenics who are refractory to other forms of treatment. Two patients treated so far showed a marked benefit from this measure. This procedure is done in conjunction with Dr. Max Katz of the Hematology Department at the Royal Victoria Hospital.

Our experimental work continued in 4 areas:

1. Study of the pathogenesis of muscle destruction in genetic dystrophy of hamsters.

2. We have developed a technique by which muscle fibers can be punctured with 5-10 micrometer thick tungsten filaments and the morphological and histochemical consequences of these micropuncture lesions can be investigated.

3. With the cooperation of Dr. K. Odusote, we have studied the mechanism of neutral lipid accumulation in fasting guinea pig skeletal muscle cells. We are continuing study of the factors which are responsible, the preferential accumulation of neutral lipid droplets in Type 2A and Type 1 fibers, with radioautographic techniques.

4. A new myopathy was developed in guinea pigs by the systemic administration of iodoacetate. This chemical inhibits glycolysis by paralyzing the alpha glycerophosphate dehydrogenase enzyme. This causes a severe disturbance of the energy metabolism of certain muscle fibers with spectacular morphological consequences.

Neuromuscular research continued to be a cooperative effort involving Drs. Carpenter and Eisen. It is gratifying that this cooperative approach will be enlarged by a new dimension with the work of Dr. Sergio Pena who will try to identify the defective gene product in cultured cells from patients with Duchenne dystrophy using sophisticated techniques of biochemistry and cell biology.

Dr. Karpati participated in a symposium on New Frontiers in Muscular Dystrophy organized by Enzo Ferrari in Maranello, Italy and in a symposium on Disorders of Lipid Metabolism organized by the Besta Institute of Milan, Italy. The Neuromuscular Research Community of McGill University has been honored by the World Federation of Neurology by being entrusted with the organization of the IVth International Congress on Neuromuscular Diseases in Montreal, September 17-21, 1978.

# Neuroanatomy

<i>Neuroanamist</i> .....	Donald G. Lawrence, B. Sc., M.D., F.R.C.P. (C)
<i>Assistant Neuroanatomist and Medical Research Council Scholar</i> . . . . .	Barbara E. Jones, B.A., M.A., Ph.D.
<i>Assistant Neuroanatomists</i> .....	Serge G. Gauthier, B.A., M.D., F.R.C.P. (C) Wan C. Lim, B.A., M.Sc.,Ph.D.
<i>Technician</i> .....	Giovanni Gaggi, R.M.T.

The highlight of the year in the laboratory of Neuroanatomy has been the appointment of two new staff members. Dr. Barbara Jones, a physiological psychologist, holds a combined post in the departments of Neurology and Neurosurgery and of Psychology. She has for some years been studying the anatomical projections and functional role in sleep-wake cycles of central monoamine neurons. She has found that these neurons project diffusely to all major areas of the central nervous system and that they modulate sleep-wake cycles. The generation of sleep-wake cycles and rapid eye movement sleep appear to be dependent upon pontine tegmental neurons and Dr. Jones is now studying the anatomical projections of these cells and the nature of their chemical transmitter. Ultimately she hopes to determine the interrelation in sleep-wake states of these generator neurons and their monoamine modulators. Dr. Jones joined the department in August 1977 and was awarded an MRC scholarship in April 1978.

Dr. Serge Gauthier, the other new staff member, is a neurologist and neurochemist who is interested in the central nervous control of blood pressure. He has shown that the central nervous system is involved in the regulation of adrenal medullary tyrosine hydroxylase activity. This enzyme is essential for the synthesis of catecholamines which, via secretion into the blood or activity in the sympathetic nervous system, are critical to the regulation of blood pressure. The splanchnic sympathetic nerves provide the immediate nervous regulation of adrenal tyrosine hydroxylase. These nerves are the axons of neurons in the intermediolateral horn of the lower thoracic spinal cords and it is the location of the supraspinal neurons and pathways which in turn influence these neurons that Dr. Gauthier is now studying.

The major teaching commitment of the laboratory continues to be the Central Nervous System course which Dr. Lawrence still coordinates. Dr. Lim found it necessary to retire prematurely from her teaching and research commitments. Dr. Jones and Dr. Gauthier assisted in the laboratory classes and Dr. Jones lectured in the course. In addition, Dr. Jones gave a course entitled "The Neurochemical Basis of Behavior" in the department of psychology. Dr. Lawrence continues to take part in clinical neurology teaching for students and residents at the Montreal General Hospital.



# Neuro-Ophthalmology

*Neuro-ophthalmologist* .....T.H. Kirkham, M.B., Ch. B.,  
F.R.C.S., D.O.

## *Research*

*Neurophysiologist* .....D. Guitton, B. Eng., M. Eng., Ph. D.  
(Mech. Eng.)

Dr. Daniel Guitton returned from a period of study in Belgium and is continuing to study the frontal eye fields and the superior colliculus in animal experiments. In clinical studies we are recording from human beings using an eye-search-contact coil in a magnetic field so that eye movements can be very precisely recorded in both vertical and horizontal planes.

Over the past six months it has become possible to record visual evoked cortical responses. Currently we are looking at the nerve conduction times in patients with multiple sclerosis and Dr. Mathieu-Millaire is correlating the findings with the pupil-cycle times.

Collaboration is also being maintained with Dr. Katsarkas by continuing to record the eye movements by electro-oculography of more routine patients.

## *Fellows*

Dr. L.B. Kline was a Fellow for six months from June to December 1977 and Dr. Francine Mathieu-Millaire, F.R.C.S. (C), commenced as a Fellow for the same length of time in January 1978.

## *Teaching*

Neurology Residents have started to attend as elective students. We have also had two Ophthalmology Residents from other training programs attend as elective students for a period of two months each. A number of Medical interns from the Royal Victoria Hospital have also spent periods of one month as elective students. Informal teaching sessions for the Neurology Residents continue. A further one-month course for Medical students during their neurophysiology elective was given.

