5th Report
1939-40

To

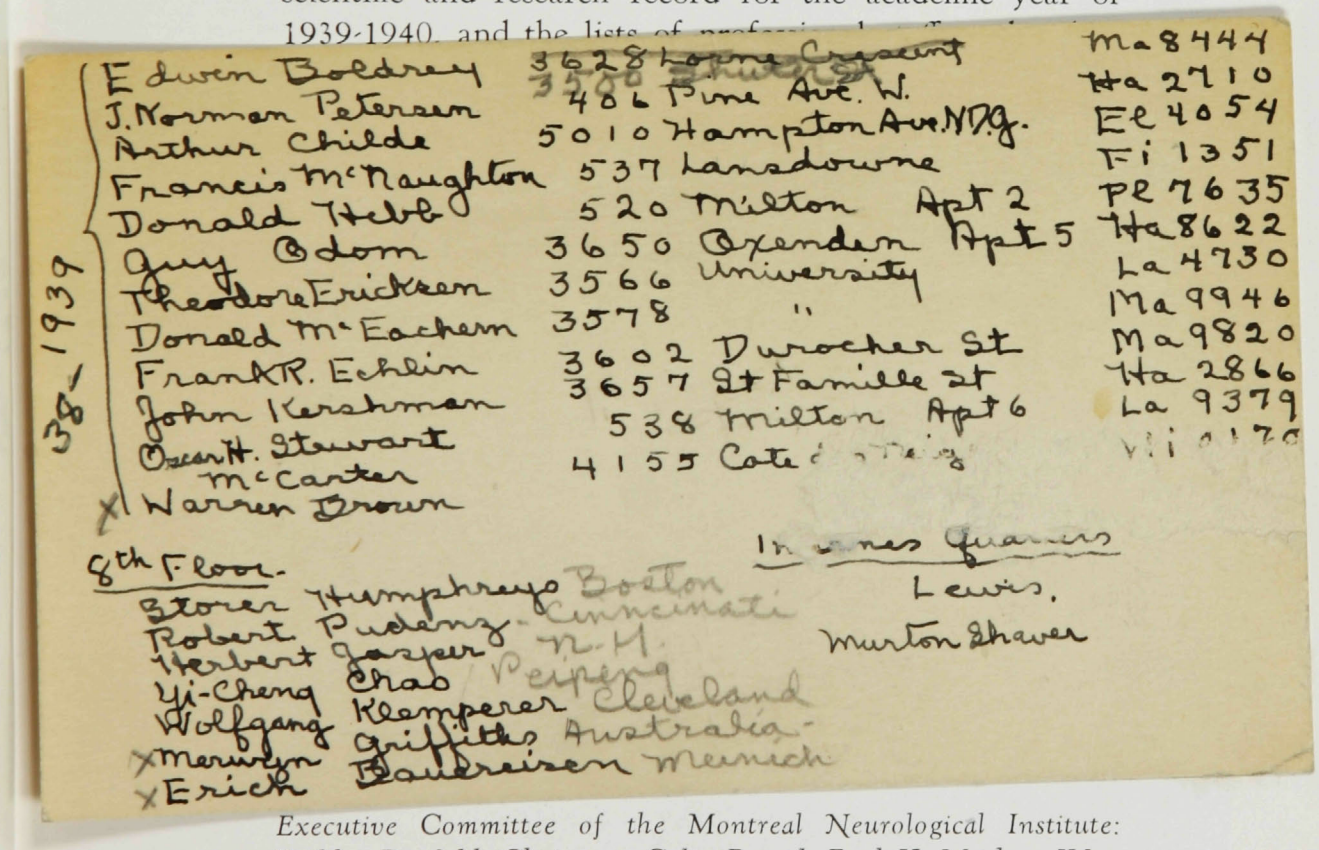
Dr. F. Cyril James,

Principal and Vice-Chancellor,

McGill University.

Sir:

On behalf of the Executive Committee I have the honour to submit the fifth annual report of the Montreal Neurological Institute. It includes a summary of the clinical work for the calendar year of 1939, together with the scientific and research record for the academic year of 1939-1940, and the lists of profes[illegible]



Executive Committee of the Montreal Neurological Institute: Wilder Penfield, Chairman, Colin Russel, Fred H. Mackay, Wm. Cone, Arthur Elvidge, Arthur Young, Donald McEachern, Norman Petersen.

MEDICAL STAFF

Director

WILDER PENFIELD, Litt.B., B.A., M.A., M.D., B.Sc. and D.Sc. (Oxon.), F.R.C.S. (C.), F.R.S.C.

Registrar

J. NORMAN PETERSEN, B.Sc., M.D., C.M.

CLINICAL SERVICES

Neurologist

*COLIN RUSSEL, B.A., M.D., C.M., F.R.C.P. (C.)

Consulting Neurologist

F. H. MACKAY, M.D., F.R.C.P. (C.)

Associate Neurologists

(1)DONALD MCEACHERN, M.D.
A. G. MORPHY, B.A., M.D.
J. NORMAN PETERSEN, B.Sc., M.D., C.M.
MIGUEL PRADOS, M.D.
ARTHUR W YOUNG, M.D., C.M., F.R.C.P. (C.)

Associate Consulting Neurologists

ROMA AMYOT, B.A., M.D. (Paris)
ANTONIO BARBEAU, M.D., Ph.D.
EMILE LEGRAND, M.D., Médecin Légiste (Paris)
JEAN SAUCIER, B.A., M.D., (Paris) M.D. (Montreal)
NORMAN VINER, B.A., M.D., C.M.

Associate Clinical Psychologist

MOLLY HARROWER-ERICKSON, Acad. Dip. (London), Ph.D.

Clinical Assistant in Psychology

W DONALD ROSS, B.Sc., M.D.

Clinical Assistants in Neurology

JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc.
(2)FRANCIS MCNAUGHTON, B.A., M.D., C.M.

Neurosurgeon

*WILLIAM CONE, B.S., M.D., F.R.C.S. (C.)

Associate Neurosurgeons

(3)ARTHUR ELVIDGE, M.Sc., M.D., C.M., Ph.D., F.R.C.S. (C.)
THEODORE C. ERICKSON, M.A., B.S., M.Sc., M.B., M.D., Ph.D.

Roentgenologist

*ARTHUR CHILDE, M.D.

Acting Roentgenologist

T. E. W. HARDING, M.D., C.M.

Consulting Roentgenologist

CARLETON B. PEIRCE, B.A., M.Sc., M.D., F.A.C.P.

Clinical Electrographer

HERBERT JASPER, Ph.D. (Iowa), D. es Sci. (Paris)

Clinical Assistant in Electrography

JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc.

