

To

DR. LEWIS W. DOUGLAS,

PRINCIPAL AND VICE-CHANCELLOR OF
MCGILL UNIVERSITY.

Sir:

On behalf of the Executive Committee I have the honour to submit the fourth annual report of the Montreal Neurological Institute. It includes a summary of the clinical work for the calendar year of 1938, together with the scientific and research record for the academic year of 1938 - 1939, and the lists of the professional staff at the close of the academic year.

Respectfully submitted,

J. NORMAN PETERSEN, M.D.
Registrar.

*Executive committee of the Montreal Neurological Institute:
Wilder Penfield, Chairman, Colin Russel, Fred H. Mackay, William
Cone, Arthur Elvidge, 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 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.

Neurologist

COLIN K. 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

DONALD McEACHERN, M.D.

A. G. MORPHY, B.A., M.D.

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

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 Psychologists

M. R. HARROWER, Acad. Dip. (London), Ph.D.

DONALD HEBB, M.A., Ph.D. (Harvard)

Clinical Assistants in Neurology

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

FRANCIS McNAUGHTON, B.A., M.D., C.M.

Neurosurgeon

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

Associate Neurosurgeon

ARTHUR ELVIDGE, M.Sc., M.D., C.M., Ph.D., F.R.C.S. (C.)

Assistant Neurosurgeon

T. C. ERICKSON, M.A., B.S., M.Sc., M.B., M.D., Ph.D. (McGill)

Roentgenologist

ARTHUR CHILDE, M.D.

Clinical Electrographer

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

Clinical Assistant in Electrography

JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc. (McGill)

Clinical Assistant in Neuropsychiatry

MICHAEL PRADOS, M.D. (Madrid)



Back Row—M. D. CARDENAS, D. O. HEBB, A. R. ELVIDGE, A. CIPRIANI, F. L. MCNAUGHTON, M. HARROWER
 Third Row—M. PRADOS, J. KERSHMAN, J. MCCARTER, T. C. ERICKSON, J. SAUCIER, A. W. YOUNG, H. H. JASPER.
 Second Row—J. N. PETERSEN, A. BARBEAU, N. VINER, C. K. RUSSEL, W. PENFIELD, W. V. CONE, D. MCEACHERN,
 A. G. MORPHY. Front Row—Y. C. CHAO, W. KLEMPERER, O. W. STEWART, E. B. BOLDREY, G. ODOM, F. ECHLIN.

Resident

EDWIN B. BOLDREY, A.B., A.M., M.D. (Indiana), M.Sc. (McGill)

LABORATORY SERVICES

Neuropathologist

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

Biochemist

DONALD MCEACHERN, M.D.

Electrophysiologist

HERBERT JASPER, Ph.D., D. ès Sci. (Paris)

Neurophysiologist

T. C. ERICKSON, B.S., M.Sc., M.A., M.D., Ph.D. (McGill)

Neuroanatomist

F. L. MCNAUGHTON, B.A., M.D., C.M.

Neuropathological Fellow

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

Research Fellows

WARREN BROWN*, M.D. (Texas)
YI-CHENG CHAO*, B.S., M.D. (Peiping)
ANDRÉ CIPRIANI, B.Sc. (McGill)
F. A. ECHLIN, M.D., C.M. (McGill)
MERVYN GRIFFITHS†, M.Sc. (Sydney)
PERRY HEWITT, M.D. (Oklahoma)
STORER P HUMPHREYS, A.B., M.D. (Yale), M.Sc. (McGill)
JOHN McCARTER*, M.D. (Wisconsin)
MICHAEL PRADOS, M.D. (Madrid)
O. W. STEWART, B.S., M.D. (Oklahoma)

HOUSE OFFICERS

E. B. BOLDREY, A.B., A.M., M.Sc., M.D., *Resident*
YI-CHENG CHAO*, B.S., M.D. (Peiping)
WOLFGANG KLIMPERER, M.D. (Cornell)
J. A. LEWIS, M.D. (McGill)
GUY ODOM, M.D. (Louisiana)
O. W. STEWART, B.S., M.D. (Oklahoma)

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
Neuropsychiatrist COLIN RUSSEL
Neurosurgeon WILLIAM CONE

<i>Associates in Neurology</i>	DONALD McEACHERN A. G. MORPHY NORMAN PETERSEN ARTHUR W. YOUNG
<i>Associate in Neurosurgery</i>	ARTHUR ELVIDGE
<i>Assistant Neurosurgeon</i>	T. C. ERICKSON

*Rockefeller Travelling Fellow.
†1851 Exhibition Science Research Scholarship.

MONTREAL GENERAL HOSPITAL
DEPARTMENT OF NEUROLOGY

<i>Neurologist</i>	FRED H. MACKAY
<i>Associates</i>	ARTHUR R. ELVIDGE NORMAN VINER
<i>Assistants</i>	A. A. MACKAY F. L. McNAUGHTON G. N. PATERSON-SMYTH C. A. PORTEOUS
<i>Consulting Neurosurgeons</i>	WILLIAM V. CONE WILDER PENFIELD

HÔPITAL NOTRE DAME
DEPARTMENT OF NEUROLOGY

<i>Chief Neurologist</i>	EDGAR LANGLOIS
<i>Assistant Neurologists</i>	ROMA AMYOT JEAN SAUCIER

HOTEL DIEU

<i>Consultant Neurologist</i>	EMILE LEGRAND
<i>Neurologist-in-Charge</i>	ANTONIO BARBEAU

CHILDREN'S MEMORIAL HOSPITAL

<i>Consultants</i>	FRED H. MACKAY WILDER PENFIELD COLIN K. RUSSEL
<i>Neuropsychiatrist</i>	ARTHUR W. YOUNG
<i>Assistant Neuropsychiatrist</i>	F. L. McNAUGHTON
<i>Neurosurgeon</i>	WILLIAM V. CONE

ST. MARY'S HOSPITAL

<i>Physicians in Neurology</i>	NORMAN PETERSEN ARTHUR W. YOUNG
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JEWISH GENERAL HOSPITAL
DEPARTMENT OF NEUROPSYCHIATRY

Chief of Service	NORMAN VINER
Associate	BARUCH SILVERMAN
Clinical Assistants	H. A. HERSHON JOHN KERSHMAN
Consultant	WILDER PENFIELD

In January 1939 it was announced that Dr. Wilder Penfield had been elected Corresponding Member of the Société de Neurologie de Paris and in February 1939 the same honour was given him by the Academie des Sciences et des Lettres of Poland.