# Neuropsychiatry

*Consultant in Neuropsychiatry* .....Louise A. Demers-Desrosiers,  
M.D., C.M., F.R.C.P. (C)

*Assistant Psychiatrists* .....Martine Lalinec-Michaud,  
M.D., F.R.C.P. (C)  
Joannis N. Nestoros, M.D.,  
F.R.C.P. (C)

## *Residents (6 months on service)*

S. Prelevic M.D. (Belgrade)  
J. Gauthier M.D. (Montréal)  
J. Bouchard M.D. (Laval)

This year has seen a sharp increase in our clinical load, especially in terms of out-patient consultation and treatment. The in-patient load remained at a steady level. More than 1000 intake interviews were conducted. The latter number does not reflect the therapy sessions of each individual psychiatrist of our department.

Beside the informal liaison activities of our service, one major focus has been the preparation of an audio-visual library for teaching neuropsychiatry. We have also been involved in the initial organization of the Montreal Neurological Hospital's Palliative Care Committee and we have a very deep interest and commitment to see it expand.

## The Library

During the past year 215 monograph titles were purchased, 109 by the Library and 106 by the Departments. Another 21 volumes were received as gifts. The total thus is slightly below the additions of last year, reflecting increased costs.

To provide space for the new books a drastic shelf clearing program had to be undertaken; all books published before 1953 and almost all periodicals older than 1957 were taken to storage. Before packing, a list of some 70 titles was circulated among members of the staff, asking their opinion as to whether these should be permanently withdrawn from the collection. About a dozen titles were retained upon recommendations of staff and the remaining 60 withdrawn. Thus the net gain for the Library during the period covered by this report is 50 titles.

This has set the stage for a permanent pattern of operation, after the projected expansion and return of all Library holdings; the two main rooms will hold books and periodicals 20 years old or less, while older materials will be kept in adjacent library areas.

Users wishing to consult stored materials can currently obtain them by placing their requests with Library staff before each Thursday noon; delivery is then made on Friday mornings.

Cooperation with the Departments has greatly increased since the Librarian began acting as their purchasing agent; it has extended to providing aid in book selection, increased reference queries and requests for putting in order, or cataloguing, their collections, which will be done in the coming months.

## Neuro Fellows' Society of McGill University

*President* .....Richard Branan, M.D.  
*Vice-President*.....Daniel Stowens, M.D.  
*(Acting) Secretary-Treasurer* .....Robert Yufe, M.D.

On June 9, Dr. Phanor Perot honoured us with a lecture entitled "Somatosensory Evoked Potentials in Spinal Cord Injury" at the Annual Fellows' Day in the

Amphitheatre of the M.N.I. A banquet at the Royal St. Lawrence Yacht Club in Dorval capsulated the nostalgic day with Dr. Perot reminiscing of his early days at the "Neuro". It was truly a memorable evening filled with humorous anecdotes and "classic" slides on past experiences.

On September 14 - 17, 1978 many of the Fellows gathered in Montreal for the III Foundation activities marking the dedication of the new Penfield Pavilion. For those who attended, I am sure you will agree that it was a memorable experience to have so many of the "Neuro family" gathered together at the Institute for the few days of festivities. It was a time to reacquaint oneself with former colleagues and to note the changes both in the Institute and the beautiful City of Montreal. A most prestigious group contributed to the uniqueness, making the III Foundation activities a complete success.

# Clinical Training Opportunities

## NEUROLOGY

The McGill University Neurology Training Program is designed to meet the requirements, in adult and pediatric neurology, of the Professional Corporation of Physicians of Quebec, the Royal College of Physicians and Surgeons of Canada, and the American Board of Neurology.

The McGill Program is university-based and includes the Neurological Departments and Teaching Units of the Montreal Neurological Institute, the Montreal General Hospital, the Montreal Children's Hospital and the Jewish General Hospital.

*Clinical Training* — The program provides two full years of clinical training and one year of laboratory training. It is open to medical graduates who have completed an approved internship and a year of clinical medicine OR an approved clinical clerkship during the final undergraduate year and one year of straight medical or pediatric internship. The Professional Corporation of Physicians of Quebec requires, in addition, that all graduates of medical schools outside Canada and the U.S. who wish to train in the Province obtain the E.C.F.M.G. certificate, and a year of rotating internship in an approved North American training centre. A third year of clinical training, combined with student teaching is available at the M.N.H. as a Teaching Fellow. A similar third year of clinical training is available as a Senior Resident in the M.G.H. and M.C.H. Departments of Neurology.

Facilities for research and advanced training in the basic sciences related to neurology are available in each of the teaching hospitals. Selected candidates may register for graduate degrees in the Department of Neurology and Neurosurgery with the approval of the appropriate laboratory or service head, and program director.

Residents are assigned for a six-month period to one clinical service. It is usual for each resident to rotate to three hospitals in the course of his two-year period of clinical training. He will spend a full year in one of the institutions.

*Laboratory Training* — As part of the three-year program, laboratory training is available in Electroencephalography, Electromyography, Clinical Neuropharmacology,

logy, Clinical Neurophysiology, Neuropathology, and Muscle Pathology. Appointments are for six or twelve months.

Applications for all the above appointments should be made to Program Director for Neurology, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada H3A 2B4.

## NEUROSURGERY

The Department of Neurology and Neurosurgery of McGill University offers opportunities for clinical training in Neurosurgery in three of the major McGill Teaching Hospitals, the Montreal Neurological Hospital, the Montreal General Hospital and the Montreal Children's Hospital.

An internship and a year of general surgical training in an approved hospital is required.

The Assistant Resident appointments are divided into six-month periods with rotation on the three Neurosurgical Services at the Montreal Neurological Hospital and the Neurosurgical Service at the Montreal General Hospital and Montreal Children's Hospital. The Resident appointments, six and twelve months in duration, are rotated among the McGill Teaching Hospitals listed above.

The various Departmental Laboratories will accept Fellows for graduate training by individual arrangement. Residents and Fellows may attend the graduate courses listed below by individual arrangement.

A limited number of training stipends are provided by the Quebec Ministry of Social Affairs and from Institute funds.

Appointments are usually made about one year in advance, with July 1st. the usual starting date.

Applications for all the above appointments should be made to The Director, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada H3A 2B4.

# Courses of Instruction

## UNDERGRADUATE

The Department of Neurology and Neurosurgery cooperates closely with the Departments of Medicine, Surgery, Pathology, Anatomy and Radiology in their undergraduate teaching. Thus the teaching of neurology, neurosurgery, neuropathology, neuroanatomy and neurological radiology is carried out as part of the regular course planned by the Chairman of each of the above departments. See McGill booklet "Faculty of Medicine". Electives are available in clinical and laboratory subjects.