Back row: R. L. Swank, G. L. Odom, H. H. Jasper, R. Amyot, J. Kershman, M. Prados, K. Stern
Third row: A. I. Finlayson, E. W. Harding, A. Cipriani, M. R. Shaver, D. Ross, F. L. McNaughton
Second row: N. Viner, J. Saucier, F. H. MacKay, W. G. Penfield, D. McEachern, A. G. Morphy, A. R. Elvidge
Front row: W. Klemperer, R. H. Pudenz, P. Hewitt

Anaesthetist
DOROTHEA M. WARDROP, M.D.

Consulting Anaesthetist
F. A. H. WILKINSON, M.D., D.A. (R.C.P. & S. Eng.)

Clinical Assistant in Neuropsychiatry
MIGUEL PRADOS, M.D.

Resident
ROBERT H. PUDENZ, B.S., M.D. (Duke)

LABORATORY SERVICES

Neuropathologist
*WILLIAM CONE, M.D.

Biochemist
DONALD MCEACHERN, M.D.

Assistant Biochemist
JOHN KERSHMAN, M.D.

Electrophysiologist
HERBERT JASPER, Ph.D.

Electrophysiological Fellow
ANDRÉ CIPRIANI, B.Sc. (McGill), M.D., C.M.

Neuroanatomist
FRANCIS MCNAUGHTON, M.D.

Neuropathological Fellow
GUY L. ODOM, M.D. (Tulane)

Research Fellows
JAMES T. DANIELS, M.D. (Georgetown)
ALLISTER I. FINLAYSON, B.Sc., M.D., M.A. (Nebraska)
RICHARD W FINNER, M.D. (Duke)
*STORER P. HUMPHREYS, A.B., M.D. (Yale)
MIGUEL PRADOS, M.D. (Madrid)
*O. W. STEWART, B.S., M.D. (Oklahoma)
†ROY L. SWANK, B.S., M.D., Ph.D. (Northwestern)

* Active Military Service.
(1) Acting Neurologist.
(2) Assistant Registrar.
(3) Acting Neurosurgeon.
† Commonwealth Fellowship.

NEUROLOGICAL AND NEUROSURGICAL STAFFS OF THE GENERAL HOSPITALS IN MONTREAL

ROYAL VICTORIA HOSPITAL

DEPARTMENT OF NEUROLOGY AND NEUROSURGERY

Neurologist and Neurosurgeon-in-Chief
WILDER PENFIELD, Litt.B., B.A., M.A., M.D., B.Sc. and D.Sc. (Oxon.) F.R.C.S. (C.), F.R.S.C.

Neuropsychiatrist
COLIN RUSSEL, B.A., M.D., C.M., F.R.C.P. (C.)

Neurosurgeon
WILLIAM CONE, B.S., M.D., F.R.C.S. (C.)

Associate Neurologists
(1)DONALD MCEACHERN, M.D.
A. G. MORPHY, B.A., M.D.
J. NORMAN PETERSEN, B.Sc., M.D., C.M.
MIGUEL PRADOS, M.D.
(2)ARTHUR W. YOUNG, M.D., C.M., F.R.C.P. (C.)

Associate Neurosurgeons
(3) ARTHUR ELVIDGE, M.Sc., M.D., C.M., Ph.D., F.R.C.S. (C.)
T. C. ERICKSON, M.A., B.S., M.Sc., M.B., M.D., Ph.D.

Clinical Assistants in Neurology
JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc.
FRANCIS MCNAUGHTON, B.A., M.D., C.M.

Associate Clinical Psychologist
MOLLY HARROWER-ERICKSON, Acad. Dip. (London), Ph.D.

Assistant in Clinical Psychology
W DONALD ROSS, B.Sc., M.D.

(1) Acting Neuropsychiatrist.
(2) Acting Psychiatrist-in Charge.
(3) Acting Neurosurgeon.

MONTREAL GENERAL HOSPITAL

DEPARTMENT OF NEUROLOGY

Neurologist	FRED H. MACKAY
Associates	ARTHUR R. ELVIDGE
	NORMAN VINER
Assistants	A. A. MACKAY
	F. L. MCNAUGHTON
	C. A. PORTEOUS
Consulting Neurosurgeons	WILLIAM V. CONE
	WILDER PENFIELD

HÔPITAL NOTRE DAME

DEPARTMENT OF NEUROLOGY

Chief Neurologist	EDGAR LANGLOIS
Assistant Neurologists	ROMA AMYOT
	JEAN SAUCIER

HOTEL DIEU

Consultant Neurologist	EMILE LEGRAND
Neurologist-in-Charge	ANTONIO BARBEAU

CHILDREN'S MEMORIAL HOSPITAL

Consultants	FRED H. MACKAY
	WILDER PENFIELD
	COLIN K. RUSSEL
Neuropsychiatrist	ARTHUR W YOUNG
Assistant Neuropsychiatrist	F. L. MCNAUGHTON
Neurosurgeon	WILLIAM V. CONE
Neurosurgeon pro tem	ARTHUR R. ELVIDGE

Diagnoses in Fatal Cases

Multiple congenital anomalies	1
Arnold-Chiari malformation	1
Arteriovenous angioma	1
Rupture of intracranial aneurysm	2
Subarachnoid haemorrhage	1
Tuberculous meningitis	5
Pneumococcus meningitis	2
Brain abscess	1
Adhesive arachnoiditis	1
Rupture aortic aneurysm	1
Head injury	18
Post-traumatic headache	1
Cerebral vascular lesion	5
Brain tumour	31
Carcinomatosis	3
Myelopathy	1
Septicaemia	1
Actinomycosis	1
Cirrhosis of the liver	1
Block of aqueduct of Sylvius	1
	79

SOCIAL SERVICE REPORT

MRS. M. A. LANTHIER

There has been a small decrease during 1939 in the number of patients placed for convalescent care. The chief reason for this is that adjustments have been made in the patients' homes through the Social Service Department with the assistance of social agencies and nursing services.

Number of patients who received convalescent care	54
Number of patients placed permanently	21

Follow-up work is done on patients discharged from the wards and also on patients who attend the Outdoor Clinics. Junior League volunteers have assisted during the clinic periods and have also kept routine files for the follow-up studies. Their assistance was found to be of such value that an extra volunteer has been placed in the Neurosurgical Outdoor Clinic. An attempt has been made to locate patients who formerly attended our clinics for anti-luetic treatment but who have not continued to do so.