Dr. Michael Prados, formerly of Madrid, joined the staff of the Institute and will serve in the capacities of clinical assistant in Neuropsychiatry and Research Fellow.

The teaching staff at the University of Montreal has recently been reorganized. Dr. Emile Legrand has been appointed Professor of Psychiatry and Dr. Antonio Barbeau Professor of Neurology. Dr. Barbeau has also been placed in charge of a thirty bed service at the Hotel Dieu.

Just before the close of the year Dr. Haddow M. Keith, who had been on our staff since 1933, tendered his resignation to take effect on March 1st 1939. Dr. Keith, whose services were highly valued by the Institute, has rejoined the Pediatric staff of the Mayo Clinic in Rochester, Minnesota.

At the annual meeting held in Chicago in May 1939 Dr. T. C. Erickson was elected second vice-president of the American section of the International League against Epilepsy.

Members of the Staff hold the following offices in Societies and Social Agencies:

- DR. WILDER PENFIELD, Vice-President of the International Neurological Association; Chairman of Programme Committee, Royal College of Physicians and Surgeons, Canada; Member of the Medical Advisory Committee of the National Research Council.
- DR. COLIN RUSSEL, Member of Council of the American Neurological Association; Member of the Board of Directors and Executive Committee of the Mental Hygiene Institute of Montreal.
- DR. FRED H. MACKAY, Secretary of the Mental Hygiene Institute of Montreal.
- DR. W. V. CONE, President of the Montreal Neurological Society.
- DR. ARTHUR W. YOUNG, Member of the Board of Directors of the Mental Hygiene Institute of Montreal; Secretary of the Quebec Division of the Canadian Medical Association.
- DR. DONALD MCEACHERN, Secretary of the Montreal Neurological Society.
- DR. J. NORMAN PETERSEN, Member of the Board of Directors and Executive Committee of the Mental Hygiene Institute of Montreal.
- DR. JEAN SAUCIER, Corresponding Member, La Revue Neurologique.
- DR. ROMA AMYOT, Vice-President, Bureau Médicale de l'Hôpital Notre Dame.
- DR. ANTONIO BARBEAU, Director, Canadian Physiological Society.
- DR. T. C. ERICKSON, Second Vice-President of the International League against Epilepsy.

CARE OF PATIENTS

The clinical services in the public wards of the Institute are subdivided into (1) a neurological service under the immediate direction of Dr. Colin K. Russel as neurologist, and (2) a neurosurgical service under the immediate direction of Dr. William V. Cone as neurosurgeon. The Director holds a supervising control over both services while the Registrar acts as executive officer. All members of the medical staff share in the care of public patients and all are permitted to admit and care for private and semi-private patients.

Under the Department of Neurology and Neurosurgery patients are cared for not only in the Montreal Neurological Institute but also in the Royal Victoria Hospital.

As in 1937 our capacity has been taxed to its utmost. The daily average of patients and the average number of days' stay per patient were essentially the same. The total number of days' treatment was 18,856 as compared with 18,315 in 1937.

OUTPATIENT DEPARTMENT

Outpatient clinics are held five days each week.

Monday and Thursday..... Neurology

Tuesday and Friday..... Neurosurgery

Wednesday..... Neurology (Epileptic)

	<i>Neuro- logy</i>	<i>Neuro- surgery</i>
New cases	355	208
Re-visits	3989	510
	<hr/>	<hr/>
	4344	718

Total outpatient visits 5062

ADMISSIONS TO HOSPITALS

	1938	1937
Admitted directly to Montreal Neurological Institute	967	908
Admitted directly to Royal Victoria Hospital	137	123
Total admitted to the Department of Neurology and Neurosurgery	<hr/> 1104	<hr/> 1031

Transfer of patients between the Montreal Neurological Institute and the Royal Victoria Hospital took place freely so that the total number of patients cared for in the former was 999 953

Of the direct admissions to the Institute 579 were males and 388 females who were cared for as follows:

	1938	1937
Private patients	142	133
Semi-private patients	172	161
Public patients	653	614
Total day's treatment	18856	18315
Average stay	19.8 days	20 days
Daily average of patients	50	50
Daily average percentage of capacity (based on 50 beds)	100%	100%
Trips made by ambulance	211	167
Residents of Montreal	419	391
Residents outside Montreal	546	517
Total deaths in Department	68	62
Deaths occurring within 48 hours of admission	14	9
Death rate (on deaths after 48 hours)	4.95%	5.18%
Autopsies obtained	61	53
Percentage of autopsies obtained	89.4%	85.6%

Diagnosis in Fatal Cases

Congenital anomalies	1
Amyotonia congenita	1
Porencephaly	1
Cerebral arteriosclerosis	2
Cerebral haemorrhage	3
Lateral sinus thrombosis	1
Subarachnoid haemorrhage	2
Intracranial aneurysm	1
Pachymeningitis haemorrhagica interna	1
Meningitis, pneumococcus	3
" staphylococcus	1
" tuberculous	2
Brain abscess	4
Intracranial tumors	25
Carcinoma of spine	1
Head injury	15
Meningo-cerebral cicatrix	1
Epilepsy	1
Encephalopathy of unknown origin	1
Diagnosis deferred	1
	68

SOCIAL SERVICE REPORT

MRS. M. A. LANTHIER

The social service work of the Institute was reorganized and placed under one worker in charge during 1938. The following figures apply only to the last ten months of that year during which this arrangement was in practice.