## GRADUATE

In the Faculty of Graduate Studies and Research, courses are offered leading to the degree of Master of Science and Doctor of Philosophy. See McGill booklet "Faculty of Graduate Studies and Research".

Throughout the year, the following elective courses are given for graduate students, Fellows and members of the house staff, and are open to undergraduates by arrangement.

### NEUROSCIENCES SEMINAR

G531-602H This is a course of weekly seminars, given during the academic year, designed to present over a 2-year period a concise, up-to-date review of the basic neurological disciplines. Mondays, 4:30 — 6:00 p.m. Professors Gloor, Wolfe, Feindel, and other members of the Department of Neurology and Neurosurgery, and related McGill Departments.

### NEUROPHYSIOLOGY

G531-610A Lectures, together with undergraduate Neurology and Neurosurgery Course 2A "Anatomy and Physiology of the Central Nervous System".

G531-611A Seminars and group discussions in Neurophysiology. Professor Gloor.

### NEUROANATOMY

G531-621A Seminars and group discussions in neuroanatomy. By special arrangement. Professor Lawrence.

### CLINICAL CONFERENCES

G531-630H Colloquium in clinical and basic aspects of the nervous system. Wednesdays 7:00 p.m. twice a month during the academic year. Staff, Visiting Lecturers and Fellows.

G531-631H Seizure and EEG conference — alternate Thursdays 4:30 p.m. Professors Gloor, Andermann, Rasmussen, Milner and Ethier.

G531-632H Neuromuscular conferences — alternate Thursdays 4:30 p.m. Professors Karpati, Carpenter and Eisen.

### NEUROCHEMISTRY

G531-640H Seminars in Neurochemistry in addition to that provided in Course G531-602H. By special arrangement. Professors Wolfe and Pappius.

## **NEUROPATHOLOGY**

G531-650H Six or twelve months laboratory work in Neuropathology.

G531-651H Conference in Neuropathology, alternate Thursdays, 4:30 — 5:30 p.m.

G531-652A Neurological Histopathology. Slide sessions, one hour twice weekly, Tuesday and Thursday mornings. Professor Stirling Carpenter.

## **NEURORADIOLOGY**

G531-660H Practical instruction in techniques and interpretation.

G531-661A Lecture demonstration (3 months in the fall). Thursdays 4:30 — 5:30 p.m. Professor Ethier and Staff.

## **ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY**

G531-670H Laboratory work in Electroencephalography (minimum-6 months with active participation, and clinical conferences). Professor Gloor.

## **NEUROPSYCHOLOGY**

G531-680H Clinical and research training for selected graduate students. Professor Milner and staff.

# Publications — 1977-1978

## THE MONTREAL NEUROLOGICAL INSTITUTE AND HOSPITAL AND THE DEPARTMENT OF NEUROLOGY AND NEUROSURGERY OF MCGILL UNIVERSITY

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## Auditor's report

To the Board of Directors,  
Montreal Neurological Hospital.

We have examined the balance sheet of the Montreal Neurological Hospital as at March 31, 1978 and the statements of operations, general fund capital and plant fund capital for the twelve month period then ended. Our examination was made in accordance with the mandate outlined in Schedule II of the Regulation adopted under the Act respecting health services and social services (L.Q. 1971, Chap. 48), and with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Hospital as at March 31, 1978 and the results of its operations for the twelve month period then ended in accordance with the standards and accounting practices required by the aforementioned Regulation applied on a basis consistent with that of the preceding period.

TOUCHE ROSS & CO.  
Chartered Accountants.

Montreal, Quebec.  
June 30, 1978.



**MONTREAL NEUROLOGICAL HOSPITAL**  
(Incorporated by Private Act under the laws of Province of Quebec)

**BALANCE SHEET AS AT MARCH 31, 1978**

**GENERAL FUND**

	<b>March 31, 1978</b>	<b>March 31, 1977</b>
<b>Assets</b>		
Cash.....	\$ —	\$ 21 329
Accounts receivable — less provision for doubtful accounts .....	656 086	578 462
Due from The Quebec Department of Social Affairs		
Operating grants .....	853 345	1 519 146
Inventory of supplies at cost .....	141 618	136 929
	<u>\$1 651 049</u>	<u>\$2 255 866</u>
<b>Liabilities</b>		
Bank indebtedness .....	\$ 261 829	\$ —
Bank loan .....	211 440	384 777
Accounts payable and accrued liabilities.....	590 756	211 670
Due to plant fund .....	8 499	6 611
Due to Royal Institution for the Advancement of Learning		
— Current account.....	747 217	1 720 569
— Advances to cover prior years' deficit	10 683	11 797
Deficit (Note 1) .....	(179 375)	(79 558)
	<u>\$1 651 049</u>	<u>\$2 255 866</u>

**PLANT FUND**

	<b>March 31, 1978</b>	<b>March 31, 1977</b>
<b>Assets</b>		
Cash .....	\$ 271 520	\$ 19 745
Short term investments.....	390 000	615 000
Due from general fund .....	8 499	6 611
Advance to Royal Institution for the Advancement of Learning construction project (Note 3).....	4 562 649	1 509 240
Fixed assets, at cost		
Equipment .....	\$2 584 346	
Less: Accumulated depreciation.....	(1 043 316)	1 178 570
	<u>\$6 773 698</u>	<u>\$3 329 166</u>
<b>Liabilities</b>		
Bank loan .....	\$1 500 000	\$ —
Unexpended balance of special equipment grant for construction project.....	382 267	382 267
Due to Royal Institution for the Advancement of Learning.....	526 735	5 863
Restricted funds — construction project .....	3 189 200	1 744 200
Capital .....	1 175 496	1 196 386
	<u>\$6 773 698</u>	<u>\$3 329 166</u>