The social study on patients with spina bifida has been completed and is ready for publication. One student from the Montreal School of Social Work was supervised during the year. Ten nurses from the Training School of the Royal Victoria Hospital were given one week's supervision in the Social Service Department.

ROENTGENOGRAPHIC DEPARTMENT

DR. A. E. CHILDE, *Roentgenologist*

DR. T. E. W. HARDING, *Acting Roentgenologist*

	1939	1938
Roentgenographic examination of patients	2261	2197
Films used	11530	10425
Encephalograms	498	429
Ventriculograms	84	100

The volume of work in the x-ray department of the Institute has increased each year. Reduction in the fees for some of the more frequent types of examination has led to a decrease in revenue.

The routine use of stereoscopic films for skull and spine examinations has now become general and the older method of single radiographs has been abandoned as unreliable. Air myelography has received renewed attention with rather valuable results in some suspected cases of herniation of an intervertebral disc. It does not entirely replace the use of lipiodol, but in a certain number of cases the findings are sufficiently definite to render any other procedure unnecessary. Comparatively little use has been made of arteriography during the past year, and it is hoped that in the near future some safer form of contrast medium may become available so that this very valuable diagnostic procedure may be performed more freely than is possible under present circumstances.

ANAESTHESIA

Ether	4
Ether and avertin	234
Rectal ether	1
Ether and gas	12
Gas and intratracheal ether	8
Nitrous oxide	1
Avertin	6
Avertin and local	40
Local	57
	363

PATIENTS CARED FOR BY NEUROLOGICAL AND NEUROSURGICAL DEPARTMENTS OF OTHER GENERAL HOSPITALS IN MONTREAL

	Outdoor Dept. Total Visits	*Admissions to Hospital*
Montreal General Hospital	6189	279
Children's Memorial Hospital	329	
St. Mary's Hospital	82	31
Jewish General Hospital	847	44

Back Row—M. R. Hyson, H. E. Nicholl, H. MacLean, M. Apedaile, R. Edwards.
Third Row—M. Thibodeau, H. Hennigar, J. Charron, I. Irwin, I. Gillespie
Second Row—C. Lambertus, L. MacNichol, C. MacLeod, E. Flanagan, B. Cameron, E. Scott, M. Goldie.
Front Row—L. Potvin, L. Cantero, L. Robichaud.

NURSING STAFF

Supervisor	Miss Eileen C. Flanagan, B.A., R.N.
Assistant	Miss Bertha Cameron, R.N.
Ward Teacher	Miss Katharine Jamer, B.Sc., R.N.
Night Supervisor	Miss May Collins, R.N.
Night Assistant—Wards	Miss Josephine MacIsaac, R.N.
Night Assistant—Operating Room	Miss Marjorie Milner, R.N.
Operating Room Supervisor	Miss Cora MacLeod, R.N.
Assistant Operating Room	Miss Anna Hudson, R.N.
Head Nurses	Miss Evelyn Scott, R.N.
	Miss Constance Lambertus, R.N.
	Miss Margaret Goldie, R.N.
General Duty, Operating Room	Miss Bonheur Cameron, R.N.
	Miss Rita Edwards, R.N.
General Duty, Floors	Miss Isabel Gillespie, R.N.
	Miss Leola Robichaud, R.N.
	Miss Elsie Ogilvie, R.N.
	Miss Lois Glass, R.N.
	Miss L. Potvin, R.N.
	Miss M. R. Hyson, R.N.
	Miss L. Cantero, R.N
	Miss M. Thibodeau, R.N.
	Miss J. Young, R.N.
	Mrs. N. Gerow, R.N.
	Miss Elsie Bradley, R.N.

In addition to the above there are seven post-graduate students who remain from six months to a year, and six undergraduate nurses of the Royal Victoria Hospital, who stay for five weeks.

In order to train graduate nurses for neurological and neurosurgical nursing a post-graduate course is given in the Institute. The minimum length of time is six months and this may be extended to two years if operating room experience is required. Lectures are given each week by members of the medical staff, on neuroanatomy, neurophysiology, neurology and neurosurgery, and the ward teacher conducts a class in nursing each morning.

The post-graduate students are assigned to the wards on day and night duty, and are given a considerable amount of supervision and teaching while on duty. These students who have come from all parts of Canada, and several from the United States, either return to their own hospitals to carry on neurosurgical nursing, remain on the staff of the Institute, or do private nursing for our service.

The number of patients treated in the Institute was again greater during the past year, with a bed occupancy of 96.4% This is made possible by changing the small wards and rooms to accommodate in turn, children, semi-private or ward patients, according to the temporary demand.

The rapid turnover of patients, and the high bed occupancy, mean that we are caring for patients in the acute stage of illness only, and this in turn means a heavy load on the nursing staff as well as on the physical, medical and surgical equipment.

There are advantages, however, in this condition both from the teaching point of view and from the pateints' point of view as it makes the service particularly interesting and instructive, and this is reflected in a better nursing service to the patients. It also means that all equipment must be kept at the maximum efficiency at all times.

TEACHING

McGILL UNIVERSITY

Neurology and Neurosurgery

Professor and Chairman of the Department	WILDER PENFIELD
Associate Professor of Neurology	COLIN RUSSEL
Associate Professor of Neurosurgery	WILLIAM CONE
Clinical Professor of Neurology	F. H. MACKAY
Assistant Professor of Neurosurgery	A. R. ELVIDGE
Lecturers in Neurology	DONALD MCEACHERN
	F. MCNAUGHTON
	J. N. PETERSEN
	N. VINER
	A. W. YOUNG
Lecturer in Neuropsychiatry	MIGUEL PRADOS
Lecturer in Neurological Roentgenology	A. E. CHILDE
Lecturer in Neurological Electrography	HERBERT JASPER
Lecturer in Clinical Psychology	MOLLY HARROWER-ERICKSON
Lecturer in Neurosurgery	T. C. ERICKSON
Lecturer in Neuropathology	KARL STERN
Demonstrator in Neurology	J. KERSHMAN
Assistant Demonstrator in Neurosurgery	ROBERT PUDENZ
Assistant Demonstrator in Neuropathology	GUY ODOM
Research Fellows	JAMES T. DANIELS
	ALLISTER I. FINLAYSON
	RICHARD W FINNER
	S. HUMPHREYS
	O. W STEWART
	ROY L. SWANK

FACULTY OF GRADUATE STUDIES AND RESEARCH

Professor	WILDER PENFIELD
Associate Professor and Head of the Department	WILLIAM CONE
Associate Professor	COLIN RUSSEL
Lecturers	A. E. CHILDE
	ARTHUR ELVIDGE
	DONALD MCEACHERN
	NORMAN PETERSEN

COURSES OF INSTRUCTION

The lecture amphitheatre in the Institute, seating one hundred and twenty, is used not only by the Department of Neurology and Neurosurgery but also, on occasion, by all other teaching departments of the Royal Victoria Hospital, and certain groups from the Montreal General Hospital. Teaching facilities for small groups are available also in the library and in special rooms on the public clinical floors.