Fifty-eight patients were placed in convalescent care and twenty-two patients were placed permanently. Three hundred and ninety-four visits were made to patients' homes and one hundred and sixty-two records were placed on file. Routine follow-up investigations were carried out on patients discharged from the wards and also on patients attending the clinics.

Special follow-up questionnaires were sent out to selected groups of patients from whom information was desired for the preparation of scientific papers. These groups included 106 cases of brain tumors, 119 cases of brain scars and 121 cases of spina bifida.

One student from the Montreal School of Social work was engaged in collecting material for the paper on spina bifida and she was supervised in this work. Eight 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.*

	1938	1937
Roentgenographic examination of patients	2197	1893
Films used	10425	7951
Encephalograms	429	339
Ventriculograms	100	77

The x-ray department of the Institute has just completed its most active year. A recent reduction in the fees for some of the more frequent types of examination will probably result in a definite decrease in revenue from this department.

No major items of equipment were purchased during the year. The film viewing room has been enlarged as the previous accommodation was inadequate. Unfortunately our radiographic apparatus is often taxed almost beyond capacity and, on certain days, it has required the utmost ingenuity of the technician and interne staff to prevent serious overcrowding. Dr. C. B. Peirce, Roentgenologist-in-Chief of the Royal Victoria Hospital, and his staff, have cooperated very closely with our own department at all times and have arranged for replacements and assistance.

ANAESTHESIA

Nitrous oxide and oxygen		1
Nitrous oxide and ether		21
Ether		2
Avertin		26
Avertin, nitrous oxide and ether		293
Pentothal sodium		2
Spinal		3
Local		82
Total		430



Back Row—M. R. HYSON, H. E. NICHOLL, H. MACLEAN, M. APEDALE, 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.

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

	<i>Outdoor Dept. Total visits</i>	<i>Admissions to Hospital</i>
Montreal General Hospital	6291	275
Hôpital Notre Dame	1363	247
Hotel Dieu	1323	174
Children's Memorial Hospital	303	61
St. Mary's Hospital	57	55
Jewish General Hospital	872	53

NURSING STAFF

<i>Supervisor</i>	MISS EILEEN C. FLANAGAN, B.A., R.N.
<i>Assistant and Ward Teacher</i>	MISS BERTHA CAMERON, R.N.
<i>Night Supervisor</i>	MISS LORRAINE MACNICHOL, R.N.
<i>Night Assistant—Wards</i>	MISS ISABEL DICKSON, R.N.
<i>Night Assistant—Operating Room</i>	MISS L. CANTERO, R.N.
<i>Operating Room Supervisor</i>	MISS CORA MACLEOD, R.N.
<i>Assistant Operating Room</i>	MISS ANNA HUDSON, R.N.
<i>Head Nurses</i>	MISS EVELYN SCOTT, R.N. MISS CONSTANCE LAMBERTUS, R.N. MISS MARGARET GOLDIE, R.N.
<i>General Duty, Operating Room</i>	MISS BONHEUR CAMERON, R.N. MISS MARION I. COOK, R.N.
<i>General Duty, Floors</i>	MISS ISABEL GILLESPIE, R.N. MISS L. ROBICHAUD, R.N. MISS ELSIE OGILVIE, R.N. MISS JOSEPHINE MACISAAC, R.N. MISS J. CHARRON, R.N. MISS M. APEDAILE, R.N. MISS L. POTVIN, R.N. MISS L. GLASS, R.N. MISS N. GEROW, R.N. MISS M. MACLIMONT, R.N.
<i>Nurse Anaesthetist</i>	MISS M. ROACH, 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 six weeks. The total nursing staff is therefore thirty-four.

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 100%. 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 patients' 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

Faculty of Medicine

<i>Professor of Neurology and Neurosurgery</i>	WILDER PENFIELD
<i>Associate Professor of Neurology</i>	COLIN RUSSEL
<i>Associate Professor of Neurosurgery</i>	WILLIAM CONE
<i>Clinical Professor of Neurology</i>	F. H. MACKAY
<i>Assistant Professor of Neurosurgery</i>	ARTHUR ELVIDGE
<i>Lecturers in Neurology</i>	DONALD MCEACHERN FRANCIS MCNAUGHTON J. N. PETERSEN N. VINER A. W. YOUNG
<i>Lecturer in Neurological Roentgenology</i>	A. E. CHILDE
<i>Lecturer in Neurological Electrography</i>	H. H. JASPER
<i>Lecturers in Clinical Psychology</i>	MOLLY HARROWER DONALD HEBB
<i>Demonstrator in Neurosurgery</i>	T. C. ERICKSON
<i>Demonstrator in Neurology</i>	JOHN KERSHMAN
<i>Assistant Demonstrator in Neurosurgery</i>	F. A. ECHLIN
<i>Assistant Demonstrator in Neuropathology</i>	R. H. PUDENZ
<i>Research Fellows</i>	WARREN BROWN YI-CHENG CHAO ANDRE CIPRIANI

<i>Research Fellows (cont.)</i>	MERVYN GRIFFITHS PERRY HEWITT STORER HUMPHREYS JOHN McCARTER MICHAEL PRADOS O. W. STEWART
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FACULTY OF GRADUATE STUDIES AND RESEARCH

<i>Professor</i>	WILDER PENFIELD
<i>Associate Professor and Head of the Department</i>	WILLIAM CONE
<i>Associate Professor</i>	COLIN RUSSEL
<i>Lecturers</i>	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, fourth and fifth 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 past academic year a special elective course, with weekly lectures, was given and was divided into the following sections:—

- Neuroanatomy, by Drs. Petersen, McNaughton, Erickson,
Kershman and Boldrey.
- Neurophysiology, by Dr. Elvidge.
- Electrophysiology, by Dr. Jasper.
- Physiological Chemistry, by Dr. McEachern.
- Roentgenology, by Dr. Childe.