# MONTREAL NEUROLOGICAL HOSPITAL

## STATEMENT OF OPERATIONS

	<b>Twelve months ended March 31, 1978</b>	<b>Fifteen months ended March 31, 1977</b>
Income		
Quebec Department of Social Affairs (Note 1) .....	\$7 828 284	\$8 652 400
Revenue from patients.....	1 917 203	2 501 336
Other income .....	23 802	21 901
	<u>9 769 289</u>	<u>11 175 637</u>
Expenses		
Salaries and wages.....	7 120 558	8 307 275
Fringe benefits .....	479 939	571 630
Drugs, medical and surgical supplies.....	330 910	426 821
Services and supplies .....	1 616 421	2 087 783
	<u>9 547 828</u>	<u>11 393 509</u>
Surplus (deficit) for the period .....	<u>\$ 221 461</u>	<u>\$ (217 872)</u>

## STATEMENT OF GENERAL FUND CAPITAL

	<b>Twelve months ended March 31, 1978</b>	<b>Fifteen months ended March 31, 1977</b>
Capital (deficit) at beginning of the period.....	\$ (79 558)	\$ 138 205
Add		
Payment from the Quebec Department of Social Affairs on account of prior period expenses.....	107 094	—
Payment from the Quebec Department of Social Affairs on account of retroactive salary adjustments.....	295 749	861 487
Adjustment of prior periods' deficit .....	1 114	109
Surplus for the period .....	<u>221 461</u>	<u>—</u>
	545 860	999 801
Deduct		
Expenses related to prior period .....	107 094	—
Salary adjustments retroactive to prior periods .....	30 000	861 487
Deficit for the period.....	—	217 872
Post-budget adjustment of 1976-1977 .....	<u>588 141</u>	<u>—</u>
Deficit at end of the period (Note 1).....	<u>\$ (179 375)</u>	<u>\$ (79 558)</u>

## STATEMENT OF PLANT FUND CAPITAL

	Twelve months ended March 31, 1978	Fifteen months ended March 31, 1977
Capital at beginning of the period.....	\$1 196 836	\$1 271 974
Increase in plant capital .....	<u>137 072</u>	<u>85 470</u>
	1 333 908	1 357 444
Less: Depreciation on equipment .....	<u>158 412</u>	<u>160 608</u>
Capital at end of the period.....	\$1 175 496	\$1 196 836

## NOTES TO FINANCIAL STATEMENTS MARCH 31, 1978

### 1. *Quebec Department of Social Affairs*

Income includes payments from the Government of Quebec to the extent of the amounts approved to May 25, 1978 by the Department of Social Affairs. The Department may, subsequent to a review of the accounts of the Hospital, modify amounts previously approved which would either give rise to additional amounts becoming due to the Hospital or cause amounts to be subject to reimbursement to the Government. No provision has been made in the accounts for such eventualities.

### 2. *Contingent Liabilities*

Employees' accumulated sickness benefits, which are recoverable from the Department of Social Affairs when paid, amounted to \$511,004 at March 31, 1978. These sickness benefits are payable when an employee terminates his services and are expensed at that time.

An action has been instituted against the Hospital for \$375,000. In the opinion of management and legal counsel, the action is unfounded.

### 3. *Construction Project*

As per the Order-in-Council No. 3415-75 dated July 23, 1975 of the Province of Quebec the total cost of the project should not exceed \$8 500 000.

# MONTREAL NEUROLOGICAL INSTITUTE

## RESEARCH AND TEACHING EXPENDITURE SUMMARY

### FOR THE YEAR ENDED MARCH 31, 1978

1. Budgeted Expenditures from MNI Endowment Funds (includes contribution of MNI Funds for Departmental Teaching of \$589,570)	689,666	
2. Expenditures from Donations and Special Funds of MNI	817,292	
3. External Grants for Research and Fellowships	919,674	2,426,632
4. Salaries paid by the Department of Neurology and Neurosurgery from General University Funds for Teaching Services of MNI/MNH Staff:		
4.1 Geographic Full Time Staff (formerly QHIS Component paid directly to MNH)	230,855	
4.2 Teaching provided to other departments (radiology, pathology, biochemistry and anatomy)	37,910	268,765
		<u>\$2,695,397</u>

## ENDOWMENTS

1934 — Rockefeller Endowment  
 1951 — Donner Canadian Foundation Grant  
 1954 — Lily Griffith McConnell Endowment  
 1957 — Hobart Anderdon Springle Memorial Endowment  
 1958 — Rupert Bruce Memorial Endowment  
 1959 — Percy R. Walters Memorial Endowment  
 1960 — William Cone Memorial Endowment  
 1963 — Walter Chamblet Adams Memorial Endowment  
 1964 — MNI Research Endowment Fund  
 1966 — Izaak Walton Killam Memorial Endowment  
 1969 — Sophie M.C. Letang Memorial Endowment  
 1972 — Senator and Mrs. Lorne Webster Memorial Endowment  
 1973 — G. Maxwell Bell Memorial Endowment  
 1974 — Flora Campbell Memorial Endowment  
 1975 — Cosgrove Multiple Sclerosis Research Fund  
 1976 — Wilder Penfield Memorial Endowment  
 1978 — William D. Munro Memorial Endowment

## FELLOWSHIP ENDOWMENTS

1948 — Duggan Fellowship  
 1950 — Lewis L. Reford Fellowship  
 1956 — Dr. and Mrs. Charles F. Martin Fellowship  
 1966 — Izaak Walton Killam Memorial Fund for Advanced Studies

## GRANTS FOR SPECIAL PROJECTS

### *Medical Research Council of Canada Grants*

- |                    |                   |
|--------------------|-------------------|
| — Dr. S. Carpenter | — Dr. J.B. Martin |
| — Dr. C. Dila      | — Dr. B. Milner   |
| — Dr. W. Feindel   | — Dr. H. Pappius  |
| — Dr. P. Gloor     | — Dr. A. Sherwin  |
| — Dr. R. Hansebout | — Dr. L. Wolfe    |
| — Dr. G. Karpati   | — Dr. I. Woods    |
|                    | — Dr. L. Yamamoto |

### *Medical Research Council of Canada Associateships*

- |                 |                |
|-----------------|----------------|
| — Dr. J. Martin | — Dr. L. Wolfe |
| — Dr. B. Milner |                |

### *Muscular Dystrophy Associate Research Grants*

- |                    |                  |
|--------------------|------------------|
| — Dr. S. Carpenter | — Dr. G. Karpati |
| — Dr. A. Eisen     |                  |