Undergraduate teaching in Neurology and Neurosurgery is carried out in the third and fourth years of the medical course and consists of formal lectures, ward teaching, and case presentations to small groups in the outpatient department. In addition an elective course of weekly case presentations of diseases of the nervous system is given by Dr. Wilder Penfield. This is open to students and practitioners before whom physical signs, diagnosis and treatment are discussed. Throughout the academic year a special elective course, with weekly lectures, is given and is divided into the following sections:—

Neuroanatomy, by Drs. Petersen, McNaughton, Erickson, Kershman and McNally.
Neurophysiology, by Dr. Elvidge.
Neuropathology, by Dr. Stern.
Electrophysiology, by Dr. Jasper.
Biological Chemistry, by Dr. McEachern.
Roentgenology, by Dr. Harding in the absence of Dr. Childe.
Psychology, by Dr. Harrower-Erickson.

A new elective course of five lectures entitled, "Introduction to the Study of Psychological Medicine" will be given by Dr. Prados during 1940-41.

In the Faculty of Graduate Studies and Research courses are offered for the degrees of Master of Science and Doctor of Philosophy. The series of lecture-demonstrations described above as elective for undergraduates forms part of the post-graduate teaching in the Department. In addition graduate students attend a weekly colloquium in neuropathology, conducted by Professors Cone and Penfield, weekly clinical seminars conducted by Professors Penfield, Russel and Cone and weekly complete ward rounds. The remainder of the time of the graduate student is devoted to experimental research, the accomplishment of which, as embodied in a thesis, is the main consideration in recommending him for a degree.

In addition to the above formal courses the Department provides opportunity for advanced clinical study and laboratory research to properly qualified graduate students. Such opportunities are described elsewhere in this report.

The weekly meetings of the Montreal Neurological Society form part of the graduate teaching in the Department of Neurology and Neurosurgery. These meetings consist of clinical presentations and of scientific lectures, usually by guest speakers. The clinical meetings are held alternately at the Montreal Neurological Institute and the Montreal General Hospital, with occasional visits to other hospitals in Montreal.

UNIVERSITY OF MONTREAL

Faculty of Medicine

Professor of Psychiatry ..... EMILE LEGRAND
Professor of Neurology ..... ANTONIO BARBEAU
Assistant Professors of Neurology ..... ROMA AMYOT
JEAN SAUCIER

RESEARCH

The laboratories of neuropathology, neurophysiology, neuroanatomy, biological chemistry and electrophysiology, under the direction of Drs. W. V Cone, T. C. Erickson, F L. McNaughton, D. McEachern and H. H. Jasper respectively, have been active throughout the year and reports dealing with each of these follow.

LABORATORIES OF NEUROPATHOLOGY

DR. W. V. CONE, *Neuropathologist*
DR. W. PENFIELD, *Neuropathologist pro tem.*
DR. K. STERN, *Assistant Neuropathologist*

A large volume of work was done under the immediate control of Dr. Robert H. Pudenz as Neuropathological Fellow. Two hundred and eighty-three pathological surgical specimens were reported on and autopsy material from sixty-three cases was studied in co-operation with the Department of Pathology of McGill University and the Royal Victoria Hospital. In addition twenty-four miscellanous specimens were examined.

LABORATORIES OF NEUROPHYSIOLOGY

DR. T. C. ERICKSON, *Neurophysiologist*

A large variety of research problems have been begun and others completed in the physiological laboratories. Some of these have been of a practical nature, for the purpose of answering particular questions raised in clinical work, while others have been part of an investigation of fundamental principles in the physiology and pathology of the nervous system. Much of the work has been carried out by co-operation between different laboratory departments of the Institute, so as to utilize to the full all the possible research tools which are available. Fortunately there are no rig d departmental lines to obstruct research, and most of the work in these laboratories is the result of the collaboration of different men with different techniques and ideas and under the guiding stimulus of Dr. Penfield, Dr. Cone, and others.

The main problems which have been studied during the past year can only be mentioned in outline.

A new method of preventing adhesions of the brain was the result of systematic experiments carried out by Drs. Chao, Humphreys and Penfield.

Drs. Cone, Hewitt and Prados have carried forward a study of experimental brain abscesses in monkeys as well as in other experimental animals.

The effects of exposure of the cerebral cortex to air under various conditions, as well as the histological changes produced by electrical stimulation were studied by Dr. Echlin. He also completed work on certain aspects of cerebral circulation.

The changes in cerebral circulation during metrazol convulsions were examined by Drs. Dancey and Erickson in order to elucidate the physiological mechanisms involved in producing the improvement following metrazol therapy of psychoses.

A study of local changes in blood flow, hydrogen ion concentration, electrical activity and DC potentials of the cerebral cortex during experimentally induced convulsions was carried out by Drs. Jasper and Erickson.

The etiology of "aseptic" meningitis was investigated by Dr. Finlayson.

In collaboration with the department of anatomy Dr. McNaughton has continued a study of the sensory innervation of intracranial structures.

Drs. Kershman and McEachern have begun an experimental investigation of the factors involved in muscular fatigue.

The problem of the blood-brain barrier during convulsions elicited by metrazol, picrotoxin, cocaine and electrical stimulation has been studied by Dr. Prados. He has also continued research into the conditions which determine the acute swelling of oligodendroglia.

Dr. Pudenz was engaged in a study of the following problems:—
(1) The relation of the perineural spaces to the subdural space,
(2) the effectiveness and safety of anticoagulants in cerebral tissue,
(3) a comparison of the reaction about various suture materials in the tissues.

Dr. Stewart has investigated in a series of experiments carried out on monkeys, certain new prophylactic measures recommended for poliomyelitis. He also began experiments to trace the sympathetic pathways in the spinal cord but these were cut short by his call to military service.

During the year a total of 185 acute experiments, 109 major sterile operations and 103 minor procedures were carried out. Miss C. Dart, R.N., and Mr. George Peladeau contributed much with their skilful technical assistance. Although the activities of the laboratories may be modified to some extent by the war, it is confidently expected that they will continue uninterruptedly to elucidate problems in neurology and neurosurgery, which will loom larger than ever before, during and after this war.