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 the Notre Dame Hospital.

During the academic year of 1938 - 1939 the following guest speakers appeared before the Society:

Professor C. P. Martin, McGill University, Montreal.—The Evolution of the Human Brain.

Dr. Zygmunt Pietrowski, New York.—Psychological Investigations of Insulin Treated Schizophrenics at the New York State Psychiatric Institute.

Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal.—Bronchogenic Carcinoma.

Professor David Thomson, McGill University, Montreal.—The Posterior Pituitary.

Dr. C. P. Rhoads, Rockefeller Institute, New York.—Deficiency Disease and the Nervous System.

Professor Tracy Putnam, Boston.—The Treatment of the Dyskinesias.

Dr. J. C. Pritchard, Montreal General Hospital,—Neuroappendicopathy.

Professor John P. Whitehorn, St. Louis.—Emotion and Sentimentality in Psychotic Reactions.

Dr. John B. Camp, Mayo Clinic.—The Roentgenologic Diagnosis of Lesions affecting the Spinal Cord.

Professor Irvine McQuarrie, Mayo Clinic.—Physicochemical Studies on the Mechanism of Convulsive Phenomena.

Dr. J. S. L. Browne, McGill University, Montreal.—The Use of Endocrine Preparations in the Treatment of Nervous Diseases.

The annual Hughlings Jackson Memorial Lecture for 1938 was given on April 6th by Dr. Detlev W. Bronk of the University of Pennsylvania on "Nerve Cells and Synapses in the Regulation of Organic Function." The lecture for 1939 was delivered by Professor Walter B. Cannon, George Higginson Professor of Physiology, Harvard University, who described "A Law of Denervation."

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 neuropathological, neurophysiological, chemical and electrophysiological laboratories, under the direction of Dr. W. V. Cone, Dr. A. R. Elvidge, Dr. Donald McEachern and Dr. H. H. Jasper respectively, have been active throughout the year and reports dealing with each of these follow.

NEUROPATHOLOGICAL LABORATORIES

DR. W. V. CONE, *Neuropathologist.*

A large volume of work was done under the immediate control of Dr. Edwin Boldrey as Neuropathological Fellow. Three hundred and eight pathological surgical specimens were reported on and thirty-five specimens were received from other clinics for opinion. Seventy-one autopsies were studied in cooperation with the main Department of Pathology of McGill University and the Royal Victoria Hospital.

BIOCHEMICAL LABORATORIES

DR. D. MCEACHERN, *Biological Chemist.*

Examinations of cerebrospinal fluid.....	2779
Basal Metabolic Rate.....	118
Bromides.....	31
Miscellaneous.....	5
Total.....	<hr/> 2933

Research problems completed during the year included work on the electrical phenomena and results of therapy in myasthenia gravis and related conditions; with Dr. Guy Odom. Experimental B₁ avitaminosis and the effect of subarachnoid injection of vitamin B₁; with Dr. Guy Odom. Studies of the chemistry of Familial Periodic Paralysis; with Dr. R. H. Pudenz and Dr. J. F. McIntosh. In addition Dr. Warren Brown has been studying the adrenalin content of arterial blood in hypertensive states and Dr. Wolfgang Klemperer has carried out work on the chemistry of Myasthenia Gravis. The list of publications from the laboratories appears at the end of this report.

NEUROPHYSIOLOGICAL LABORATORIES

DR. T. C. ERICKSON, *Neurophysiologist.*

During this year, as in years past, much of the research carried out in the physiological laboratories was concerned with the manifold physiological aspects of epilepsy. The functional changes induced in the central nervous system by cerebral cicatrization, the factors governing the formation of meningocerebral adhesions, the possible complications of simple craniotomies and their prevention, and various aspects of the cerebral circulation were studied by various investigators under the guidance of Dr. Penfield, Dr. Cone, Dr. McEachern and other members of the staff.

Dr. Warren Brown has worked on the biological assay of the epinephrin content of the blood in hypertension by the use of the denervated sensitized pupil. Dr. Chao has begun a search for a satisfactory substance with which to repair gaps in the dura and a method to prevent adhesions between the brain and meninges.

Mr. Cipriani has been responsible for maintenance of much of the electrical apparatus. In collaboration with Dr. Erickson, Dr. T. Dancey has begun an intensive study of the convulsions produced by metrazol with a view to discovering a more rational physiological treatment for dementia.

Dr. F. Echlin with great thoroughness has completed an experimental analysis of the rôle of various factors such as temperature, humidity, simple exposure and electrical stimulation in the causation of untoward reactions following craniotomy. He has also studied the effect of local mechanical and electrical stimuli on the pial blood vessels as well as making a further study of the effects of anaemia on the central nervous system. By the use of various indices such as clonic movements, local changes in blood flow and in electrical activity, an inquiry into the mode of spread of the epileptic discharge has been completed by Dr. Erickson. A further study of the changes in cerebral circulation induced by cerebral cicatrices was also carried out. The use of metrazol and other solutions applied locally to the cortex as a possible substitute for electrical stimulation in cerebral localization has been investigated. Dr. Humphreys operated on certain animals to produce degeneration of perivascular nerves.

In the early part of the year Dr. J. Kershman, utilizing a window implanted in the skull, made long time observations upon the vascular changes during hypoglycemic convulsions produced by insulin. Dr. W. Klemperer made experimental studies on myasthenia gravis.

Dr. J. McCarter has produced brain scars for use in histological study. Various procedures were performed by Dr. G. Y. McClure in an attempt to elucidate the fundamental physiological changes necessary to produce swelling of the oligodendroglia. Before his return to England Dr. Martin Nichols completed a study of the circulation of the brain and spinal cord particularly in relationship to its functional activity. Dr. Guy Odom examined the changes produced by vitamin B deficient diets. Dr. Prados has begun work on the hemato-encephalic barrier. Drs. Reid, Keith and Robertson completed problems which had been largely carried out in the previous year.

