Montreal Neurological Institute

Registrar's Report

1934 - 1935
To

THE DIRECTOR,

MONTREAL NEUROLOGICAL INSTITUTE.

Sir:

On the completion of the first calendar year of activity of the Montreal Neurological Institute, this, the first Annual Report has been prepared. To make permanent record of the work of the Institute since its opening, the activities of the three months of 1934 during which it functioned have been included.

On October 6th, 1933, His Excellency, the Right Honourable the Earl of Bessborough, Governor-General of Canada, laid the cornerstone of the Montreal Neurological Institute. On that occasion the late Sir Arthur Currie, then Principal of McGill University, gave the principal address. On September 27th, 1934, the Institute was formally declared open by the Chancellor of the University, Sir Edward Beatty.

At the inaugural ceremonies many prominent neurologists and neurosurgeons from both sides of the Atlantic were present, as well as the proper representatives of the Universities of McGill and of Montreal. Foundation Lectures were delivered by Dr. Gordon Holmes, of London, England, and Dr. Harvey Cushing, of New Haven, Connecticut. These lectures, together with the other addresses delivered at that time and the biographies noted in the "List of Publications" of this report, have been collected into a Foundation Volume published by the Oxford University Press.

In the vestibule is a plaque which acknowledges the part played by those who made the Institute possible:

McGill University
acknowledges with gratitude generous
donations toward the erection and
maintenance of this building

ROCKEFELLER FOUNDATION
PROVINCE OF QUEBEC
CITY OF MONTREAL
SIR HERBERT HOLT
J. W. McCONNELL
WALTER STEWART
FOUR ANONYMOUS DONORS.
The Rockefeller Foundation gave one half the money required to build the Institute. This money was considered to be the amount necessary to construct the scientific half and the private individuals mentioned in the plaque have built the clinical half of the edifice. In addition, the Rockefeller Foundation donated a permanent fund of one million dollars, the income of which is to be devoted to the maintenance of scientific work in the department of Neurology and Neurosurgery. The Foundation therefore built and endowed the laboratories without undertaking any responsibility for the sick poor of this country. The Province of Quebec and the City of Montreal, under the leadership of Premier Louis Alexandre Taschereau and Mayor Camillien Houde, have promised a yearly stipend necessary for clinical upkeep.

All hospital activities in the Institute are administered under special agreement by the Royal Victoria Hospital. In consideration of this, McGill University has agreed to indemnify the hospital up to an amount which has been estimated as the deficit at the beginning of each year. This arrangement has proved very satisfactory, allows of more intimate association between the Institute and the Hospital and makes easy the transfer of patients from one to the other.

The building and the scientific activities are all administered directly by McGill University which is also the owner of the Institute. The immediate control of the entire Institute and its activities is exercised by the Director, and the Registrar acts as his executive assistant. The Medical Staff consists of both French and English practitioners and through their other affiliations the Institute retains a close contact with most of the hospitals in Montreal. The extent of this co-operation is well shown in the following list:

### MEDICAL STAFF

<table>
<thead>
<tr>
<th>Positions in Institute</th>
<th>Other Hospital Associations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roma Amyot, B.A., M.D. (Paris)</td>
<td>Notre Dame Hospital</td>
</tr>
<tr>
<td>Associate Consulting Neurologist</td>
<td>Verdun General Hospital</td>
</tr>
<tr>
<td>E. C. Brookes, L.R.C.P. and S. (Edin.)</td>
<td>Sanatorium Prevost.</td>
</tr>
<tr>
<td>Consulting Roentgenologist.</td>
<td>Royal Victoria Hospital</td>
</tr>
<tr>
<td>A. E. Childe, M.D.</td>
<td>Montreal Children's Hospital.</td>
</tr>
<tr>
<td>Neurologist.</td>
<td>Children's Memorial Hospital</td>
</tr>
<tr>
<td>William V. Cane, B.S., M.D., C.M., F.R.C.S. (C)</td>
<td>Montreal Children's Hospital</td>
</tr>
<tr>
<td>Neurosurgeon, Neuropathologist.</td>
<td>Royal Victoria Hospital</td>
</tr>
<tr>
<td></td>
<td>Montreal General Hospital</td>
</tr>
<tr>
<td></td>
<td>Children's Memorial Hospital</td>
</tr>
<tr>
<td></td>
<td>Women's General Hospital</td>
</tr>
<tr>
<td></td>
<td>Homoeopathic Hospital.</td>
</tr>
<tr>
<td></td>
<td>Royal Victoria Hospital</td>
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<tr>
<td></td>
<td>Montreal General Hospital</td>
</tr>
<tr>
<td></td>
<td>Montreal Children's Hospital</td>
</tr>
<tr>
<td></td>
<td>Verdun Protestant Hospital.</td>
</tr>
<tr>
<td></td>
<td>Children's Memorial Hospital</td>
</tr>
<tr>
<td></td>
<td>Montreal Children's Hospital.</td>
</tr>
</tbody>
</table>
EMILE LEGRAND, M.D., Médecin Légiste (Paris).
Associate Consulting Neurologist.

FRED H. MACKay, M.D., F.R.C.P. (C)
Consulting Neurologist.

DONALD MCEACHERN, M.D.
Associate Neurologist, Biological Chemist.

FRANCIS L. McNNAUGHTON, B.A., M.D., C.M.
Clinical Assistant.

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

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

J. NORMAN PETERSEN, B.Sc., M.D., C.M.
Registrar. Associate Neurologist.

COLIN K. RUSSEL, B.A., M.D., C.M., F.R.C.P. (C)
Neurologist, Neuroanatomist.

Associate Consulting Neurologist.

NORMAN VINEER, B.A., M.D., C.M., F.R.C.P. (C).
Associate Neurologist.

ARTHUR W. YOUNG, M.D., C.M., F.R.C.P. (C).
Associate Neurologist.

Hotel Dieu
St. Jean de Dieu.

Montreal General Hospital
Children's Memorial Hospital
Shriners Hospital
Military Hospital, Ste. Anne de Bellevue
Mental Hygiene Institute.

Royal Victoria Hospital.

Montreal General Hospital.

Royal Victoria Hospital
Lovat Hall, Lancaster, Ont.

Royal Victoria Hospital
Montreal General Hospital
Children's Memorial Hospital
Jewish General Hospital
Verdun Protestant Hospital.

Royal Victoria Hospital
St. Mary's Hospital
Mental Hygiene Institute.

Royal Victoria Hospital
Children's Memorial Hospital
Mental Hygiene Institute.

Notre Dame Hospital
St. Justine Hospital
Sanitorium Prevost
St. Jean D'Arc Hospital.

Montreal General Hospital
Jewish General Hospital
Verdun Protestant Hospital.

Royal Victoria Hospital
St. Mary's Hospital
Children's Memorial Hospital
Mental Hygiene Institute.

HOUSE STAFF

THEODORE C. ERIKSON, M.A., M.Sc., M.D. ... ... Resident. 1934-35.

EXUM WALKER, M.D. .................................................. Resident. 1935-36.

DONALD F. COBURN, M.D. ........................................... Service terminated July 1935.

WILLIAM T. GRANT, M.D.

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

NATHAN C. NORCROSS, S.B., M.D.

DAVID L. REEVES, A.B., M.D. ........................................ Service terminated July 1935.

W. LISTER REID, M.B., B.S. ........................................ Service terminated July 1935.

— 3 —
NEUROPATHOLOGICAL FELLOWS

William T. Grant, M.D. ................................................................. 1934-35.
Donald F. Coburn, M.D. ................................................................. 1935-36.