LABORATORIES OF NEUROANATOMY

DR. F. L. MCNAUGHTON, Neuroanatomist

Close co-operation has been maintained with the Department of Anatomy of McGill University. During the winter a brain modelling course was conducted by Drs. Kershman and McNaughton. This was limited to a small group of Research Fellows and selected undergraduate students. Progress was made in the preparation of teaching material, such as serial sections, photographs and dissections. Dr. McNaughton continued his studies on the sensory innervation of intracranial structures.

LABORATORIES OF BIOLOGICAL CHEMISTRY

DR. D. MCEACHERN, *Biological Chemist*

EXAMINATIONS

Cerebrospinal fluid —	Pandys	1438
	Proteins	1438
	Sugars	60
	Chlorides	80
	Langes	291
Blood and C.S.F. Bromides		23
Miscellaneous		2
Basal Metabolic Rate		116
Total		3448
Private and Semi-private		868
Public		2580

Research problems carried out during the year included studies on the bradycardia of Thiamin deficiency and of the effect of thymus extracts on creatinuria in rats with Miss Doris Brophy; also chemical alterations in myasthenia gravis with Dr. Wolfgang Klemperer. Dr. Miguel Prados investigated the effect of adrenal cortex extract on brain metabolism. Clinical investigations were also carried out on the effect of vitamin E in certain neuromuscular diseases. Mr. William C. Gibson, in conjunction with Dr. Jasper's Department, is undertaking a study of epileptiform convulsions produced in animals during vitamin B_6 deficiency. Dr. M. R. Shaver is studying the pathological changes in muscle in various neuromuscular diseases.

LABORATORIES OF ELECTROENCEPHALOGRAPHY

DR. H. H. JASPER, *Electrophysiologist*

The department of electroencephalography was installed in its new quarters in January, 1939. Ample space and equipment were provided in this especially constructed building through the generosity of Montreal citizens. During the past year the work of the department has been directed toward the perfection of the technique of clinical electroencephalography as an aid to the diagnosis and localization of brain disorders and to the experimental investigation of epilepsy.

During the first year of operation, 1104 electroencephalographic examinations were carried out on 649 patients. The majority of these were epileptic. The distribution of cases according to principal diagnosis was as follows:—

Diagnosis	*No.*
Brain abscess	10
Cerebral atrophy	5
Chorea	1
Epilepsy	340
Head injury	76
Cerebral haemorrhage	13
Cerebral vascular disease	15
Migraine	5
Neoplasm	74
Mental disease	29
Miscellaneous	69
Undiagnosed	12
Total	649

FELLOWS' LIBRARY

DR. D. MCEACHERN, *Librarian*

The Fellows' Library has continued to be actively used by members of the Staff and others and the library room has been in frequent use for small meetings and demonstrations. Thirty periodicals have been received regularly, an addition of two. The library now contains five hundred and eighty-four volumes exclusive of bound periodicals, an addition of sixty-six volumes. An attempt is being made to build up a small nucleus for a collection on psychology and psychiatry.

During the year Dr. Colin K. Russel generously presented to the library the extensive back files of three important periodicals. Through Dr. Penfield funds were made available for the binding of these sixty-six volumes. The Journal of Nervous and Mental Diseases and the American Journal of Psychiatry were thus added to the periodical list and many back files were added to the Revue Neurologique. We are deeply grateful to Dr. Russel for this valuable gift.

Much credit is due to Miss Helen O'Mara, who has been directly responsible for the care of the collection.

THE FELLOWS' SOCIETY

GUY ODOM, *Chairman*

This organization, which is composed of all the research fellows and house officers, meets in the Fellows' Library every week or every two weeks for the purpose of holding scientific sessions. Some of these meetings are devoted to reviews of the current literature dealing with neurology and neurosurgery and others are given over to preliminary reports of research work in progress by the various research fellows. Guests from other departments of the Medical School are occasionally invited to present material which bears on the problems of neurology. The aim is to cover subjects which are not dealt with at larger and more formal meetings, and to foster active discussion and questions as well as to keep all who attend "au courant" with the problems which are under investigation at the Institute.

The meetings of this group have a definite function in the scientific life of the Neurological Institute, namely to furnish a place for active discussion of new experimental work and hypotheses, to enable everyone to learn of the research work in progress, to bring in outside speakers to cover subjects not dealt with in the more formal meetings and to discuss new research which appears in the current literature.

MONTREAL NEUROLOGICAL SOCIETY

DR. F. H. MACKAY, *President*
DR. A. BARBEAU, *Vice-President*
DR. T. C. ERICKSON, *Secretary-Treasurer*

The Montreal Neurological Society, which is a section of the Montreal Medico-Chirurgical Society, meets weekly throughout the academic year. As stated elsewhere in this report, its meetings constitute part of the post-graduate teaching programme of the Institute. These meetings are of two types, those consisting of case presentations and those consisting of formal lectures usually delivered by a visiting speaker. The clinical meetings alternate between the Institute and the Montreal General Hospital, but occasional visits are made to the Notre Dame Hospital, Hotel Dieu and the Children's Memorial Hospital of Montreal.

Early in April of each year the Institute conducts a special meeting in memory of John Hughlings Jackson, the great English neurologist. The Hughlings Jackson Memorial Lecture for 1940 was entitled "The Factors Affecting the Liberation of Insulin from the Pancreas", and was given by Dr. Charles H. Best, Professor of Physiology of the University of Toronto.

On November 15th, 1939, a special meeting was held in memory of Harvey Cushing, who died on October 7th, 1939, at the age of 70 years. This meeting was under the Chairmanship of Dr. Charles F. Maritn, and the speakers were Mr. Gerald Birks and Drs. W. V. Cone, Wilder Penfield and W. W. Francis.

Guest speakers who appeared before the Montreal Neurological Society during the 1939-1940 session were:

Dr. J. P. S. Cathcart, Department of Pensions and National Health, Ottawa, Canada.—The War Neuroses.

Dr. Foster Kennedy, Professor of Clinical Neurology, Cornell University Medical School.—Functional Disorders Associated with Warfare.

Dr. J. C. Meakins, Professor of Medicine, McGill University.—The Effort Syndrome.

Dr. S. Burt Wolbach, Shattuck Professor of Pathological Anatomy, Harvard. —Avitaminosis and Diseases of the Nervous System.

Dr. H. Houston Merritt, Associate Professor of Neurology, Harvard.—The Medical Treatment of the Convulsive Disorders.

Dr. Byron Stookey, Professor of Neurosurgery, Columbia University.—Surgery of Peripheral Nerves in War.

Dr. Lewis J. Pollock, Professor of Nervous and Mental Diseases, Northwestern University.—Injury and Repair of Peripheral Nerves.