All of these problems, as well as others both of scientific and practical import, have been prosecuted during the year. A total of 190 major and 143 minor sterile operations and 202 acute experiments were performed. Although there was an actual increase in the volume of work done it has been possible to effect considerable reduction in the routine expenses. Much credit is due to Miss C. Dart, R.N., for her skillful technical assistance as well as to Mr. George Peladeau.

Needless to say much of the work prosecuted in the physiological laboratories represents only a phase of larger research projects carried out also in the neuropathological, the chemical and the electrophysiological laboratories as well as in the clinical field, and continued success in pursuing the many elusive problems in neurology depends upon an indivisible cooperation between all of these. The intimate correlation of the facts which can be elicited by the several methods of investigation furnished by these different departments offers the greatest promise for progress.

NEUROANATOMICAL LABORATORY

DR. F. L. MCNAUGHTON, *Neuroanatomist.*

This laboratory is in the process of organization and it is expected that close cooperation will be maintained with the Department of Anatomy of McGill University. During the winter of 1938 - 1939 a brain modelling course was inaugurated by Dr. Kershman and Dr. McNaughton, and most of the Research Fellows, and several members of the staff, joined the class. It is hoped that this work will be extended during the coming year. Work was begun on the preparation of a set of serial sections of the human brain.

ELECTROPHYSIOLOGICAL LABORATORIES

DR. H. H. JASPER, *Electrophysiologist.*

During the last few months of 1938 plans were drawn up by Ross and Macdonald, Architects, for a small extension to the basement of the Institute to house the electrophysiological laboratories. Donations from citizens of Montreal provided for the erection of the laboratories and an annual grant from the Rockefeller Foundation will aid in the work to be carried out during the next four years. These donations are further acknowledged elsewhere in this report.

The extension consists of a foyer and general room for secretarial work, filing of records, etc., an examining room for patients and another for animal experimentation, a recording room and two offices. The examining rooms are sound-proof and shielded from outside electrical interference. Adjacent to the recording room there is a well equipped workshop.

An informal opening was held on February 24th, 1939, and was attended by a large group of investigators in electrophysiology who came to Montreal for the occasion.

At symposia in the morning and afternoon the following contributions were made: the effect of low oxygen on the human electroencephalogram, by Pauline Davis of Harvard; electroencephalographic changes with auditory stimulation, by Hallowell Davis of Harvard; the development of human brain potentials from birth to maturity, by Donald Lindsley of Brown; electroencephalographic analysis of sleep, by A. Loomis, E. N. Harvey and G. Hobart of the Loomis Laboratories; the elemental structure of cortical potentials, by Alexander Forbes of Harvard; spinal cord potentials, by Joseph Hughes of the University of Pennsylvania; focal epileptic discharge in man and some results of operation, by John Kershman, spread of epileptic discharge in the monkey, by Theodore Erickson, spread of epileptic discharge in the human cortex, by Wilder Penfield, all of the Montreal Neurological Institute; cortical potentials and Ph, by E. L. Nims of Yale; the epilepsies, by Stanley Cobb of Harvard.

On February 25th the staff of the Montreal Neurological Institute and their out-of-town guests went to the Laurentian Mountains for a week-end skiing party.

The work of this department, which began on September 15th, 1938, has been chiefly concerned with the establishment of clinical electroencephalography as a routine procedure. Initial studies, carried out with Dr. Penfield, Dr. Erickson, and with the technical assistance of Mr. Cipriani, were concerned with the localization of epileptogenic foci. With the addition of the full time assistance of Dr. Kershman during the last quarter of the year, investigations have been extended to include other forms of cerebral pathology.

A total of 235 electroencephalographic examinations were made on 118 patients during 1938. These included the following diagnoses:

Epilepsy	84
Intracranial neoplasm	16
Intracranial haemorrhage	7
Head injury	7
Migraine	3
Neuroses	3
Brain abscess	2
Hypertension	2
Pain	2
Undiagnosed	2
Cerebral atrophy	1
Endocrine disorders	1
Arachnoiditis	1
Psychoses	1
Spinal cord lesions	1
Tic douloureux	1
Arteriosclerosis	1

This department has been organized after the pattern of an x-ray department for general electrographic service for clinicians of this institute as well as of neighbouring hospitals and out-patients. Research investigations are centered about studies of the epilepsies, expanding intracranial lesions, and acute cerebral trauma due to head injury or operative procedures.

FELLOWS' LIBRARY

DR. D. McEACHERN, *Librarian.*

The Fellows' Library continued to be actively used by the members of the staff and others and the library room has been in frequent use for small meetings and case demonstrations. During the past year twenty-eight periodicals have been received regularly. The library now contains five hundred and eighteen volumes, exclusive of bound periodicals. Only eighteen new volumes were added to the library during the year due to lack of funds. An increase in the budget for the coming year will allow of further purchase of books. The presentation of suitable books will be warmly welcomed. During the year Dr. Colin K. Russel very generously offered to the library extensive back-files of four important periodicals, and this gift of over sixty-five volumes was gratefully accepted. Through lack of funds, however, it has not been possible to bind these volumes and they therefore remain unavailable for library use. It is estimated that \$250.00 will be required to bind them.

THE FELLOWS' SOCIETY

Chairman — THEODORE ERICKSON
Secretary — STORER P. HUMPHREYS

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. It is possible to detail only a few of the activities.

Early in the year Dr. Penfield dealt with ways of writing and the crystalization of ideas as well as many practical hints in the methods of scientific bibliography. Dr. Russel presented several moving pictures of neurological conditions. Dr. McEachern reviewed recent advances in vitamin research. Dr. Paterson-Smyth spoke on the treatment of neurosyphilis, Dr. William Gibson on degeneration and regeneration in the sympathetic nervous system, Dr. John Nichols on certain aspects of ophthalmology as applied to neurology, Dr. B. Rose on recent research in the rôle of histamine, and Dr. E. Bensley on recent advances in chemotherapy. Dr. S. Piotrowski of New York gave a demonstration of the clinical values of the Rorschach test and Dr. B. Balzer of New York spoke on the experimental production of demyelination.