RESEARCH FELLOWS

E. B. Boldrey, A.B., A.M., M.D.                                        David L. Reeves, A.B., M.D.
William Gibson, B.A. ........................................................................ W. Lister Reid, M.D., B.S.
Webb Haymaker, M.D. ........................................................................ J. Sanchez Perez, M.D. Fellow-Junta
F. L. McNaughton, B.A., M.D., C.M. ................................................... para Ampliacion de Estudios Spain.

VOLUNTARY RESEARCH FELLOWS AND EXTERNES

Mr. E. Miles Atkinson, F.R.C.S.                                       Ralphy M. Stuck, A.B., M.D.
Lorne McConnell, M.D.

Members of the Staff hold the following teaching appointments at
McGill University and at the University of Montreal.

McGILL UNIVERSITY

Professor of Neurology and Neurosurgery ............................................ Wilder Penfield.
Clinical Professors of Neurology ....................................................... Colin Russel.
F. H. MacKay.
Assistant Professor of Neurology and Neurosurgery ......................... William Cone.
Lecturers in Neurology ..................................................................... Donald McEachern.
J. N. Petersen.
N. Viner.
A. W. Young.
Lecturer in Neurosurgery ................................................................. A. R. Elvidge.
Demonstrator in Pediatric Neurology ................................................ H. M. Keith.
Assistant Demonstrator in Neurosurgery ............................................ T. C. Erickson.
Assistant Demonstrator in Neuropathology ........................................ W. T. Grant.
Assistant Demonstrator in Neurophysiology ...................................... G. Stavreky.

UNIVERSITY OF MONTREAL

Professeur Agrégé de Neurology ........................................................ Emile Legrand.
Assistant Professor of Neurology ....................................................... Roma Amyot.
Jean Saucier.
NURSING STAFF

The nursing staff of the Institute is appointed by the Superintendent of Nurses of the Royal Victoria Hospital. The permanent staff consists of a general supervisor who is in charge, an assistant, who also acts as ward teacher, a night supervisor, an operating room supervisor, a head nurse on each of the three ward floors, an operating room assistant and five general duty graduate nurses, making a total of thirteen. In addition there are six post graduate students who remain for a period of from six months to two years, and nine student nurses who remain for two or three months. There is therefore a total nursing staff of twenty-eight.

PERMANENT NURSING STAFF

Supervisor: Miss Eileen Flanagan, B.A., R.N.
Assistant Supervisor and Ward Teacher: Miss Helen M. Eberle, R.N.
Night Supervisor: Miss Bertha Cameron, R.N.
Operating Room Supervisor: Miss Kathleen Zwicker, R.N.
Ward Floor Nurses: Miss Margaret Goldie, R.N.
Miss Lorraine McNichol, R.N.
Miss Marian Currie, R.N.
Assistant Operating Room Nurse: Miss Cora McLeod, R.N.
General Duty, Operating Room: Miss Eileen Kelly, B.Sc., R.N.
General Duty, Floors: Miss Margaret Casselman, R.N.
Miss Constance Lambertus, R.N.
Miss Evelyn Scott, R.N.
Miss Kathleen Kidd, R.N.

The distribution of the nursing services varies to some extent according to the activity of each division. The operating room has three nurses of the permanent staff and one post-graduate; the private floor with fifteen patients has a head nurse and three or four general duty nurses on day duty and two night nurses in addition to special duty nurses. The two public floors, with eighteen patients each, have each a head nurse and four or five nurses on day duty and two nurses on night duty.

The type of patient cared for in the Institute requires more than the ordinary amount of individual attention and observation, and the large number of procedures carried on in the diagnosis and treatment of these patients means that the nursing service has considerably more to undertake than observation and bedside care alone.

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. Members of the medical staff give one lecture a week in neuroanatomy, neurophysiology, neurology or neurosurgery and the ward teacher conducts a class in nursing three mornings a week. The post-graduate students are assigned to the public floors on day and night duty and are given a considerable amount of supervision and teaching while on duty.
TECHNICIANS AND LABORATORY ASSISTANTS

Miss D. Brophy, B.A., Licenciée ès Science — Chemistry.
Miss C. Dart, R.N. — Neuro-physiology.
Miss I. V. Finlay — Neuro-pathology.
Mr. A. Goddard — Neuro-pathology.
Mr. H. S. Hayden, F.R.P.S. — Photography.
Mr. G. Peladrau — Neuro-physiology.
Mr. W. Whitehouse — Roentgenology.

SECRETARIAL STAFF

Miss Hope Lewis — Miss Helen O'Mara
Miss Winifred Smith — Miss Imelda Walsh

The functions of the Institute can be divided into the three groups of care of the sick, neurological investigation and University teaching.

HOSPITAL DIVISION

The second floor of the building (one flight up) and the third floor are devoted to public patients, being nearly identical in arrangement. The Sir Herbert Holt ward on the third floor and the J. W. McConnell ward on the second floor accommodate twelve beds each. The lighting in these wards, as well as in the smaller ones, is entirely from windows at the end of each ward, and, with reflection from the cream coloured ceiling, the light falls evenly on every patient. Nursing control is facilitated by placing a desk in a bay of glass which projects into the ward, so that every bed may be seen by the nurse. A common dressing room is so arranged that patients may easily be moved into it in their beds for surgical dressings, examinations or therapy.

There was originally a capacity of thirty-two public beds in the Institute for both neurological and neurosurgical cases but during the past year this has had to be increased to thirty-six. The general service and treatment rooms are quite large enough to permit the addition of another large ward on each floor. This would increase the accommodation of patients without other alteration except to install a second elevator in the space already provided, when and if occasion demands.

On the fourth floor there are nine small rooms for private patients. There are also two small wards with three beds each for semi-private patients, so arranged that the nurse in charge can see through windows from her desk into each ward without any loss of privacy for the patient. The fifth floor separates the patients below from the laboratories above. Here are two operating theatres with associated rooms. The main amphitheatre is provided with a viewing gallery which is entered by a narrow
pair of stairs from the visiting physicians’ room. This obviates the necessity of visitors or research fellows, who come in to watch operations, passing through the operating room at all. Beneath the viewing gallery is a small photographic cellar with a window. The photographer enters this cellar from the viewing gallery and sets up his camera behind the window. A photographic mirror adjustable from the cellar is maintained over the operating field and above the operator's head. In this mirror the photographer can see the field and can take photographs routinely at every operation without fear of contamination and without confusion. The temperature and moisture of the air in the operating room are automatically controlled and the ventilation is carried out with thoroughly washed air, so that windows will never be open and danger of wound contamination from the air is thereby reduced to a minimum.

The smaller operating room is used chiefly for ventriculography and encephalography. It is connected with the X-ray room by large folding doors so that a patient may be wheeled in for X-rays after the introduction of oxygen, lipiodol or any other radiable substances into the cerebrospinal spaces, and may be taken for immediate operation if indicated.

The custom of including private offices in a public hospital follows the development of full time University Medicine in the United States, Canada and England. Consulting rooms in a clinic make it possible for some members of the professional staff to limit their entire work to that clinic with only occasional consultations outside. Such a system demands that those who are granted such consulting rooms shall make clinical research a greater desire than private practice. To this end two suites of consulting rooms are included in the building. Accommodation for three neurosurgeons is placed on the same floor as the operating rooms, the fifth floor, and consulting rooms for three neurologists are placed on the first floor, the ground floor.