### *Multiple Sclerosis Society of Canada*

- Dr. J.B.R. Cosgrove
- Dr. A. Eisen

### *Réseau Provincial de médecine génétique*

- Dr. E. Andermann

# Donations to Special Funds

## — 1977-78

### ANAESTHESIA RESEARCH FUND

#### *BRAIN RESEARCH FUND*

Mr. A. Murray Vaughan .....	\$1,000.00
Mrs. A. Murray Vaughan.....	1,000.00

#### *CANCER CLINICAL RELIEF FUND*

#### COMPUTER TOMOGRAPHY RESEARCH FUND

M.N.I. Radiology Clinic Inc. ....	116,475.00
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#### *WILLIAM CONE MEMORIAL RESEARCH FUND*

Estate of the late Mr. Josef Aron.....	7,051.02
Dr. W.E. Baker .....	250.00
Mr. Jacques Boulais .....	100.00
Mrs. N. Cassar (In Memory of the late Mr. M. Cassar).....	100.00
Mr. Harold Roy Crabtree (In Memory of the late Mr. Robert R. Feindel)....	100.00
Mr. Jacques E. Daccord .....	500.00
Mrs. Edith L. Dawson (In Memory of the late Miss Gail Budd).....	50.00
Estate of the late Mr. Frederick Dalton Drake .....(Final Distribution)	4,113.23
Mr. Sam Farbstein .....	200.00
Dr. William Feindel .....	400.00
Miss Mildred Flynn.....	100.00
Estate of the late Mr. James A. Jackson .....	8,177.48
Mrs. Margaret W. Kahliff (In Memory of the late Mr. Bruce Bumpers).....	5,000.00
Mr. James Keith.....	10.00
Mr. John Langdon.....	500.00
Mrs. Sidney Lyman.....	75.00
Estate of the late Mrs. Margaret L. McDougal.....	1,500.00
Mr. Hugh Gordon Seybold .....	100.00
In Memory of the late Mrs. David Armstrong.....	25.00
In Memory of the late Mrs. Cheryl Leroux .....	405.00
In Memory of the late Jody Leibowitz.....	97.00
In Memory of the late Mrs. David J. Steele .....	577.00
In Memory of the late Mrs. Julia Wollitzer.....	70.00

#### *COSGROVE RESEARCH FUND*

Dr. Mounir Abou-Madi .....	10.00
Dr. and Mrs. Gilles Bertrand .....	10.00
Dr. Harold C. Bonner .....	100.00
Mrs. Joan E. Bourne.....	5,000.00
Miss Bertha Cameron .....	350.00
Champoux et Associés Inc. ....	100.00
Mr. and Mrs. Chazanoff.....	110.00
Brig. J.A. de Lalanne.....	200.00
Mme. Ghislaine Lemieux.....	100.00
Miss Sally Brigid Martin .....	15.00
Mr. Claude Menard.....	500.00
Mr. Adelard St-Hilaire .....	20.00

Mrs. Alain SansRegret .....	500.00
Mr. Raymond Surveyer .....	100.00
In Memory of the late Mr. Georges Cloutier .....	26.00
<i>GORDON LIBRARY FUND</i>	
<i>HARVEY CUSHING CLINICAL RELIEF FUND</i>	
Anonymous .....	1.00
Mrs. C.L. Copland .....	25.00
Miss Sybil Etmekdjian .....	5.00
The Gazette (Christmas Fund) .....	500.00
In His Name Society .....	40.00
M.N.I. Women's Society .....	141.00
Mrs. Lillian Sandler .....	45.00
Mrs. J. Shapiro .....	25.00
Women's Auxiliary, R.V.H. ....	1,200.94
<i>HOSPITAL EQUIPMENT FUND</i>	
Mr. Bernard Goodman .....	4,000.00
Dr. John Little .....	50.00
Women's Auxiliary, R.V.H. ....	2,098.40
<i>MARY MASSABKY FOUNDATION RESEARCH FUND</i>	
Mary Massabky Foundation, Inc. ....	5,150.00
<i>MARY MASSABKY SCHOLARSHIP FUND</i>	
Mary Massabky Foundation, Inc. ....	2,575.00
<i>M.N.I. BUILDING FUND</i>	
<i>M.N.I. NEUROSURGICAL RESEARCH FUND</i>	
<i>M.N.I. STAFF LOAN FUND</i>	
<i>MULTIPLE SCLEROSIS CLINICAL RELIEF FUND</i>	
In His Name Society .....	200.00
Montreal Association for Multiple Sclerosis .....	1,000.00
<i>MULTIPLE SCLEROSIS RESEARCH FUND</i>	
Mrs. Lucia Auclair .....	15.00
Miss Ilene Beaudoin .....	15.00
Miss Patricia Bergeron .....	10.00
Mrs. Carmelle Boissonneault .....	10.00
Mr. Jules Bureau .....	25.00
Miss Carmen Carignan .....	50.00
Mrs. Albany Chagnon .....	50.00
Miss Denise Charbonneau .....	15.00
Mrs. Fleur-Ange Charbonneau .....	10.00
Miss Francine Charbonneau .....	25.00
Mrs. Pauline Couture .....	25.00
Mrs. Diane Croteau .....	2.00
Miss Mary-Louise Dumont .....	10.00
Mr. Paul-Andre Giguère .....	15.00
Miss Céline Gratton .....	15.00
Mrs. Hélène Gravelle-Gratton .....	200.00
Mr. Henri Gratton .....	300.00
Miss Colette Gravelle .....	50.00
Mrs. Francine Guilbert .....	10.00
Mrs. Edith Inwood .....	25.00
Mrs. Yvette Lantaigne .....	20.00

Mrs. Denise Leduc.....	10.00
Mrs. Denyse Talbot-Malenfant.....	10.00
Mrs. Dolorès Mercier.....	25.00
Montreal Association for Multiple Sclerosis .....	5,000.00
Multiple Sclerosis Society.....	4,017.30
Miss Rejeanne Pageau .....	10.00
Mrs. Valeda Perrier .....	10.00
Rev. Sister Yolande Picard .....	10.00
Miss Céline Roy.....	25.00
Miss Nicole Roy.....	10.00
Miss Suzanne Roy .....	25.00
Mrs. Pierre Sammut.....	20.00
Miss Louise Turcotte .....	5.00
Mrs. Ginette Whittom.....	10.00