All of the Research Fellows of the Institute have taken part in the meetings with contributions too varied to mention in detail. Dr. Pudenz discussed the rôle of potassium in the human body, Mr. Griffiths the histogenesis of the pituitary, Dr. Klemperer the nature of myasthenia gravis and Dr. G. Y. McClure the neurotropic virus diseases.

It is felt that 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 hypothesis, to enable everyone to learn of the research work in progress, to bring in outside speakers to cover subjects not dealt with in the larger and more formal meetings and to discuss new research which appears in the current literature.

TECHNICIANS AND LABORATORY ASSISTANTS

MISS DORIS D. BROPHY, B.A., Licenciée ès Science	Chemistry
MISS LORRAINE CODE, B.A., M.T.	Chemistry
MISS CATHERINE DART, 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 H. LEWIS	Departmental Secretary
MISS A. DAWSON	Office
MISS L. EDMISON	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

CLINICAL SERVICES AND FELLOWSHIPS

The internship 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 externship 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 Internships, Fellowships and Externships 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:

Neurosyphilis	23
Multiple sclerosis	24
Progressive muscular atrophy	6
Amyotrophic lateral sclerosis	2
Familial periodic paralysis	3
Friedreich's ataxia	1
Myasthenia gravis	5
Tuberous sclerosis	1
Avitaminosis	2

Meninges:

Meningocele	7
Chronic adhesive arachnoiditis	14
Acute leptomeningitis	12
Extradural cyst	1
Extradural abscess	2
Subdural effusion	7
Subarachnoid haemorrhage	9
Meningeal haemorrhage, traumatic	37
Thrombophlebitis	4
Post-traumatic headache	26

Brain:

Defect of septum pellucidum	1
Agenesis of corpus callosum	1
Hypoplasia of brain	1

Microcephaly	1
Fronto-ponto-cerebellar atrophy	1
Encephalomeningocele	1
Infantile cerebral hemiplegia	2
Infantile cerebral diplegia	2
Measles encephalitis	3
Chronic encephalopathy	6
Encephalitis periaxialis diffusa	2
Cerebral abscess	8
Cerebral concussion	76
Intracranial foreign body	1
Herniation of cerebellum	1
Cerebral contusion and/or laceration	10
Meningo-cerebral or cerebral cicatrix	20
Cyst of brain	7
Epilepsy	170
Syncope	2
Carotid sinus syndrome	2
Migraine	2
Cerebral arteriosclerosis	11
Cerebral haemorrhage, thrombosis or embolism	20
Intracranial aneurysm	5
Cerebral atrophy	33
Encephalomalacia	2
Porencephaly	1
Sydenham's chorea	2
Chronic progressive chorea	1
Progressive lenticular degeneration	1
Double athetosis	3
Spasmodic torticollis	1

Tumours of Nervous System:

Blood vessel tumours	1
Glioma	59
Perineurial fibroblastoma	5
Meningeal fibroblastoma	12
Dural and extradural sarcoma	2
Metastatic carcinoma	17
Cholesteatoma	2
Pinealoma	1
Pituitary adenoma	3
Craniopharyngeal pouch tumour	4
Hypophyseal duct tumour	2
Tuberculoma	2
Lipoma	1
Chordoma	1
Unclassified tumour	4
Unverified tumour and tumour suspect	23

Spinal Cord:

Myelomeningocele	3
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Myeloradiculitis	3
Radiculitis	2
Haematomyelia	2
Acute anterior poliomyelitis	2
Post-poliomyelitic paralysis	1
Intraspinal foreign body	1
Compression of spinal cord	17
Dorsal sclerosis	1
Dorso-lateral sclerosis	1
Laceration of the cord	1

Cranial and Peripheral Nerves:

Mixed cranial nerve palsies	3
Macular degeneration	1
Retrobulbar neuritis	2
Ocular palsy	2
Trigeminal neuralgia	48
Nerve deafness	4
Meniere's syndrome	5
Paralysis of brachial plexus or branches	10
Herpes zoster	1
Multiple neuritis	2
Post-diphtheritic neuritis	1
Sciatica	5
Other neuralgias	10

Mental Diseases:

Mental deficiency	6
Alcohol or drug addiction	31
Bromide intoxication	5
Psychoneurosis	47
Manic-depressive psychosis	10
Schizophrenia	3
Miscellaneous	10

Other Systems and Miscellaneous:

Developmental cranial anomalies	5
Spina bifida	13
Cervical rib	1
Nuclcus pulposus herniation	7
Hypertrophy ligamentum flavum	4
Pseudohypertrophic muscular dystrophy	1
Amyotonia congenita	1
Malaria, therapeutic	4
Tuberculosis of the spine	3
Fracture of skull	43
Fracture and/or dislocation vertebral column	25
Other fractures	19
Lacerations, contusions, abrasions, and/or haematomas	64
Carcinoma	11
Diseases of cardiovascular-renal system	53

“ “ respiratory system	24
“ “ gastro-intestinal system	29
“ “ genito-urinary system	17
“ “ haematopoietic system	6
“ “ endocrine system	11
“ “ locomotor and integumentary system	60
“ “ eyes, ears, nose and throat	45
Miscellaneous	18
Diagnosis deferred	55
No disease	11