No provision is made for a separate outpatient clinic in the Institute. Neurological and neurosurgical clinics are conducted in the outpatient department of the Royal Victoria Hospital, which is just across the street.

LABORATORY AND RESEARCH DIVISION

The sixth and seventh floors are given over to laboratories for pathology, chemistry and physiology. The laboratory research is carried on in general by men who continue to maintain an active interest in clinical work. The neuropathological laboratories occupy most of the sixth floor and they are equipped to meet the requirements of neuropathology as outlined by Dr. William Cone. Biological chemistry is also housed on the sixth floor where study of the cerebrospinal fluid is carried out routinely and where chemical research is available for neurological problems under the direction of Dr. Donald McEachern. In addition, the Fellows' Library is located on the same floor and contains current neurological journals as well as reference books which supplement those available in the library of the Medical School.

The neurophysiological laboratories occupy the seventh floor and are equipped for aseptic operating with the same care as ordinary clinical theatres. The quarters for animals are planned carefully so that any type
of animal can be made comfortable, and each room has an outdoor runway on the roof exposed to the sun. In addition, there is a large room on the first floor which has been planned for clinical and psychological research. This room contains a vibration free steel girder under the floor so that sensitive apparatus can be used without the danger of vibration. A studio for gross and microscopic photography is also placed on the first floor and space and lighting are available for motion picture photography. Routine photographic records are kept there of microscopic sections, patients and operations.

On the small eighth floor, the Fellows' quarters are located. The chief resident and four or five Fellows can be accommodated. The important work of research is carried on by men who have finished all preliminary training and who have not yet undertaken positions of responsibility. Some of them are voluntary laboratory assistants, others are on a research stipend from the department budget. These men may be wandering students from any part of the world. Adjacent to the living quarters is a squash court. The space for this was originally intended for laboratories but possibly it may serve the young men of the staff to better purpose in its present form.

**TEACHING DIVISION**

A lecture amphitheatre, seating one hundred and twenty, occupies space in the ground floor and basement and serves as a much needed addition to the University accommodation. This is used not only by the Department of Neurology and Neurosurgery but also on occasion by all the other clinical departments of the Royal Victoria Hospital. In addition special courses of lectures to nurses and meetings of the Montreal Neurological Society, and also of other societies, have been held there.

Teaching facilities for small groups are available in the library on the sixth floor and in the waiting rooms on the second and third floors.

**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 the Neurological and Neurosurgical Outpatient Department combined with traumatic neurosurgical work. 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 a 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 Neuro-
pathological 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 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 role 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. These weekly meetings alternate between clinical demonstrations at the different hospitals and scientific lectures.

Applicants for Internships, Fellowships and Externships should send 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.

OUTPATIENT DEPARTMENT

The outpatient clinics are held five days each week in the Royal Victoria Hospital.

Monday and Thursday ...................... Neurology
Tuesday and Friday .......................... Neurosurgery
Wednesday ................................. Neurology (Epileptic)

Admissions to O.P.D.  
\[\begin{array}{ccc}
\text{Sept. 27 to Dec. 31-1934} & \text{Jan. 1 to Dec. 31-1935} \\
\text{Referred by Outside Doctors} & 44 & 142 \\
\text{Referred to Neurology} & 75 & 283 \\
\text{Referred to Neurosurgery} & 30 & 124 \\
\text{Total New Cases} & 105 & 407 \\
\end{array}\]
ADMISSIONS TO HOSPITAL

The Department of Neurology and Neurosurgery attends to cases not only in the Montreal Neurological Institute but also in the Royal Victoria Hospital. The following figures refer only to those cases treated in the Institute. 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 Cone as neurosurgeon. The Director holds a supervising control over both services while the Registrar acts as executive officer for both services and for the Institute in general.

<table>
<thead>
<tr>
<th>Admissions:</th>
<th>Sept. 27 to Dec. 31-1934</th>
<th>Jan. 1 to Dec. 31-1935</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Neurology</td>
<td>64</td>
<td>236</td>
</tr>
<tr>
<td>To Neurosurgery</td>
<td>126</td>
<td>582</td>
</tr>
<tr>
<td>To Other Services</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Transferred from Royal Victoria Hospital</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>190</td>
<td>841</td>
</tr>
</tbody>
</table>

An analysis based on 825 patients admitted to the Institute during 1935 shows the following distributions as to sex, religion and economic status. Of these, 344 were resident in the City of Montreal and 481 were from districts outside of the City.

Sex:

- Males ..................................... 473
- Females .................................. 352

Religion:

- Protestant ................................ 411
- Roman Catholic ........................... 313
- Hebrew ................................... 73
- Others ................................... 28

<table>
<thead>
<tr>
<th>Economic Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private patients ........................ 143</td>
</tr>
<tr>
<td>Semi private patients ................... 123</td>
</tr>
<tr>
<td>Public pay patients ..................... 337</td>
</tr>
<tr>
<td>Public patients admitted under the Quebec Public Charities Act ............ 218</td>
</tr>
<tr>
<td>Admitted as free patients .............. 4</td>
</tr>
</tbody>
</table>

825
In the X-ray department during 1935 a total of 1311 patients were rayed and a total of 5864 plates were taken.

The following classifications of diseases, operations and deaths are based on the total number of patients cared for by the Department of Neurology and Neurosurgery in the Royal Victoria Hospital and Montreal Neurological Institute. In the period of 1934 included in this report the total number of patients thus cared for was 215 and in 1935 it was 939.

### CLASSIFICATION OF DISEASES

**Nervous System Generally:**

<table>
<thead>
<tr>
<th>Disease</th>
<th>1934</th>
<th>1935</th>
</tr>
</thead>
<tbody>
<tr>
<td>af-mutism</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>rebrospinal syphilis</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>bes dorsalis</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>general paresis</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>bo-paresis</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>multiple sclerosis</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>atrophobic lateral sclerosis</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>rebral arteriosclerosis</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>cephalomyelitis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>diagnosed disease of the nervous system</td>
<td></td>
<td>1</td>
</tr>
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</table>

**Eninges:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>1934</th>
<th>1935</th>
</tr>
</thead>
<tbody>
<tr>
<td>chronic adhesive arachnoiditis</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>acute leptomenigitis</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>meningitis, pneumococcus</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>&quot; streptococcus</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>&quot; staphylococcus</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>&quot; mixed infection</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>&quot; aseptic</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>&quot; tuberculous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chymeningitis hemorrhagica</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>subdural effusion</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>subdural abscess</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>tra-dural abscess</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>tra-dural hemorrhage, post-traumatic</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>subdural hemorrhage, post-traumatic</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>subdural hematoma, infected</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>subdural hemorrhage, traumatic</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>subdural hematoma, infected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exposure of subarachnoid space</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>meningeal headache, cause undetermined</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>
Brain:

Agenesis corpus callosum ......................................................... .......................... 3
Aplasia (absence) of septum pellucidum ........................................ 1
Hyperplasia ................................................................................ 1
Microgyria and congenital anomalies ............................................. 4
Craniun bifidum .......................................................................... 1
Encephalocele ............................................................................. 1
Cerebral abscess ......................................................................... 2

Echinococcosis with cyst formation .............................................. 1
Post-infectional encephalitis ......................................................... 2
Tuberculoma .............................................................................. 1
Encephalitis periaxialis diffusa ..................................................... 1
Lead encephalopathy .................................................................. 1
Chronic encephalopathy ............................................................. 2
Post-infectional encephalopathy ................................................... 1
Encephalomalacia due to hemorrhage .......................................... 1
Porencephaly ............................................................................. 1
Dystonia musculorum .................................................................. 1
Cyst of brain ............................................................................. 1
Syringobulbia ............................................................................. 3
Hydrocephalus .......................................................................... 3
Paralysis agitans ........................................................................ 5
Bulbar palsy .............................................................................. 2