Dr. Virgil H. Moon, Professor of Pathology, Jefferson Medical College.—Surgical Shock.

Dr. Reginald H. Smithwick, Massachusetts General Hospital.—Surgery of the Sympathetic Nervous System for Vascular Disease.

Dr. Gilbert Horrax, Lahey Clinic, Boston.—Neurosurgery in War Time.

TECHNICIANS AND LABORATORY ASSISTANTS

Miss Doris D. Brophy, B.A., Licenciée ès Science	*Chemistry*
Miss Lorraine Code, B.A., M.T.	*Chemistry*
Miss Isabel Dickson, R.N.	*Neurophysiology*
Mr. H. S. Hayden, F.R.P.S.	*Photography*
Mrs. L. Lafortune	*Neuropathology*
Miss M. E. MacDonald, R.N.	*Electrophysiology*
Mr. G. Peladeau	*Neurophysiology*
Mr. F. Putt	*Neuropathology*
Mr. W. Whitehouse	*Roentgenology*

SECRETARIAL STAFF

Miss A. Dawson	*Departmental Secretary*
Miss B. Burrows	*Electrophysiology*
Miss E. Fanning	*Half time, Manuscripts*
Miss I. Meagher	*Roentgenology*
Miss E. C. Montgomery	*Administration*
Miss H. O'Mara	*Neuropathology*
Miss M. O'Mara	*Records*
Miss P. Sheehan	*Office*

CLINICAL SERVICES AND FELLOWSHIPS

The interneship of eighteen months' duration consists of six months neurosurgery, six months neurology, and six months as senior interne in neurosurgery with special supervision of the traumatic cases. This eighteen months' appointment is available on January 1st and July 1st. The internes live in residence in the Royal Victoria Hospital and have their meals there.

The appointment of neurological and neurosurgical Resident is of two years' duration. No candidates are considered unless they have had previous work on this service and in the Laboratory. The Resident has his quarters in the Neurological Institute.

The appointment of Neuropathological Fellow is a yearly one open to men who have had previous work as interne or Laboratory Fellow. It carries with it residence in the Institute and a monthly stipend. The Neuropathological Fellow is responsible for pathological reports on autopsy material and surgical specimens, under the supervision of Dr. Cone.

Two fellowships are available for research in neuropathology, neuroanatomy, neurophysiology or biological chemistry. These fellowships carry with them residence in the Institute and a small stipend. Applicants for these fellowships must have demonstrated the fact that they are capable of independent work.

There is opportunity for two or more voluntary Fellows to do fundamental work of the type described above. The qualifications for these appointments are similar to those of the other Fellows. An externeship in either neurology or neurosurgery is available to men who are not in residence but who are qualified to play an active rôle in the service. No stipend is attached to these services. In neurosurgery the externe is expected to work up cases and to act as second assistant at operations, at the discretion and under the supervision of the Resident.

The Fellows and Externes are enabled to follow the progress of clinical problems by attending complete rounds once a week. A weekly pathological conference makes it possible for them to see the pathological material of the week, and weekly meetings of the Montreal Neurological Society are so planned that they may attend and take part in the discussions.

Applicants for Interneships, Fellowships and Externeships should send to the Registrar, with their applications, the names of three men as references, a careful description of their University, hospital and laboratory work up to the time of writing, an outline of future plans and a statement of age, nationality, religion, schooling, and if possible their rank in their final medical examinations.

CLASSIFICATION OF DISEASES

Nervous System Generally:

Encephalomyelitis	1
Neurosyphilis	16
Multiple sclerosis	37
Progressive muscular atrophy	1
Amyotrophic lateral sclerosis	4
Myasthenia gravis	5
Avitaminosis	4

Meninges:

Meningocele	4
Chronic adhesive arachnoiditis	6
Acute meningitis	18
Cyst of dura	3
Subdural abscess	1
Laceration of dura	4
Subdural effusion	15
Subarachnoid haemorrhage	9
Meningeal haemorrhage, traumatic	49
Thrombophlebitis	1
Post-traumatic headache	20

Brain:

Congenital anomalies	6
Arnold-Chiari malformation	1
Hydrocephalus	13
Encephalomeningocele	5
Infantile cerebral diplegia	2
Double athetosis	1
Acute encephalitis	6
Chronic encephalopathy	3
Cerebral abscess	9
Cerebral concussion	86
Cerebral contusion and/or laceration	17
Meningocerebral or cerebral cicatrix	27
Cyst of brain	3
Epilepsy	206
Syncope	2
Carotid sinus syndrome	3
Migraine	2
Cerebral arteriosclerosis	9
Cerebral haemorrhage, thrombosis or embolism	33
Intracranial aneurysm	7
Cerebral atrophy	27
Porencephaly	3
Paralysis agitans	8
Sydenham's chorea	2
Huntingdon's chorea	1

Tumours of the Nervous System:

Blood vessel tumours	11
Gliomas	56
Perineurial fibroblastoma	9
Meningeal fibroblastoma	15
Dural sarcoma	3
Metastatic carcinoma	10
Pinealoma	1
Pituitary adenoma	8
Craniopharyngeal pouch tumour	7
Tuberculoma	1
Chordoma	2
Unclassified tumour	5
Unverified tumour and tumour suspect	23

Spinal Cord:

Myelomeningocele	4
Neuronitis	2
Transverse myleopathy	8
Post-poliomyelitic paralysis	1
Compression of spinal cord	15
Dorso-lateral sclerosis	4
Laceration of the cord	8

Cranial and Peripheral Nerves:

Mixed cranial nerve palsies	4
Optic atrophy	2
Retrobulbar neuritis	3
Trigeminal neuralgia	41
Peripheral facial palsy	4
Nerve deafness	6
Meniere's syndrome	15
Glossopharyngeal neuralgia	1
Lesions of brachial plexus or branches	14
Lesions of lumbosacral plexus or branches	3
Herpes zoster	2
Multiple neuritis	5
Sciatica	9
Other neuralgias	2

Mental Diseases:

Mental deficiency	7
Mongolian idiocy	3
Alcohol or drug addiction	31
Bromide intoxication	2
Psychoneurosis	60
Manic depressive psychosis	26
Schizophrenia	6
Paranoia and paranoid conditions	2
Miscellaneous	17

Other Systems and Miscellaneous:

Developmental cranial and spinal anomalies	14
Spina bifida and cranium bifidum	13
Nucleus pulposus herniation	6
Hypertrophy ligamentum flavum	4
Muscular dystrophies	1
Fracture of the skull	72
Fracture and/or dislocation vertebral column	37
Other fractures and dislocations	38
Tuberculosis of the spine	3
Lacerations, contusions, abrasions, and/or haematomas	90
Carcinoma	12
Diseases of the body as a whole	31
" " " cardio-vascular and renal system	74
" " " respiratory system	31
" " " gastro-intestinal system	21
" " " genito-urinary system	33
" " " haematopoietic system	11
" " " endocrine system	30
" " " locomotor and integumentary system	75
" " " eyes, ears, nose and throat	55
Miscellaneous	15
Diagnosis deferred	49
No disease	4

CLASSIFICATION OF OPERATIONS

Craniotomy	13
" exploration	13
" decompression	6
" removal of tumour	78
" removal of focus	4
" drainage or removal of cyst	3
" excision of cicatrix	13
" lobectomy	4
" drainage of abscess	9
" removal of carbuncle of brain	2
" drainage of subdural space	16
" rhizotomy	22
" removal of extradural haemorrhage	1
" separation of adhesions	2
" drainage of intracerebral haemorrhage	3
" opening aqueduct of Sylvius	3
" puncture of corpus callosum	1
" ligation of arteries	1
Laminectomy	5
" removal of tumour	9
" rhizotomy	3
" removal of nucleus pulposus	3
" removal of hypertrophied ligamentum flavum	1
" antero-lateral chordotomy	5
" separation of adhesions	1
" drainage of abscess	1
Spinal fusion and bone graft	14
Plastic repair of spina bifida or cranium bifidum and/or meningocele or myelomeningocele	11
Trepanation	88
" subdural insufflation	8
" insertion of wire leads	4
" exploration and/or drainage subdural space	9
" aspiration of cyst	3
" aspiration of haemorrhage	2
Encephalography, lumbar puncture	498
Ventriculography	84
Arterial encephalography	3
Carotid sinu-neurectomy	2
Ligation of carotid arteries	3
Elevation of depressed skull fracture	19
Debridement and suture of wound	24
Application of skull traction	10
Plastic repair of wound	4
Exploration of nerve, removal of neuroma, and nerve suture	8
Nerve anastomosis, hypoglossal-facial	2
Neurolysis and neurectomy	5
Sympathectomy and ganglionectomy	22
Re-exploration of wound and/or re-elevation of bone flap	14
Miscellaneous	19

PUBLICATIONS BY THE STAFF

For the Year 1939

Dr. Roma Amyot:

Tradition, école d'expérience. L'Union Méd. du Canada 68:1 (janvier) 1939.

Leçons inaugurales à nos Facultés de Médecine. Ibid. 68:120 (février) 1939.

Préparation scientifique à l'étude de la médecine. Ibid. 68:233 (mars) 1939.

Cours de perfectionnement. Ibid. 68:584 (juin) 1939.

Méningite aigue purulente traitée par le sulfanilamide. Guérison. Ibid. 68:604 (juin) 1939.

Hypertension artérielle. Ibid. 68: 988 (sept.) 1939.

Traitements modernes de la démence précoce. Ibid. 68:989 (sept.) 1939.

Syndrome de l'artère cérébelleuse supérieure. Ibid. 68:1067, (oct.) 1939.

Traitement moderne de la syphilis nerveuse. Ibid. 68:1230 (nov.) 1939.

Névrite rétro-bulbaire. Sclérose en plaques mono-symptomatique. Ibid. 68:840 (août) 1939.

Paralysie glosso-labio-laryngée d'origine bulbaire. (Réunion scientifique du Bureau méd. H.N.D. 17 nov. 1939). Ibid. 68:200 (fév.) 1939.

Sciatique droite traitée sans succès depuis 1937. *Greffe osseuse lombo-sacrée. Guérison.* (En collaboration avec Paul Ricard). (Réunion scientifique du Bureau méd. H.N.D., 9 mars 1939). Ibid. 68:898 (août) 1939.

Diabète grave et polynévrite. (En collaboration avec C. E. Grignon). (Réunion scientifique du Bureau méd. H.N.D. 20 avril 1939). Ibid. 68:1116 (oct.) 1939.

Contribution à l'étude de la paraplégie des cancéreux. (En collaboration avec P. E. Laurin). Presse Médicale. (juin) 1939.

Dr. Antonio Barbeau:

Résultats Immédiats dans le Traitement de l'Epilepsie Essentielle par le Venin de Cobra. (Avec Edmond Laurendeau). L'Union Médicale du Canada, p. 363 (avril) 1939.

Profil Criminologique de la Démence Précoce. (Avec Paul Lecavalier). L'Union Médicale du Canada, pp. 964-1074-1192-1289 (sept., oct., nov., déc.) 1939.

Conception Moderne des Spécialités. The Journal of the Canadian Dental Association. (nov.) 1939.

Dr. Edwin Boldrey:

(See under Penfield, Wilder).

Mr. André Cipriani:

(See under Penfield, Wilder).

Dr. William V. Cone:

The Mechanism of Fixed Dilatation of the Pupil. (With William Lister Reid). J.A.M.A. 112:2030-2034, May 1939.

Dr. Theodore C. Erickson:

Cardiac Activity During Epileptic Seizures. Arch. Neurol. & Psychiat. 41:511-518, March 1939.

Neurogenic Hyperthermia. Brain, 62: Part 2, 172-190, June 1939.

Dr. Molly Harrower (Harrower-Erickson):

Changes in Figure-ground Perception in Patients with Cortical Lesions. Brit. J. Psychol. (General Section). 30: Part 1, 47-51, July 1939.

Brain Lesions and Mental Functions. 39th Yearbook of National Society for Study of Education.

DR. DONALD HEBB:

Intelligence in man after large removals of cerebral tissue: Report of four left frontal lobe cases. J. Gen. Psychol. 21:73-87, 1939.

Intelligence in man after large removals of cerebral tissue: Defects following right temporal lobectomy. J. Gen. Psychol. 21:437-446, 1939.

DR. STORER HUMPHREYS:

A method for the impregnation of perivascular nerves on intracerebral blood vessels. Am. J. Path. 15: No. 1, 151-153, Jan. 1939.

Anatomic relations of cerebral vessels and perivascular nerves. Arch. Neurol. & Psychiat. 41:1207-1221, June 1939.

DR. HERBERT JASPER:

Analogies and opposites in schizophrenia and epilepsy: Electrographic and clinical studies. (With Charles P. Fitzpatrick and Philip Soloman). Am. J. Psychiat. 95: No. 4, 835-851, Jan. 1939.