CLASSIFICATION OF OPERATIONS

Craniotomy	6
“ exploration	14
“ decompression	12
“ removal of tumour	67
“ removal of focus	4
“ drainage or removal of cyst	8
“ excision of cicatrix	17
“ removal of aneurysm	2
“ lobectomy	3
“ drainage of abscess	3
“ removal of carbuncle of brain	2
“ drainage of subdural space	3
“ incision of dura	2
“ rhizotomy	30
“ removal of extradural haemorrhage	4
“ separation of adhesions	2
“ drainage of intracerebral haemorrhage	2
“ removal of choroid plexus	1
“ opening aqueduct of Sylvius	2
Laminectomy	1
“ exploration	3
“ decompression	3
“ exploration and fusion	11
“ removal of tumour	10
“ removal of extradural fat	1
“ opening of cyst	2
“ rhizotomy	10
“ removal of nucleus pulposus	6
“ removal of hypertrophied ligamentum flavum	2
“ antero-lateral chordotomy	5
“ separation of adhesions	7
Plastic repair of spina bifida and/or meningocele or myelomeningocele	5

Trepanation	19
" and exploration	2
" ventriculography	22
" ventricular puncture	9
" subdural insufflation	5
" insertion of wire leads	3
" biopsy	9
" exploration and/or drainage subdural space	11
" aspiration of cyst	2
" aspiration of haemorrhage	1
Encephalography, lumbar puncture	348
Ventriculography	13
Spinal insufflation	2
Arterial encephalography	4
Carotid sinu-neurectomy	28
Ligation of carotid arteries	2
Elevation of depressed skull fracture	12
Debridement and suture of wound	9
Application of skull traction	4
Plastic repair of wound	9
Drainage osteomyelitis of skull	3
Exploration of brachial plexus or branches	3
Exploration of nerve, removal of neuroma and nerve suture	3
Nerve anastomosis, hypoglossal — facial	1
Avulsion of nerve	1
Neurectomy	5
Sympathectomy and ganglionectomy	2
Splanchnic sympathectomy and ganglionectomy	12
Drainage of intracranial abscess	3
Re-exploration of wound and/or re-elevation of bone flap	20
Spinal fusion and bone graft	7
Miscellaneous	29

PUBLICATIONS FROM THE MONTREAL NEUROLOGICAL INSTITUTE

FOR THE YEAR 1938.

DR. ROMA AMYOT:

Maladie de Steinert sans myotonie. Syndrome pluri-glandulaire. Hypothèse pathogénique.
La Presse Médicale 46: 188 (Fév.) 1938.

Paralysie du membre supérieur par traumatisme de l'épaule. Syndrome de Claude Bernard-Horner homolatéral. Distension radiculaire des nerfs du plexus brachial. L'Union Médicale du Canada 67: 270 (Mars) 1938.

La sclérose en plaques. L'Union Médicale du Canada. 67: 829 (Août) 1938.

Contribution à l'étude de la sclérose en plaques. L'Union Médicale du Canada 67: 906 (Sept.) 1938.

Les tremblements. Diagnostic clinique. L'Union Médicale du Canada. 67: 1159 (Nov.) 1938.

DR. ANTONIO BARBEAU:

Quelques notions premières en sympathologie. L'Union Médicale du Canada 1938.

Pyrétothérapie au Pyrifer dans la Paralysie Générale. L'Hôpital (Mai-Juin) 1938.

Profil criminologique de la paralysie générale. With P. Lecavalier. L'Hôpital (Nov.) 1938.

DR. EDWIN BOLDREY:

See under Elvidge, A.R.

DR. ARTHUR CHILDE:

Cerebral pneumography in childhood. Canad. M.A.J. 39: 552, 1938.

MR. ANDRÉ CIPRIANI:

See under von Sántha, K.

DR. F. A. ECHLIN:

Sensory fibres in the spinal accessory nerve. With N. Propper. J. Physiol. 92: No. 2, 160, 1938.

Synchronized impulse discharges from receptors in the deep tissues in response to a vibrating stimulus. With A. Fessard. J. Physiol. 93: No. 4, 312, 1938.

DR. A. R. ELVIDGE:

Biopsy studies of cerebral pathologic changes in schizophrenia and manic-depressive psychosis. With George Reed. Arch. Neurol. & Psychiat. 40: 227, 1938.

The cerebral vessels studied by angiography. Assn. Res. Nerv. & Ment. Dis. Proc. Vol. 18, 110, 1937. (This has only recently been published).

Head injuries. Canad. Med. A. J. 38: 26, 1938.

Dermoid cysts of the vertebral canal. With Edwin Boldrey. Tr. Am. Neurol. Assn. 1938.

DR. J. P. EVANS:

See under McEachern, Donald.

DR. DONALD HEBB:

The innate organization of visual activity: III. Discrimination of brightness after removal of the striate cortex in the rat. Jour. Comp. Psychol. 25: 427, 1938.

Studies of the organization of behavior: I. Behavior of the rat in a field orientation. Jour. Comp. Psychol. 25: 333, 1938.

Studies of the organization of behavior: II. Changes in the field orientation of the rat after cortical destruction. Jour. Comp. Psychol. 26: 1938.

DR. HERBERT JASPER:

Electro-encephalography. With H. L. Andrews. Arch. Neurol. & Psychiat. 39: 96, Jan. 1938.

Electrical signs of cortical function in epilepsy and allied disorders. With I. C. Nichols. Am. J. Psychiat. 94: No. 4, 1938.

Brain potentials and voluntary muscle activity in man. With H. L. Andrews. J. Neurophysiol. 1: 87, March, 1938.

Transmission of excitation between excised non-myelinated nerves. With A. M. Monnier. J. Cell. & Comp. Physiol. V: 11, No. 2, 1938.

Electro-encephalography. With W. Hawke. Arch. Neurol. & Psychiat. 39: 985, 1938.

DR. JOHN KERSHMAN:

The medulloblast and the medulloblastoma. Arch. Neurol. & Psychiat. 40: 937, Nov. 1938.

DR. DONALD MCEACHERN:

The rôle of potassium in the mechanism of family periodic paralysis. J. Clin. Investigation 17: 530, 1938. With R. H. Pudenz and J. F. McIntosh.