Epilepsy ..................................................................................... 24
  “ focal .................................................................................. 6
  “ post-traumatic ................................................................. 1
  “ autonomic ........................................................................... 1

Narcolepsy ................................................................................ 1
Migraine .................................................................................... 2
Cephalalgia ................................................................................ 2
Cerebral hemorrhage ............................................................... 2
Cerebral thrombosis ................................................................. 3
Cerebral infarction .................................................................... 1
Intracranial aneurysm ............................................................... 4
Air embolus ............................................................................... 1
Cerebral atrophy ...................................................................... 5
Cerebral degeneration ............................................................. 1

Herniation of brain ................................................................... 1

Spinal Cord:

Bifurcation of spinal cord ........................................................... 1
Cyst of cauda equina .................................................................. 1
Spina bifida .............................................................................. 4
Spina bifida with meningocele .................................................. 4
Spina bifida with myelomeningocele ........................................... 1 8
Congenital anomaly of cauda equina ........................................... 2
Myelitis ........................................................................ 2 3
Post-poliomyelitis paralysis ....................................................... 2 3
Myelopathy, cause undetermined .................................................. 2 3
" arteriosclerotic ........................................................................ 1
Adhesions of cauda equina ....................................................... 1
Hematomyelia ........................................................................... 1
Syringomyelia .......................................................................... 1
Compression of spinal cord ....................................................... 3 9
Herniation of spinal cord ............................................................ 1
Atrophy of spinal cord ............................................................... 1
Spastic paraplegia ...................................................................... 1
Progressive muscular atrophy .................................................... 3
Pseudo-hypertrophic muscular dystrophy...................................... 2
Dorso-lateral sclerosis ................................................................. 1

Cranial and Peripheral Nerves:

Optic atrophy ................................................................. 2
Familial primary optic atrophy (Leber's disease) ...................... 1
Retrobulbar neuritis ............................................................... 2
Toxic amblyopia ..................................................................... 2
Ocular palsy ............................................................................ 1
Facial paralysis, peripheral ................................................... 1
Deafness .................................................................................. 1
Laryngeal paralysis ................................................................. 1
Trigeminal neuralgia .............................................................. 7 45
Other neuralgias ....................................................................... 1 12
Paralysis of brachial plexus and its branches ............................ 1 9
Multiple neuritis ..................................................................... 2 6
Herpes zoster ........................................................................... 3
Spasmodic tic ........................................................................... 1

Trauma:

Cerebral concussion ........................................................... 16 74
" contusion ............................................................................. 5 9
" laceration .............................................................................. 3
Tentorial tear ........................................................................... 2
Fracture of skull ................................................................. 9 46
Fracture-dislocation vertebral column .................................... 2 14
Transverse section of spinal cord ............................................ 1
Other fractures ........................................................................ 9 17
Lacerations ............................................................................ 12 63
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<td>Gun-shot wound of head</td>
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<td>Foreign body in orbit</td>
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<td>Post-traumatic headache</td>
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<td>Cyst of brain, post-traumatic</td>
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<td>Brush burn</td>
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<td>Skull defect</td>
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<td>Intracranial hemorrhage, traumatic</td>
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<td>Post-traumatic neuroma</td>
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**Tumours of Nervous System:**

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<td>Spongioblastoma polare</td>
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— 14 —
Unverified tumor .............................................. 4
Tumor suspect .............................................. 1 8

**Autonomic Nervous System:**

Raynaud's disease ............................................. 4
Causalgia ....................................................... 2
Angioneurotic oedema .......................................... 1
Miscellaneous .............................................. 5 4

**Mental Diseases:**

Mental deficiency ............................................ 8
Mongolian idiocy .............................................. 1
Alcohol addiction ............................................. 5 19
Heroin addiction ............................................. 1
Post-traumatic psychosis ..................................... 2
Post-operative psychosis ..................................... 1
Psychoneurosis .............................................. 16 54
Simple depression ............................................ 1 7
Manic depressive psychosis .................................. 5 21
Dementia praecox ............................................. 5 6
Paranoid condition .......................................... 4
Malingering .................................................... 1
Miscellaneous .............................................. 1 7

**Other Systems and Miscellaneous:**

Pseudo-hypertrophic muscular dystrophy .................. 2
Facio-scapulo-humeral muscular dystrophy ................. 1
Carcinoma ..................................................... 5 10
Tuberculosis ................................................... 2 8
Diseases of cardio-vascular-renal system .................... 8 58
  " " respiratory system ...................................... 7 21
  " " gastro-intestinal system ............................... 1 21
  " " genito-urinary system ................................... 12
  " " hematopoietic system .................................... 3 7
  " " endocrine system ....................................... 5 35
  " " locomotor and integumentary system .................. 10 57
  " " eyes, ears, nose and throat ............................ 7 50
Dislocation nucleus pulposus ................................ 1 3
Congenital syphilis .......................................... 1
Latent syphilis (positive Wasserman) ....................... 3
Ethyl alcohol intoxication .................................. 5
Carbon monoxide poisoning ................................ 1
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### CLASSIFICATION OF OPERATIONS

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<td>&quot; biopsy</td>
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<td>&quot; hypophysectomy</td>
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<tr>
<td>&quot; separation of adhesions and opening of cyst</td>
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<td>&quot; injection of cyst with oxygen</td>
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<td>&quot; exploration and fusion</td>
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— 17 —
Nerve anastomosis, hypoglossal-facial ........................................... 1 1
Avulsion of nerve ................................................................. 7
Nerve suture ............................................................................. 2
Neurolysis ................................................................................ 2
Miscellaneous ........................................................................... 11 8

TOTAL ......................................................................................... 157 6.6

DEATHS IN HOSPITAL

September 27th to December 31st, 1934: total admissions—215; total deaths—15; deaths occurring more than 48 hours after admission—11.
Mortality rate based on deaths occurring after 48 hours—5.21 per cent.
Autopsies obtained—13, and percentage of autopsies obtained—86.8%.

January 1st, 1935 to December 31st, 1935: total admissions—939; total deaths—76; deaths occurring more than 48 hours after admission—58.
Mortality rate based on deaths occurring after 48 hours—6.29 per cent.
Autopsies obtained—59, and percentage of autopsies obtained—77.6%.

PUBLICATIONS — 1935

DR. WILDER PENFIELD:

A technique for demonstrating the perivascular nerves of the pia mater and central nervous system. Am. J. Path. 11: No. 6. 1007, November 1935.
The principles of physiology involved in the management of increased intracranial pressure. Annals of Surgery, 102: No. 4, October 1935.
(see also under Elliott, H., and under Elvidge, A. R.)

DR. COLIN RUSSEL:


DR. WILLIAM CONE:

See under Hyndman, O.

DR. ROMA AMYOT:

Contribution a l’étude pathogénique de la maladie de Milroy ou trophoedème de Meige. (en collaboration avec Francois Trépagnier.) L’Union Médicale du Canada, 4: 389, avril 1935.


DR. EVELYN ANDERSON:
See under Haymaker, W.

DR. GEORGE CHOROBSKI:

MR. HAROLD ELLIOTT:

DR. ARTHUR ELVIDGE:

DR. THEODORE ERICKSON:
See under Torkildsen, A.