Effect of benzidrine sulfate and phenobarbital on behavior problem children with abnormal electroencephalograms. (With Katharine K. Cutts). Arch. Neurol. & Psychiat. 41:1138-1145, June 1939.

DR. JOHN KERSHMAN:

Genesis of microglia in the human brain. Arch. Neurol. & Psychiat. 41:24-50, Jan. 1939.

DR. W. W. KLEMPERER:

Another recovery from pneumococcal meningitis. Canad. M.A.J. 41:585-586, 1939.

DR. EMILE LÉGRAND:

Evolution de la psychiatrie. L'Union Médicale du Canada, Oct. 1939.

DR. WILDER PENFIELD:

Cerebral blood flow during induced epileptiform seizures in animals and man. (With Kalman von Santha and André Cipriani). J. Neurophysiol. 2:257-267, July 1939.

The epilepsies: with a note on radical therapy. New Engl. J. Med. 221: No. 6, 209-218, Aug. 1939.

Cortical spread of epileptic discharge and the conditioning effect of habitual seizures. (With Edwin Boldrey). Am. J. Psychiat. 96: No. 2, 255-281, Sept. 1939.

Epilepsy and the cerebral lesions of birth and infancy. Canad. M.A.J. 41:527-534, 1939.

DR. COLIN RUSSEL:

The nature of the war neuroses. Canad. M.A.J. 41:549-554, 1939.

DR. JEAN SAUCIER:

Tuberculose de la protubérance. L'Union Médicale du Canada, 68:1213, Nov. 1939.

Quelles notions avez-nous sur l'hérédité. Ibid. 68:1320, Déc. 1939.

Le syndrome convulsif infantile. Year-book, St. Justine's Hospital, 1939.

DR. ARTHUR YOUNG:

Cranial Nerves. (With I. M. Tarlov). The Cyclopedia of Medicine, Piersol. Philadelphia, F. A. Davis and Co., 1939.

THE NEEDS OF THE INSTITUTE

Clinical Activity

From the beginning the Neurological Institute has been filled with patients to its capacity. The Institute belongs to McGill University but the clinical unit, comprising about fifty-five beds, public and private, is administered for the University by the Royal Victoria Hospital. The majority of the patients come under the heading of "public" and it is not considered to be the province of the University to undertake financial responsibility for the deficit which inevitably arises from the care of such patients. Hospitalization expense is quite properly covered by the contributions from the City of Montreal and the Province of Quebec, but there are crying needs not covered by the present generosity of the City and Province.

From other provinces and from the United States come sufferers who have raised enough money for the journey but who are unable to pay for a bed even at the daily public ward rate of $3.00 (which in reality is about one-half of the actual cost of maintaining that bed). Nevertheless, these patients come to our door in the desperate hope that they will be admitted. It is no doubt logical to suggest that they should be sent back, or that local subscription in their place of origin ought to have been made, as it often is, to cover all expenses of hospitalization. But as long as endowed research, as well as special equipment and training, make special forms of treatment available here, such patients will continue to throw themselves upon the mercy of the staff from time to time. To refuse help may mean suffering and perhaps death.

To meet such emergencies a "Transfusion and Clinical Relief Fund" has been created. At the time of the opening of the Neurological Institute on September 27th, 1934, Professor Harvey Cushing of Yale University gave $150.00 for "some deserving patient". Having learned during his brilliant career as neurosurgeon how often destitute sufferers stretch the heartstrings as well as the pursestrings of a clinic staff, Dr. Cushing made this unsolicited donation and with it the fund was capitalized. It was rescued from immediate extinction by the timely gift of $696.00 from a Montreal friend, Mrs. A. A. Hodgson. In 1936 Mrs. J. Howard Means of Boston replenished the fund by the generous donation of $1000.00.

As the title suggests, this fund is used for the cost of transfusions, when needed urgently by indigent patients, as well as to pay hospitalization expenses when no other support is available. It serves another useful purpose, to defray the costs of occasional clinical studies which are required for scientific purposes rather than for the immediate therapeutic need of the patient. For example, additional x-rays of a rare bone condition may be of considerable value to the staff in the study of that disease although it would be unfair to burden the account of the patient with such charges.

There is a further need for at least two endowed beds in the public ward for patients who do not fall under the Quebec Public Charities Act.

Scientific Activity

The second purpose of the Neurological Institute is the advancement of knowledge in a field which is in some ways the most obscure and yet filled with

the greatest possibility of good to mankind. This scientific activity which includes pathological, physiological, anatomical and biochemical studies of the nervous system is supported in part by endowment given by the Rockefeller Foundation.

Because of decreased income from securities the funds derived from this endowment are annually ten thousand dollars less than the minimum which was estimated as necessary for this purpose. Consequently the laboratory work has been handicapped and has fallen short of its full possible realization. Increased income is needed particularly for the endowment of Research Fellowships.

Specific Needs

For the information of those who might desire to help the work of the Institute a few specific examples of our needs are added below.

A.—Transfusion and Clinical Relief Fund. Donations of any size are welcome and may be addressed to the Montreal Neurological Institute and marked for this fund.

B.—Free Beds. The cost of endowing one public bed in perpetuity in the Institute, to be named by the donor and maintained free for indigent patients, is not less than $25,000.00.

C.—Research Fellowships. The sum necessary for such a Fellowship is $1,200 annually or not less than $30,000 as a permanent endowment. If desired by the donor these Fellowships may be named as a memorial and publications of work done during the tenure of such a grant would bear the name of the Fellowship, e.g. "John Smith Memorial Fellowship". Each of these would support a recent graduate in medicine while carrying out advanced study and research. At least four such Fellowships are urgently needed.

D.—The Fellows' Library. This library contains journals and special neurological books needed for the studies in progress both scientific and clinical. The books here supplement those in the University Medical Library without duplicating them. There is a waiting-list of books and journals which cannot be purchased without exceeding the library appropriation. Any donation to the library would bear the donor's name on the fly-leaf. Ten dollars will purchase a text-book, $400 a many-volume handbook of neurology and $900 the back file of a neurological journal.

Form of Donation

I give and bequeath to McGill University, Montreal, for the Montreal Neurological Institute $ ..... the same to be and become a part of the general endowment fund of the said Institute and to be known as the (here insert name of testator or a name selected by him) ..... Endowment Fund the income only to be used for the furtherance of (the charitable) (the scientific) (the charitable and scientific) work of the Montreal Neurological Institute.

DONATIONS

For Experimental Studies on Surgical Instruments:	
Mr. G. H. Duggan	$ 500.00
For Research Fund:	
Sir Herbert Holt	5,000.00
For Electroencephalographic Laboratory:	
Rockefeller Foundation	12,500.00

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