#### *McNAUGHTON NEUROANATOMY RESEARCH FUND*

#### *FRANCIS McNAUGHTON NEUROLOGICAL RESEARCH FUND*

Anonymous .....	60.00
Mr. and Mrs. S.M. Duncan (In Memory of the late Mr. Paul Vauthier).....	30.00
Mr. S.M. Duncan .....	20.00
Mr. W.G. Lynn.....	100.00
Mr. Edward Norsworthy .....	325.00
Mr. Allan E. Ross.....	1,000.00
Mr. John F. Ross.....	1,000.00
Mr. J. Clare Wilcox.....	100.00
In Memory of the late Mrs. Queenie Taylor .....	20.00

#### *NEUROENDOCRINE RESEARCH FUND*

Mr. and Mrs. S. Nowa .....	500.00
Mr. and Mrs. J. Zelicovitz.....	50.00
In Memory of the late Mr. Joe Nadler.....	15.00
On Behalf of Goldie and Saul Smith on their 25th Wedding Anniversary .....	761.00

#### *NEUROGENETICS RESEARCH FUND*

Association Canadienne de l'Ataxie de Friedreich.....	12,500.00
Mr. Richard Fournier .....	120.00
Mr. Alfred Rouleau .....	80.00

#### *NEUROLOGICAL RESEARCH FUND*

Mr. and Mrs. B. Baier (In Memory of the late Mr. Frederick Lloyd Tadgell).....	15.00
Mrs. L. Bucci (In Memory of her daughter Rosalia).....	10.00
Mrs. L. Bucci (In Memory of the late Mrs. Carmela Rapagna) .....	5.00
Mrs. Simone D. Campbell .....	25.00
Mr. and Mrs. David Dorfmann.....	100.00
Léo Gravel et Fils Inc. ....	30.00
Mr. James Hawkins.....	100.00
Miss Muriel Jones .....	15.00
Mr. and Mrs. S. Kramer.....	10.00
Dr. Stanley J. Kubina.....	100.00
Mrs. Bertha LaFleur (In Memory of the late Mr. Yvan Sabourin).....	5.00
Mr. Robert Leroux .....	25.00
Mr. Andre Michel.....	200.00
Mr. and Mrs. Jean Claude Morency.....	100.00



Estate of the late Mrs. Myrtle Millicent Staples.....	500.00
Steynning Foundation.....	3,000.00
Mrs. Hazel Sutherland.....	25.00
Miss Jill Weedon (In Memory of the late Mr. Paul Vauthier) .....	15.00
Mr. and Mrs. K. Wightman (In Memory of the late Mr. Frederick Lloyd Tadgell).....	15.00
In Memory of the late Mr. Herkko Bergstrom.....	20.00
In Memory of the late Miss Mariel Blouin.....	25.00
In Memory of the late Mr. Ronald G. Brosseau.....	1,680.00
In Memory of the late Mr. Caron.....	5.00
In Memory of the late M. François Champagne.....	355.00
In Memory of the late Mr. Albert G. Charlton.....	10.00
In Memory of the late M. Claude Charrette.....	35.00
In Memory of the late Mr. Gerald Connolly.....	5.00
In Memory of the late Mr. P. Copplin .....	115.00
In Memory of the late Mr. Pardo DiLauro.....	55.00
In Memory of the late Mr. Hubert Dumouchel.....	579.00
In Memory of the late Mrs. Lillian Guy.....	35.00
In Memory of the late Mr. Robert Jussaume.....	25.00
In Memory of the late Mrs. Elizabeth Kurylo.....	25.00
In Memory of the late Miss Sheelagh LaFontaine .....	150.00
In Memory of the late Miss Françoise Lajoie.....	10.00
In Memory of the late Mr. Lucien L'Allier.....	592.00
In Memory of the late Mrs. E. Lazar.....	25.00
Mrs. H.F. Mackay (In Memory of the late Dr. Fredrick Holland Mackay).....	1,200.00
In Memory of the late Mr. M. Locas.....	25.00
In Memory of the late Mrs. Lynn Marquez .....	20.00
In Memory of the late Mrs. Margaret McDougal.....	320.00
In Memory of the late Dr. J.B. McKay.....	25.00
In Memory of the late Mrs. H.J. McKoy.....	20.00
In Memory of the late Mr. W. Morrow.....	20.00
In Memory of the late Mr. Kenneth E. Plumpton.....	485.00
In Memory of the late Mr. Edwin Mervin Porter.....	40.00
In Memory of the late Mr. Frank M. Schiestel .....(to date)	410.00
In Memory of the late Mr. Walter Synowicky.....	735.00
<i>NEUROPHYSIOLOGY RESEARCH FUND</i>	
<i>NEURORADIOLOGY RESEARCH AND TEACHING FUND</i>	
<i>NURSING FUNDS</i>	
<i>EILEEN C. FLANAGAN NURSING BURSARY FUND</i>	
Neuro Nurses (In Memory of the late Miss Irene Herdan).....	25.00
<i>M.N.I. NURSING EDUCATION FUND</i>	
Mrs. Evelyn Stitt.....	100.00
Women's Auxiliary, R.V.H.....	500.00
<i>PENFIELD AWARD FUND</i>	
<i>WILDER PENFIELD MEMORIAL RESEARCH FUND</i>	
Altru Foundation Inc. ....	2,000.00
Mr. and Mrs. T.E. Francis.....	25.00
Mrs. Evelyn Milette-Griffith.....	50.00
Dr. Joseph Hanaway.....	50.00
Estate of the late Mrs. Beatrix Hicks.....	25,000.00