DR. JOSEPH EVANS:


(See also under Penfield, W.)

DR. LYLE GAGE:
See under Elliott, H.

DR. WEBB HAYMAKER:

Rio-Hortega's double silver impregnation technique adapted to the staining of tissue cultures. (with J. M. Sanchez-Perez.) Science, 82: No. 2128, p. 355, October 1935.

DR. OLAN HYNDMAN:

DR. HADDOW KEITH:

Experimental convulsions induced by administration of thujone. A pharmacologic study of the influence of the autonomic nervous system on these convulsions. (with George Stavraky.) Arch. Neurol. & Psychiat. 34: 1022, November 1935.

DR. EMILE LEGRAND:
See under Mackay, F. H.

DR. DONALD MCEACHERN:


In June 1935, the annual meeting of the American Neurological Association was held in Montreal under the presidency of Dr. Colin K. Russel and also the annual meeting of the American Association of Neuropathologists under the presidency of Dr. Wilder G. Penfield. This was the first occasion on which these societies had held their annual meetings outside the United States of America and they received open hospitality at the Montreal Neurological Institute.

Respectfully submitted,

J. N. Petersen, M.D.,
Registrar.
To

THE DIRECTOR,

MONTREAL NEUROLOGICAL INSTITUTE.

Sir:

I have the honour to submit the second annual report of the Montreal Neurological Institute, for the calendar year of 1936.

All hospital activities in the Institute are administered by the Royal Victoria Hospital under special agreement with McGill University, while the building and scientific activities are administered directly by the University. The immediate control of the entire Institute and its activities is exercised by the Director, and the Registrar acts as his executive assistant. The Medical Staff consists of both French and English practitioners and through their other affiliations the Institute retains a close contact with most of the hospitals in Montreal.

The scientific and research activities of the Institute are made possible through the endowment, specifically made for these purposes, by the Rockefeller Foundation. The Province of Quebec and the City of Montreal donate yearly stipends to help make up the deficit resulting from the care of public ward patients and for general upkeep of the clinical departments.

On two occasions during 1936 His Excellency, the Right Honourable Lord Tweedsmuir, Governor-General of Canada, visited the Institute and following the second visit both he and Lady Tweedsmuir sent autographed photographs to us. Many other visitors were received at the Institute during the year.
MEDICAL STAFF

Positions in Institute

ROMA AMYOT, B.A., M.D. (Paris)
Associate Consulting Neurologist

E. C. BROOKS, L.R.C.P. and S. (Edin.)
Consulting Roentgenologist.

A. E. CHILDE, M.D.
Roentgenologist.

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

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

JOSEPH P. EVANS, B.A., M.Sc., M.D.
Assistant Neurosurgeon.

HADDOW M. KEITH, M.B. (Tor.)
Assistant Registrar, Assistant Neurologist.

EMILE LEGRAND, M.D., Médecin Légiste (Paris)
Associate Consulting Neurologist.

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

DONALD McEACHERN, M.D.
Associate Neurologist, Biological Chemist.

FRANCIS L. MCNAUGHTON, B.A., M.D., C.M.
Clinical Assistant.

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

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

J. NORMAN PETERSEN, B.Sc., M.D., C.M.
Registrar, Associate Neurologist.

COLIN K. RUSSEL, B.A., M.D., C.M., F.R.C.P. (C)
Neurologist, Neuroanatomist.

JEAN SAUCIER, B.A., M.D., (Paris), M.D. (Montreal)
Associate Consulting Neurologist.

Other Hospital Associations

Notre Dame Hospital
Verdun General Hospital
Sanatorium Prevost

Royal Victoria Hospital
Montreal Children's Hospital
Children's Memorial Hospital
Montreal Children's Hospital
Royal Victoria Hospital
Montreal General Hospital
Children's Memorial Hospital
Women's General Hospital
Homoeopathic Hospital
Royal Victoria Hospital
Montreal Children's Hospital
Women's General Hospital
Hotel Dieu
St. Jean de Dieu.

Montreal General Hospital
Children's Memorial Hospital
Shriners Hospital
Military Hospital, Ste. Anne de Bellevue
Mental Hygiene Institute.
Royal Victoria Hospital

Montreal General Hospital.

Royal Victoria Hospital
Lovat Hall, Lancaster, Ont.

Royal Victoria Hospital
Montreal General Hospital
Children's Memorial Hospital
Jewish General Hospital
Verdun Protestant Hospital

Royal Victoria Hospital
St. Mary's Hospital
Mental Hygiene Institute.

Royal Victoria Hospital
Children's Memorial Hospital
Mental Hygiene Institute.

Notre Dame Hospital
St. Justine Hospital
Sanatorium Prevost
St. Jean d'Arc Hospital
HOUSE STAFF

EXUM WALKER, M.D. ...................................................... Resident.


W T. GRANT, M.D. .......................................................... Service terminated August 1936.

Acting Resident during July 1936.

JOHN KERSHMAN, B.Sc., M.D., M.Sc. ............................. Service terminated December 1936.

N. C. NORCROSS, S.B., M.D. .......................................... Service terminated July 1936.

T. RASMUSSEN, M.D. ...................................................... Service terminated August 1936.


NEUROPATHOLOGICAL FELLOW

DONALD F COBURN, M.D. ................................................ Service terminated July 1936.


RESEARCH FELLOWS


A. J. CIPRIANI, B.Sc. .................................................. Service began October 1936.


FRANCIS L. MCNAUGHTON, B.A., M.D., C.M. ............... Service began September 1936.

DAVID L. REEVES, A.B., M.D. .................................

VOLUNTARY FELLOWS

W. M. NICHOLS, M.B., Ch.B., F.R.F.P.S. (Glas.)

Ure Fellowship. ........................................................ Service began November 1936.

W LISTER REID, M.B., B.S. ......................................... Service terminated July 1936.

KÁLMÁN VON SÁNTHA, M.D., Priv. Doc. (Budapest)

Rockefeller Fellowship. .......................................... Service began October 1936.

RALPH M. STUCK, A.M., M.D. ................................. Service terminated September 1936.
Members of the Staff hold the following teaching appointments at McGill University and at the University of Montreal.

**McGILL UNIVERSITY**

Professor of Neurology and Neurosurgery ........................................ WILDER PENFIELD.

Clinical Professors of Neurology ...................................................... F. H. MACKAY.
C. K. RUSSEL.

Assistant Professor of Neurology and Neurosurgery ............................. WILLIAM CONE.

Lecturers in Neurology ................................................................. DONALD MCEACHERN
J. N. PETERSEN
N. VINTER
A. W. YOUNG.

Lecturer in Neurosurgery .................................................................... A. R. ELVIDGE.

Demonstrator in Paediatric Neurology .................................................. H. M. KEITH.

Demonstrator in Roentgenology ......................................................... A. E. CHILDE.

Assistant Demonstrator in Neurosurgery ............................................. T. C. ERICKSON.

Assistant Demonstrator in Neuropathology .......................................... W. T. GRANT.

Assistant Demonstrator in Neurophysiology ....................................... J. P. EVANS.

**UNIVERSITY OF MONTREAL**

Professeur Agrégé of Neurology ......................................................... EMILE LIEGRAND.

Assistant Professor of Neurology ....................................................... ROMA AMYOT.
JEAN SAUCIER.

**NURSING STAFF**

Supervisor: MISS EILEEN C. FLANAGAN, B.A., R.N.

Assistant Supervisor and Ward Teacher: MISS HELEN M. EBERLE, R.N.