Intracranial tumors. With Wilder Penfield. Oxford Medicine, 6: 137, 1938.

Tumor of medulla of adrenal (adrenal pheochromocytoma) with removal and relief of paroxysmal hypertension. With David McKenzie. J. Urol. 40: 467, 1938.

The circulatory changes in cerebral vascular occlusion and in cerebral cicatrization. Assn. Res. Nerv. & Ment. Dis. Proc. 18: 379, 1937. With J. P. Evans. (This has only recently been published).

The rôle of potassium in familial periodic paralysis. With R. H. Pudenz and J. F. McIntosh. J.A.M.A. III: 2253, 1938.

Physiological and chemical studies of neuromuscular disorders. Tr. Am. Neurol. A. May 1938.

DR. FRANCIS MCNAUGHTON:

The innervation of the intracranial blood vessels and dural sinuses. Assn. Res. Nerv. & Ment. Dis. Proc. Vol. 18, 1937. (This has only recently appeared.)

DR. NATHAN NORCROSS:

Intracerebral blood flow. Arch. Neurol. & Psychiat. 40: 1, July 1938.

DR. WILDER PENFIELD:

The cerebral cortex in man. Arch. Neurol. & Psychiat. 40: 417, September 1938.

Arnold-Chiari malformation. With Donald Coburn. Arch. Neurol. & Psychiat. 40: 328, August 1938.

The circulation of the epileptic brain. Assn. Res. Nerv. & Ment. Dis. Proc. Vol. 18, 1937. (This has only recently appeared).

Intracranial tumors. With Donald McEachern. Oxford Medicine 6: 137, 1938.

DR. NORMAN PETERSEN:

Diseases of the Nervous System, chapter XV in the Practice of Medicine by Dr. Jonathan C. Meakins, 2nd edition, St. Louis, C. V. Mosby, 1938.

DR. ROBERT PUDENZ:

See under McEachern, Donald.

DR. DAVID REEVES:

Clinical and experimental results with thorostrast. With R. Stuck. Medicine 17: No. 1, Feb. 1938.

See under Stuck, Ralph.

DR. JEAN SAUCIER:

Paralysie des mouvements volontaires des globes oculaires dans toutes les directions.

Paralysie dissociée de la motilité oculaire réflexe. Hémiplégie gauche. Syndrome d'origine vasculaire. L'Union Médicale, Mars 1938.

La sclérose en plaques chez l'enfant. Les Annales Médico-Chir. de l'H. Ste-Justine. Year Vol. 1938.

Syndrome de la fente sphenoidale. L'Union Médicale, Mai 1938.

Les encéphalographies gazeuses dans les services de neurologie médicale. L'Union Médicale, Sept. 1938.

L'électroprexie dans le traitement de la chorée. L'Union Médicale, Nov. 1938.

DR. RALPH STUCK:

Dangerous effects of thorostrast used intracranially. With D. Reeves. Arch. Neurol. & Psychiat. 40: 86, July 1938.

See also under Reeves, David.

DR. I. M. TARLOV:

Structure of the filum terminale. Arch. Neurol. & Psychiat. 40: 291, 1938.

DR. NORMAN VINER:

A psychogenic origin of some organic syndromes. Canad. M.A.J. 38: 561, 1938.

DR. K. VON SANTHA:

Focal alterations in subcortical circulation resulting from stimulation of the cerebral cortex.

With André Cipriani. Assn. Res. Nerv. & Ment. Dis. Proc. 18, 1937 (This has only recently appeared).

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.

But 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.

E.—We are still urgently in need of a second elevator as our present equipment is called on to transport patients, visitors, stretchers, beds, food trucks, freight, etc. and cannot render proper service under these circumstances. We have, however, no funds available from which such an expenditure can be met.

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

JANUARY 1ST, 1938, TO JUNE 1ST, 1939.

For Electrophysiological fund:

Mr. J. W. McConnell	\$3000.00
Mrs. Lewis Reford	2000.00
Mrs. A. A. Hodgson	2000.00
Mr. G. H. Duggan	1000.00

For special fund:

Mr. Ward C. Pitfield	600.00
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For clinical and transfusion fund:

Dr. M. Scherzer	5.00
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For researches directed by Dr. Cone:

Mr. I. W. Killam	2500.00
Mrs. D. M. E. O'Connor	300.00

To the Epilepsy and Dementia Fund:

Rockefeller Foundation	12,500.00
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For building of electrophysiology extension:

Sir Herbert Holt	5000.00
Mr. J. W. McConnell	5000.00
Mr. G. H. Duggan	500.00

1940 J Norman Peterson 406 Pine Ave US - Ha 2710

xx Arthur Childe 5010 Hampton Ave N. 79. EE 4054

Francis McNaughton 537 Lamadrome Fi 11351

Gray Adam 3616 Oxenden Ta 8622

Theodore E Nickerson 3566 University La 4730

Donald McEachern 3598 6210th ^{Becker Rd} Ma 9946

John Kenneth ^{At 5343} ~~St Francis Rd~~ ~~Ma 2866~~ EE 5417

x Herbert Joseph 4930 Circle Road Ma 3976

Donald Torres Miguel P. rados 3585 Jeanne Marie La 2417

Roy Swank ^{Spencer for Evans 19} La 3346

Kare Stern

Dr Floor

Robert P. Adams ^{Winter 1971} Termes ✓ Theodore Raasmann

William Gibson ^{Spencer for Evans 19} Percy Hewitt

William Bridgans (Duke) Peter Lehman

~~De Witt~~ ^(Cleveland) Robertson

Ernest Thurston (Iowa) ^{Le 6811} Pa. ^{Robertson} ^{Winter 1971} Termes

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Colin Russell 641 Argyle Ave.
Arthur Young 38 Fordons Cres.
Fred Mackay 1538 Crescent
Arthur E. Lidger 1465 Bernard

Mrs Stewart 3634 Lorne Cres Apt 5.

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" Dawson
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William Bryan

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