Mrs. Harold Holst.....	50.00
Mrs. Opal Holst (In Memory of the late Mr. and Mrs. O.E. Wells).....	50.00
Estate of the late Mr. James A. Jackson .....	7,709.91
Mr. William Landau .....	50.00
Mrs. Madeleine Lemaire.....	15.00
Mr. Carl Little and Mrs. B. Wolfond.....	200.00
J.W. McConnell Foundation Inc. ....	5,000.00
In Memory of the late Mrs. Wilder Penfield .....	1,905.00
In Memory of the late Mr. Raymond Poupart.....	25.00
<i>ZELDA AND LEO POSMAN RESEARCH FUND</i>	
Mr. Maurice Gillick.....	250.00
Natural Furs Limited.....	100.00
Mr. B.A. Usheroff (Oct./76).....	550.00
<i>REITMAN RESEARCH FUND</i>	
Mr. Sam Reitman.....	5,000.00
<i>REUBEN RABINOVITCH MEMORIAL LIBRARY FUND</i>	
Mrs. A. Horowitz (In Memory of the late Mrs. Rose Springer).....	5.00
Dr. and Mrs. Andrew Kelen .....	200.00
<i>LEWIS REFORD FELLOWS' FUND</i>	
<i>SHERWIN RESEARCH FUND</i>	
<i>SPECIAL PROJECT FUNDS:</i>	
<i>EPILEPSY FOLLOW-UP AND RESEARCH PROJECT</i>	
<i>MULTIPLE SCLEROSIS HOME-CARE PROGRAMME</i>	
Anonymous .....	40,000.00
<i>STROKE RESEARCH</i>	
<i>SPINAL CORD RESEARCH FUND</i>	
Mr. Fred W. Scotcher (In Memory of the late Mrs. Dorothy Scotcher).....	250.00
Mr. G. Scotcher (In Memory of the late Mrs. Dorothy Scotcher).....	50.00
Mr. Thomas Spitzer.....	100.00
<i>THOMAS WILLIS FUND</i>	
<i>H.L. TEUBER NEUROPSYCHOLOGY RESEARCH FUND</i>	
Mrs. H.L. Teuber .....	2,000.00
<i>THIRD FOUNDATION BRAIN FUND</i>	
Anonymous .....	10,000.00
<i>WOMEN'S AUXILIARY, R.V.H.</i> Total Donations.....	3,799.34

Donations to the Montreal Neurological Institute may be made to any of the above funds or for other purposes as specified by the donor. Receipts for such contributions are valid for income tax purposes in Canada. Donations from the United States will also qualify for income tax purposes if cheques are made out to *the Friends of McGill University Inc.* and sent to the *Secretary, Mrs. Ernest Rossiter, Jr., Box 441, Elizabethtown, N.Y. 12932*, with the notation that they are for the Montreal Neurological Institute.

## SUGGESTED FORMS OF BEQUESTS UNRESTRICTED

I give and bequeath the sum of                      dollars (or designated property or portion of estate) to the Montreal Neurological Institute, McGill University, both the principal and income to be derived therefrom to be used in such manner as the Board of Governors of the said University shall from time to time determine.

### RESTRICTED ONLY AS TO PRINCIPAL

I give and bequeath the sum of                      dollars (or designated property or portion of estate) to the Montreal Neurological Institute, McGill University, to constitute part of its general endowment funds, the income to be derived therefrom to be used in such manner as the Board of Governors of the said University shall from time to time determine.

### RESTRICTED AS TO PURPOSE

I give and bequeath the sum of                      dollars to the Montreal Neurological Institute, McGill University, both the principal and the income to be derived therefrom to be used for the purpose of (stating purpose) in such manner as the Board of Governors of the said University shall from time to time determine.

### FOR FOUNDING FELLOWSHIPS AND STUDENT AID

I give and bequeath the sum of                      dollars (or designated property or portion of estate) to the Montreal Neurological Institute, McGill University, for the purpose of founding in the said University one or more fellowships or bursaries to be known as “                      Fellowship or Bursary”, the net annual income from this fund to be awarded annually in such amounts, under such conditions and to such recipients as may be determined from time to time in accordance with the directions of the Board of Governors of the said University.

For information and suggestions, address

The Director  
Montreal Neurological Institute  
3801 University St.  
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# CLASSIFICATION OF OPERATIONS

April 1, 1977 — March 31, 1978

## *Craniotomy and Craniectomy*

and biopsy.....	3	
and drainage of abscess .....	3	
and excision of abscess.....	2	
and drainage of subdural haematoma .....	19	
and drainage of intracerebral haematoma.....	8	
and drainage of extradural haematoma .....	5	
and elevation of depressed skull fracture .....	1	
and decompression, debridement and repair of dural laceration .....	9	
and excision of epileptogenic focus (lobectomy) .....	66	
and excision of epileptogenic focus (hemispherectomy).....	1	
and excision, clipping or wrapping of aneurysm .....	23	
and removal of arteriovenous malformation.....	5	
and cerebral vascular bypass anastomosis.....	8	
and exploration .....	1	
and hypophysectomy for pituitary or intrasellar tumour .....	1	
and plastic repair of dura, C.S.F. rhinorrhea or fistula.....	4	
and removal of posterior fossa tumour .....	20	
and removal of cerebral tumour .....	54	
and correction Chiari Malformation (plugging of central canal) .....	2	
and removal of foreign body.....	1	
and removal of tumour of skull .....	1	
and trigeminal rhizotomy — suboccipital .....	4	
and hypophysectomy endocrine control transphenoidal .....	1	
and hypophysectomy transphenoidal for pituitary or intrasellar tumour.....	35	
and plastic repair of skull defect (plate, bone, acrylic).....	4	281

## *Craniopexy*

and drainage of epidural, intracerebral or subdural space .....	8	
and drainage of abscess .....	4	
and insertion ventricular catheter or drain .....	2	14

## *Shunt procedures*

and ventricular caval (atrial).....	7	
and ventricular peritoneal .....	6	
and ventriculocisternostomy (Torkildsen's) .....	2	
and replacement or revision of shunt.....	3	18

## *Stereotaxic procedures*

and placement of electrodes .....	2	
and ventriculography, P.E.G., angiography (localization).....	5	
and introduction of depth electrodes.....	1	
and lesion (mechanical or neurolytic agent, including electro- physiological localization) .....	5	
and biopsy or drainage of cyst .....	4	17