Night Supervisor: MISS BERTHA CAMERON, R.N.

Assistant Night Supervisor: MISS MAY COLLINS, R.N.

Operating Room Supervisor: MISS KATHLEEN ZWICKER, R.N.

Assistant Operating Room Supervisor: MISS CORA MACLEOD, R.N.

Head Nurses: MISS LORRAINE MACNICHOL, R.N.
MISS CONSTANCE LAMBERTUS, R.N.
MISS MARGARET GOLDIE, R.N.

General Duty, Operating Room: MISS EILEEN KELLY, B.SC., R.N.

Night General Duty, Operating Room: MISS LUCY MILLETTE, R.N.

General Duty, Floors: MISS EVELYN SCOTT, R.N.
MISS MARGUERITE MACLIMONT, R.N.
MISS ENID JONES, R.N.
MISS MILDRED HOWLETT, R.N.
MISS JOAN INGRAM, R.N.
The nursing staff of the Institute is appointed by the Superintendent of Nurses of the Royal Victoria Hospital. The permanent staff consists of a general supervisor who is in charge, an assistant who also acts as ward teacher, a night supervisor with an assistant, an operating room supervisor, assistant, and two general duty nurses — one day and one night, a head nurse on each of the three floors and eight general duty nurses. In addition, there are seven postgraduate students, who remain for from nine months to one year, and six student nurses who remain for from two to three months. There is, therefore, a total nursing staff of thirty-two.

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. Members of the medical staff give one lecture a week in neuroanatomy, neurophysiology, neurology or neurosurgery and the ward teacher conducts a class in nursing three mornings a week.

The post-graduate students are assigned to the public floors on day and night duty and are given a considerable amount of supervision and teaching while on duty.

**TECHNICIANS AND LABORATORY ASSISTANTS**

**Miss Doris D. Brophy, B.A., Licenciée ès Sciences, Chemistry.**
**Miss C. Dart, R.N. .................................................. Neurophysiology.**
**Miss I. V. Finlay, Service terminated June 1936 ..... Neuropathology.**
**Mr. A. Goddard .................................................. Neuropathology.**
**Mr. H. S. Hayden, F.R.P.S. .................................. Photography.**
**Mr. G. Peladeau .................................................. Neurophysiology.**
**Mr. J. Warner, Service began October 1936 ...... Neuropathology.**
**Mr. W. Whitehouse ............................................ Roentgenology.**

**SECRETARIAL STAFF**

**Miss H. Lewis .................................................. Departmental Secretary.**
**“ A. Dawson .................................................. Office.**
**“ E. Fanning .................................................. Half-time, Manuscripts.**
HOSPITAL DIVISION

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. The clinical services in the public wards 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 they are all permitted to admit and care for private and semi-private patients.

To meet certain emergencies a "Transfusion and Clinical Relief Fund" was created on the opening of the Institute in September 1934. This fund is used for the cost of blood transfusions when needed urgently by indigent patients. It serves also to defray the costs of occasional clinical studies which are required for scientific purposes rather than for the immediate therapeutic needs of the patient. Donations to this fund, received during 1936, are acknowledged elsewhere in this report.

At the present time there are no endowed beds in the public wards of the Institute although there is a need for at least two of these for patients who are not provided for under the terms of the Quebec Public Charities Act. The cost of endowing one public bed in perpetuity, to be named by the donor and maintained free for indigent patients, is $25,000.00.

LABORATORY AND RESEARCH DIVISIONS

The neuropathological, neurophysiological and chemical laboratories, under the direction of Dr. W. V. Cone, Dr. A. R. Elvidge, and Dr. Donald McEachern respectively, have been active throughout the year and reports dealing with each of these appear elsewhere in this record.

Because of decreased income from securities, the funds derived from the endowment given by the Rockefeller Foundation are ten thousand dollars less annually than the minimum which was estimated as necessary for the proper maintenance of the laboratory and research activities. 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.
Each research fellowship requires $1,200.00 annually or $30,000.00 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.

TEACHING DIVISION

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 the other teaching departments of the Royal Victoria 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 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. Beginning in October 1937 a further elective course on the "Fundamentals of Neurology", and consisting of advanced neuroanatomy, neurophysiology, biological chemistry and Roentgenology, is to be given by members of the staff.

The courses described above as elective for undergraduates form part of the post-graduate teaching in the Department. In addition graduate students attend a weekly colloquium in neuropathology, conducted by Drs. Cone and Penfield, weekly meetings of the Montreal Neurological Society and weekly complete ward rounds.

Lectures to undergraduate and to graduate nurses are also given in the Institute by members of the staff.

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 the Neurological and Neurosurgical Outpatient Department combined with traumatic neurosurgical work. This eighteen months' appointment is available on January 1st and July 1st.

The interns 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 Neur­
ological 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 spervision 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 role 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. These weekly meetings alternate
between clinical demonstrations at the different hospitals and scientific lectures.

Applicants for Internships, 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.

NEUROPATHOLOGICAL LABORATORIES

Dr. W. V. Cone .................................. Neuropathologist.

The neuropathological laboratories have continued to serve as a common
meeting ground where many of the activities of the research and clinical staffs
are correlated. Dr. William Reid succeeded Dr. Donald Coburn as neuropatho-
logical fellow. He reports that there have been two hundred and twenty-four
specimens from neurosurgical operations, seventy-six from autopsies on neuro-
logical cases and forty-three specimens sent from other clinics for opinions.

(9)
It is through the splendid co-operation provided by Dr. Horst Oertel's pathological department of the University and the Royal Victoria Hospital and through Dr. William Chase of that department that much of interest has been added to the work. Material of neuropathological interest obtained from general medical autopsies has been turned over to our department for study and has been most valuable.

The following men have worked on research problems in the laboratory: Dr. Boldrey — cytoarchitecture of the cortex, Evans — cerebral cicatrix, Kershman — cytogenesis of the central nervous system, McNaughton — innervation of the dura, Pudenz — neurohistology, Reeves — cytological reactions of the meninges to thorotrast, Reid — neuropathology, Stuck — reactions to thorotrast, Santha — neuropathology.

**PHYSIOLOGICAL LABORATORIES**

**Dr. A. R. Elvidge** ........................................... *Neurophysiologist.*

The physiological laboratories are equipped for the purpose of investigating problems in applied physiology, neurology and neurosurgery. Research in the current year has embraced a variety of topics. Those arising in the clinic have been in many instances directly investigated in the laboratory. They have included studies connected with the physiology of the cerebral circulation, the mechanism involved in the production of headache, cerebral localization, epilepsy, problems in connection with the elucidation of certain neurological signs, bone grafting, ventriculography and arteriography. This experimental work has been carried on by fellows, graduate students and associated physicians.

Apparatus has been perfected by Mr. André Cipriani, undergraduate research fellow, with the use of the cathode ray oscillograph by which cortical stimulation may be more accurately controlled for use in the main operating room for patients.

In the operating rooms of the laboratory with the help of the nurse in charge, Miss C. Dart, one hundred and sixty sterile and acute operations were performed during the year together with three hundred and four minor technical procedures.

**CHEMICAL LABORATORIES**

**Dr. Donald McEachern** ......................................... *Biological Chemist.*

The chemical laboratories were opened on February 20th, 1936, for the examination of cerebrospinal fluid from patients in the Institute, in the Neurological Outpatient Department, and patients elsewhere in the hospital who are under the care of staff members of the Institute. Serological reactions and bacteriological work on these fluids continue to be done in the Royal Victoria
Hospital bacteriology laboratory. Routine blood chemistry determinations are carried out, as before, by the medical laboratories of the University Clinic.

The determinations made on cerebrospinal fluids between February 20th and December 31st, 1936, numbered as follows:

- Pandy reaction: 591
- Protein: 601
- Sugar: 35
- Chlorides: 41
- Lange curves: 313
- Extra: 23

Total: 1604

Private and semi-private: 434
Public: 1170

Arrangements have also been made to take over the determinations of basal metabolism on patients in the Institute and this change will be made in the near future. Save for the above determinations, which are dictated by time and convenience, no effort has been made to extend the routine activities of the laboratories which have been planned primarily as research laboratories.

In collaboration with the Department of Physics of McGill University and under a grant from the Rockefeller Foundation, work has continued on the problems of lead absorption in disease of the nervous system. Mr. Joseph Moro has undertaken a study of the effect of lead absorption on rats in various stages of vitamin B deficiency. Work is also in progress on problems relating to myasthenia gravis. In collaboration with Dr. Joseph P. Evans a study is being made of the effect of various vaso-dilating agents following obstruction of cerebral vessels in animals.

**ROENTGENOGRAPHIC DEPARTMENT**

**DR. A. E. CHILDE** Roentgenologist

- Roentgenographic examination of patients: 1677
- Roentgenographic examination for research purposes: 310
- Daily average of films exposed: 27
- Films used: 7924
- Encephalograms: 397
- Ventriculograms: 87
Myelograms were carried out with oxygen with good visualization of the spinal canal and cord, particularly in the lumbar and thoracic regions. It seems possible that with further experience with this method of examination, considerable information may be obtained. It is hoped that this will supplant lipiodol injections in some cases and also yield information that cannot be obtained in any other manner. The axial examination of the base of the skull, which was introduced in 1935, has proven to be a valuable adjunct to the standard positions and not infrequently has shown changes which could not have been demonstrated otherwise.

OUTPATIENT DEPARTMENT

The outpatient clinics are held five days each week in the Royal Victoria Hospital.

Monday and Thursday ........................................... Neurology
Tuesday and Friday ............................................... Neurosurgery
Wednesday ......................................................... Neurology (Epileptic)

<table>
<thead>
<tr>
<th></th>
<th>Neurology</th>
<th>Neurosurgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>New cases</td>
<td>305</td>
<td>172</td>
</tr>
<tr>
<td>Re-visits</td>
<td>4100</td>
<td>463</td>
</tr>
<tr>
<td>Total visits</td>
<td>4405</td>
<td>635</td>
</tr>
</tbody>
</table>

ADMISSIONS TO HOSPITAL

Admitted directly to Montreal Neurological Institute 877
  to Neurology ............................................ 221
  to Neurosurgery ........................................ 656
Admitted directly to Royal Victoria Hospital ........... 108

Total admissions to Department of Neurology and Neurosurgery ........................................... 985

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 during the year was 912

The following statistics apply to the 887 cases admitted directly to the Montreal Neurological Institute:

Residents of Montreal ........................................ 523
Residents outside Montreal .................................. 364

887
Males ................................................................................................................. 510
Females ............................................................................................................. 377
 ...................................................................................................................... 887
Private patients .............................................................................................. 130
Semi-private patients ....................................................................................... 145
Public pay patients .......................................................................................... 372
Public patients admitted under the Quebec Public Charities Act ................. 240
 ...................................................................................................................... 887
Total days' treatment .................................................................................. 17,667
Average stay .................................................................................................. 18 days
Daily average of patients ............................................................................... 48
Daily average percentage of capacity (based on 50 beds) ............................. 96%
Trips made by ambulance ........................................................................... 194

Patients transferred to and from other hospitals in the vicinity of Montreal and the Montreal Neurological Institute were also numerous.

<table>
<thead>
<tr>
<th>To From</th>
<th>To From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Memorial Hospital</td>
<td>3</td>
</tr>
<tr>
<td>Homoeopathic Hospital of Montreal</td>
<td></td>
</tr>
<tr>
<td>Hopital de la Femme Invalide</td>
<td>2</td>
</tr>
<tr>
<td>Hopital du Sacre Coeur</td>
<td>2</td>
</tr>
<tr>
<td>Hopital Notre Dame</td>
<td>4</td>
</tr>
<tr>
<td>Hopital St. Jean de Dieu</td>
<td>1</td>
</tr>
<tr>
<td>Hopital St. Justine</td>
<td></td>
</tr>
<tr>
<td>Hotel Dieu</td>
<td>3</td>
</tr>
<tr>
<td>Lachine General Hospital</td>
<td></td>
</tr>
<tr>
<td>Little's Nursing and Convalescent Home</td>
<td>2</td>
</tr>
<tr>
<td>Montreal Convalescent Home</td>
<td>5</td>
</tr>
<tr>
<td>Montreal General Hospital (Central Division)</td>
<td></td>
</tr>
<tr>
<td>“ “ “ (Western Division)</td>
<td></td>
</tr>
</tbody>
</table>
The following classifications of diseases, operations and deaths are based upon the total number of patients cared for by the Department of Neurology and Neurosurgery in the Montreal Neurological Institute and the Royal Victoria Hospital. This total number of patients was 985.

**CLASSIFICATION OF DISEASES**

**Nervous System Generally:**

- Neurosyphilis
- Multiple sclerosis
- Progressive muscular atrophy
- Friedreich’s ataxia
- Cerebral arteriosclerosis
- Encephalomyelitis

**Meninges:**

- Chronic adhesive arachnoiditis
- Meningitis, pneumococcus
- Streptococcus
- Staphylococcus
- Mixed infection
- Tuberculous
- Subdural effusion
- Extravascular haemorrhage, traumatic
- Subdural haemorrhage, traumatic
- Pachymeningitis haemorrhagica
- Lateral sinus thrombosis
- Subarachnoid haemorrhage
- Subarachnoid haemorrhage, traumatic
- Subdural adhesions
- Post-traumatic headache
- Meningeal cicatrix
- Laceration of dura
Brain:
Extradural abscess ................................................................. 1
Microcephaly ........................................................................ 2
Agenesis of cerebellum ............................................................ 2
Agenesis of corpus callosum .................................................... 3
Cerebral diplegia .................................................................... 1
Cerebral abscess ..................................................................... 9
Tuberculoma ........................................................................... 4
Encephalitis ........................................................................... 3
Cerebral gliosis ....................................................................... 3
Encephalitis periaxialis diffusa ............................................... 2
Cerebral concussion ............................................................... 105
Cerebral contusion and laceration ........................................... 16
Compression of brain .............................................................
Herniation of brain .................................................................. 2
Cerebral cicatrix ....................................................................... 10
Meningo-cerebral cicatrix ......................................................... 13
Chronic encephalopathy ........................................................... 4
Encephalomalacia ................................................................... 2
Porencephaly ......................................................................... 2
Cyst of brain .......................................................................... 7
Hydrocephalus ........................................................................ 6
Arnold-Chiari malformation ....................................................
Paralysis agitans ..................................................................... 7
Sydenham's chorea .................................................................. 2
Progressive lenticular degeneration ........................................... 1
Epilepsy ................................................................................... 143
  " focal .................................................................................. 38
Migraine .................................................................................. 8
Cerebral haemorrhage ............................................................
Cerebral thrombosis ................................................................. 10
Cerebral angiospasm ................................................................ 1
Intracranial aneurysm .............................................................
Cerebral atrophy ..................................................................... 10
Cerebral degeneration ............................................................
Intracranial calcification ...........................................................
Syringobulbia ......................................................................... 1