## *Laminectomy and Hemilaminectomy*

and antero-lateral cordotomy-thoracic .....	4	
and discectomy, lumbar, sacral.....	76	
and discectomy, thoracic.....	2	
and discectomy, cervical.....	4	
and incision and drainage of abscess .....	1	

and excision or occlusion of arteriovenous malformation of cord .....	1	
and repair of meningocele C.S.F. leak, dural graft.....	1	
and removal of tumour, intramedullary .....	5	
and removal of tumour, extramedullary intradural.....	2	
and removal of tumour, extra-dural, metastatic bone, etc.....	10	
and rhizotomy — dorsal .....	1	
and rhizotomy — torticollis .....	1	
and spinal fusion with bone graft — autogenous or bone bank .....	16	
and spinal fusion with Harrington Rods, and autogenous		
or other graft.....	1	
and spinal fusion, anterior approach, spinal trauma .....	1	
and discectomy, anterior approach, cervical (Cloward) .....	28	
and discectomy, anterior approach, cervical without arthrodesis.....	6	
and decompression or exploration of spinal cord or cauda equina for		
stenosis or dentate ligament section or spondylosis.....	17	
and spinal cord cooling and fusion.....	1	
and decompression or exploration spinal cord, trauma .....	1	
and implantation dorsal column stimulator unit.....	3	182
<i>Nerve exploration</i>		
and biopsy.....	1	
and avulsion or section .....	9	
and excision of nerve tumour .....	1	
and neurolysis, transplantation or decompression or exploration .....	76	87
<i>Artery exploration</i>		
and shunt or bypass, graft (autogenous, other).....	1	
and endarterectomy (patch graft) .....	22	
and progressive — occlusion (Selverstone clamp) .....	1	
and ligation or biopsy superficial temporal artery .....	4	
and occlusion of carotid cavernous fistula.....	1	29
<i>Wound re-opening</i>		
and drainage of infection .....	2	
and evacuation of haematoma.....	7	
and exploration .....	1	
and further removal of tumour .....	1	
and resuturing.....	1	12
<i>Miscellaneous</i>		
and miscellaneous.....	17	
and nerve blocks.....	102*	
and suture of laceration of wound.....	2	
and division or denervation sternocleido-mastoid		
muscle for torticollis .....	3	
and radio frequency trigeminal rhizotomy .....	8	
and radio frequency percutaneous cordotomy.....	1	
and tracheostomy .....	4	
and muscle biopsy .....	116	151
<i>Radiological procedures</i>		
Cerebral angiography (venography) percutaneous, carotid,		
vertebral subclavian .....	29	
Catheterization — brachial, carotid, femoral.....	377	
Pneumograms under anaesthesia .....	166	572
TOTAL .....		1363

# CLASSIFICATION OF DISEASES

April 1977 — March 1978

## *Nervous system generally*

Multiple sclerosis .....	75	
Motor neurone disease .....	23	
Tuberous sclerosis .....	11	
Miscellaneous .....	5	114

## *Meninges*

Meningocele and myelomeningocele .....	11	
Acute purulent meningitis .....	9	
Subdural haematoma .....	13	
Subarachnoid haemorrhage .....	26	
Adhesive arachnoiditis .....	1	
CSF rhinorrhea .....	4	
Spinal arachnoiditis .....	1	
Miscellaneous .....	62	127

## *Brain*

Hydrocephalus .....	16	
Abscess .....	3	
Head injury (contusion, laceration, traumatic encephalopathy, concussion, skull fracture) .....	120	
Epilepsy .....	261	
Arnold-Chiari deformity .....	6	
Parkinsonism .....	13	
Intracerebral haemorrhage .....	14	
Intracerebral haematoma .....	6	
Alzheimer's disease .....	5	
Thrombosis, encephalopathy due to arteriosclerosis .....	90	
Cysts .....	7	
Aneurysm .....	16	
Encephalitis .....	5	
Arteriovenous malformation .....	11	
Miscellaneous .....	87	660

## *Tumours*

Astrocytoma .....	9	
Craniopharyngioma .....	1	
Schwannoma .....	3	
Neuroma .....	1	
Chromophobe adenoma of pituitary .....	27	
Gliomas .....	14	
Sarcoma .....	1	
Metastatic carcinoma .....	58	
Brain tumour suspected .....	15	
Hemangioblastoma .....	1	
Angioma .....	4	
Glioblastoma multiforme .....	16	
Meningioma .....	14	
Chordoma .....	1	
Miscellaneous .....	21	186

<i>Spinal cord</i>		
Contusion of spinal cord.....	4	
Compression of spinal cord.....	2	
Guillain-Barré syndrome .....	4	
Myelopathy .....	9	
Syringomyelia .....	6	
Hydromyelia .....	1	
Spinal stenosis.....	6	
Miscellaneous.....	52	84
<i>Cranial and peripheral nerves</i>		
Trigeminal neuralgia .....	8	
Ulnar neuropathy.....	12	
Other neuralgias.....	5	
Peripheral neuropathy .....	7	
Neuritis .....	1	
Occipital neuralgia .....	1	
Oculomotor paresis .....	1	
Miscellaneous.....	82	117
<i>Muscles</i>		
Myasthenia gravis.....	6	
Muscular dystrophy.....	8	
Myopathy.....	1	
Spasmodic torticollis.....	2	
Muscular atrophy .....	3	
Huntington's chorea.....	1	
Myalgia of undetermined origin .....	2	
Charcot-Marie tooth disease .....	1	
Miscellaneous.....	18	52
<i>Mental disease</i>		
Mental retardation .....	8	
Depression .....	11	
Anxiety state .....	5	
Conversion hysteria.....	9	
Schizophrenia .....	1	
Behaviour disorder .....	3	
Chronic alcoholism.....	14	
Miscellaneous.....	2	53
<i>Other systems</i>		
Protrusion disc — lumbar.....	74	
Protrusion disc — cervical .....	21	
Fracture and/or dislocation vertebral column .....	19	
Back pain.....	23	
Pain miscellaneous.....	19	
Rheumatoid arthritis.....	2	
Coronary insufficiency.....	4	
Hypoglycemia .....	1	
Diabetes mellitus.....	2	
Hypertension .....	5	
CNS disease .....	2	
Osteoarthritis.....	2	
Hypothyroidism.....	2	
Miscellaneous.....	48	224

CAUSES OF DEATH

Head injury (concussion, contusion, haematoma) .....	11
Intracranial aneurysm (haemorrhage, haematoma due to aneurysm).....	24
Cerebrovascular disease (thrombosis, infarction, haemorrhage).....	9
Intracranial tumour, primary .....	7
Intracranial tumour, metastatic .....	5
Cardiac arrest .....	12
Other systems .....	7
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TOTAL.....	75