Tumours of Nervous System:
Blood vessel tumours .............................................................. 4
Total gliomas ........................................................................... 55

(15)
<table>
<thead>
<tr>
<th>Tumour Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astroblastoma</td>
<td>3</td>
</tr>
<tr>
<td>Astrocytoma</td>
<td>17</td>
</tr>
<tr>
<td>Ependymoma</td>
<td>3</td>
</tr>
<tr>
<td>Glioblastoma multifforme</td>
<td>22</td>
</tr>
<tr>
<td>Glioma—unclassified</td>
<td>7</td>
</tr>
<tr>
<td>Spongioblastoma polare</td>
<td>1</td>
</tr>
<tr>
<td>Neuroepithelioma</td>
<td>2</td>
</tr>
<tr>
<td>Perineurial fibroblastoma</td>
<td>5</td>
</tr>
<tr>
<td>Meningeal fibroblastoma</td>
<td>14</td>
</tr>
<tr>
<td>Neuroma</td>
<td>3</td>
</tr>
<tr>
<td>Pituitary adenoma</td>
<td>9</td>
</tr>
<tr>
<td>Craniopharyngeal pouch tumour</td>
<td>2</td>
</tr>
<tr>
<td>Dural and extradural sarcoma</td>
<td>6</td>
</tr>
<tr>
<td>Cholesteatoma</td>
<td>1</td>
</tr>
<tr>
<td>Metastatic carcinoma</td>
<td>1</td>
</tr>
<tr>
<td>Metastatic hypernephroma</td>
<td>1</td>
</tr>
<tr>
<td>Von Recklinghausen’s disease</td>
<td>2</td>
</tr>
<tr>
<td>Unclassified tumour</td>
<td>2</td>
</tr>
<tr>
<td>Unverified tumour</td>
<td>2</td>
</tr>
<tr>
<td>Tumour suspect</td>
<td>22</td>
</tr>
</tbody>
</table>

**Spinal Cord:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spina bifida</td>
<td>18</td>
</tr>
<tr>
<td>Acute anterior poliomyelitis</td>
<td>2</td>
</tr>
<tr>
<td>Abscess of cauda equina</td>
<td>1</td>
</tr>
<tr>
<td>Myelopathy, traumatic</td>
<td>1</td>
</tr>
<tr>
<td>Laceration of spinal cord</td>
<td>1</td>
</tr>
<tr>
<td>Compression of spinal cord</td>
<td>26</td>
</tr>
<tr>
<td>Haematomyelia</td>
<td>5</td>
</tr>
<tr>
<td>Thrombosis, anterior spinal artery</td>
<td>1</td>
</tr>
<tr>
<td>Atrophy of spinal cord</td>
<td>1</td>
</tr>
<tr>
<td>Syringomyelia</td>
<td>2</td>
</tr>
<tr>
<td>Primary lateral sclerosis</td>
<td>2</td>
</tr>
<tr>
<td>Dorso-lateral sclerosis</td>
<td>4</td>
</tr>
<tr>
<td>Charcot-Marie-Tooth atrophy</td>
<td>1</td>
</tr>
</tbody>
</table>

**Cranial and Peripheral Nerves:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrobulbar neuritis</td>
<td>4</td>
</tr>
<tr>
<td>Toxic amblyopia</td>
<td>1</td>
</tr>
<tr>
<td>Ocular palsy</td>
<td>1</td>
</tr>
<tr>
<td>Trigeminal neuralgia</td>
<td>44</td>
</tr>
<tr>
<td>Facial paralysis, peripheral</td>
<td>7</td>
</tr>
<tr>
<td>Condition</td>
<td>Count</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Facial tic</td>
<td>2</td>
</tr>
<tr>
<td>Ménière's syndrome</td>
<td>13</td>
</tr>
<tr>
<td>Multiple neuritis</td>
<td>8</td>
</tr>
<tr>
<td>Hypertrophic interstitial neuritis</td>
<td>1</td>
</tr>
<tr>
<td>Sciatric neuritis</td>
<td>1</td>
</tr>
<tr>
<td>Neuralgias</td>
<td>14</td>
</tr>
<tr>
<td>Trauma to cervical nerve roots</td>
<td>1</td>
</tr>
<tr>
<td>Paralysis brachial plexus and branches</td>
<td>6</td>
</tr>
<tr>
<td>Compression brachial plexus by cervical rib</td>
<td>2</td>
</tr>
<tr>
<td>Paralysis lumbosacral plexus and branches</td>
<td>3</td>
</tr>
<tr>
<td><strong>Autonomic Nervous System:</strong></td>
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<tr>
<td>Sympatheticotonia</td>
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<tr>
<td>Angioneurotic oedema</td>
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<tr>
<td><strong>Mental Diseases:</strong></td>
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<td>Mental deficiency</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
<td>Symptomatic psychosis</td>
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<td>Miscellaneous</td>
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<tr>
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<tr>
<td>Pseudo-hypertrophic muscular dystrophy</td>
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<tr>
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<tr>
<td>Myasthenia gravis</td>
<td>3</td>
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<tr>
<td>Carcinoma</td>
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<tr>
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  drainage of subarachnoid space .................................... 2
  drainage of subdural space .......................................... 9
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<td>Trepanation</td>
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<td>&quot; ventriculography</td>
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<tr>
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<td>6</td>
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<tr>
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<tr>
<td>&quot; subdural insufflation</td>
<td>6</td>
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<tr>
<td>&quot; drainage of brain abscess</td>
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<tr>
<td>&quot; aspiration of cyst</td>
<td>5</td>
</tr>
<tr>
<td>&quot; insertion of wires for traction</td>
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<td>&quot; and ligation external carotid artery</td>
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<td>5</td>
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<tr>
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<tr>
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<tr>
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<tr>
<td>Exploration of ulnar nerve, removal of neuroma and nerve suture</td>
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<td>Deaths</td>
<td>70</td>
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<td>20</td>
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<td>Death rate based upon deaths occurring more than 48 hours after admission</td>
<td>5.18%</td>
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<tr>
<td>Autopsies obtained</td>
<td>58</td>
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<tr>
<td>Percentage of autopsies obtained</td>
<td>82.8%</td>
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(19)
Neurological Biographies and Addresses, Foundation Volume, published for the Staff to commemorate the opening of the Montreal Neurological Institute of McGill University (Oxford University Press, London: Humphrey Milford, 1936).

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SIR VICTOR HORSLEY.
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JEAN MARTIN CHARCOT.
CLAUDE BERNARD.
FRANZ NISSEL AND ALOIS ALZHEIMER.
WILHELM HEINRICH ERB.
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DR. WILDER PENFIELD:


(See also under Elvidge, A.)

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(See also under Penfield, W.)

(See also under Elvidge, A.)

**DR. ROMA AMYOT:**


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DR. JOSEPH P. EVANS:
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DR. J. N. PETERSEN:

DR. DAVID L. REEVES:
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DR. JEAN SAUCIER:
Où en est la thérapeutique de la poliomyélite. L'Union Médicale du Canada, novembre 1936.
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DR. EXUM WALKER:
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Mrs. A. A. Hodgson ........................................................................ 1,000.00

Sir Herbert Holt .............................................................................. 3,000.00

Mr. J. W. McConnell ...................................................................... 2,250.00

Mrs. Lewis Reford ........................................................................... 1,000.00

Respectfully submitted,

J. N. Petersen, M.D.,

Registrar.