

10th Report
1944-45

To

DR. F. CYRIL JAMES,
PRINCIPAL AND VICE-CHANCELLOR,
MCGILL UNIVERSITY.

Sir :

On behalf of the Executive Committee I have the honour to submit the tenth annual report of the Montreal Neurological Institute. It includes a summary of the clinical work for the calendar year of 1944, together with the scientific and research record for the academic year of 1944-45, and the lists of professional staff at the close of the academic year.

Respectfully submitted,
J. PRESTON ROBB,
SURG. LT. CMDR., R.C.N.V.R.
Acting Registrar.

*Executive Committee of the Montreal Neurological Institute :
Wilder Penfield, Chairman, W.V. Cone, A.R. Elvidge, John
Kershman, Fred H. Mackay, F.L. McNaughton, C.K. Russel,
Arthur Young, H.H. Jasper, A.E. Childe, J.P. Robb.*



Front Row: C. CORONA; H. DEMAY; J.A. TARKINGTON; A.A. WARD; A.A. MORRIS; H.F. STEELMAN; N. AUUCK-
 LAND; J.R. WILSON; M. BORNSTEIN.
 Second Row: A. BARBEAU; W.V. CONE; W.G. PENFIELD; S. COBB; C.K. RUSSEL; F.H. MACKAY; R. AMYOT.
 Third Row: F.L. MCNAUGHTON; A.W. YOUNG; A.E. CHILDE; A.R. ELVIDGE; J. KERSHMAN; J.P. ROBB;
 N. VINER.
 Back Row: W. FEINDEL; H.H. JASPER; M.R. SHAVER; K.A.C. ELLIOTT; G.K. MORTON.

CLINICAL STAFF

Director

WILDER PENFIELD, C.M.G., M.D., D.Sc., F.R.C.S. (C).
HON. F.R.C.S. (ENG), F.R.S.

Honorary Neurologist

A.G. Morphy, B.A., M.D.

Neurologist

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

Consulting Neurologist

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

Associate Neurologists

*DONALD McEACHERN, M.D.
FRANCIS L. McNAUGHTON, B.A., 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 and Montreal)
NORMAN VINER, B.A., M.D., C.M.

Clinical Assistants in Neurology

*JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc.
*J. PRESTON ROBB, B.Sc., M.D., C.M.

Neurosurgeon

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

Associate Neurosurgeon

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

Clinical Assistants in Neurosurgery

*CLAUDE BERTRAND, B.A., M.D.
*GUY MORTON, M.D.
MURTON R. SHAVER, B.A., M.D.
*O.W. STEWART, B.S., M.D.

Roentgenologist

ARTHUR CHILDE, M.D.

Consulting Roentgenologist

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

Physician in Charge of Electroencephalography

*HERBERT JASPER, Ph.D., D. es Sci. (Paris), M.D., C.M.

Clinical Assistant in Electroencephalography

*ANDRÉ CIPRIANI, B.Sc., M.D., C.M.

Neurochemist

K.A.C.ELLIOTT, M.Sc., Ph.D.

Consulting Anæsthetist

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

Supervisor of Nurses

EILEEN FLANAGAN, B.A., R.N.

Director of Social Service

ELABEL McL. DAVIDSON.

Social Service Assistant

JEAN STEWART.

EXECUTIVE STAFF

Acting Registrar
Executive Assistant to Director.....

J. PRESTON ROBB
JOHN KERSHMAN

RESIDENT STAFF

July 1st, 1944 to June 31st, 1945.

Resident: A.A. WARD, JR., A.B., M.D.

Internes

Ass't Resident : A.A. MORRIS, JR., A.B., M.D.	J.A. TARKINGTON, JR., M.D.	
" H.F. STEELMAN, B.S., M.D.	J. LONDON, B.S., M.D.	2 mos.
***SURG. LT. R.B. MCKENZIE, B.Sc.,	A. BATTISTA, M.D.	4 mos.
M.D., C.M.	R. HERTZ, M.D.	4 mos.
***SURG. LT. CMDR. W.V. BREMNER.	H. ROSEN, M.D.	4 mos.
***SURG. LT. J.R. WILSON.	H. DEMAY, M.D.	3 mos.
**F/L. S. JOHN HOLMES.	J. BATES, M.D.	3 mos.
**S/L. M.K. YOUNG.	M. HENINGER, M.D.	3 mos.
**F/L. CHARLES W. TAYLOR.	M. SHY, M.D.	2 mos.
**F/L. W.B. MITCHELL.	R.C. LEWIS, M.D.	2 mos.
**F/L. R.J. NORTHOVER.		

*On active military service.

**Seconded by the R.C.A.F. for three months service.

***Seconded by the R.C.N. for six months service.

FELLOWS OF THE MONTREAL NEUROLOGICAL INSTITUTE

M. BORNSTEIN, B.A., M.Sc
CHEN CHAO-JEN, M.D.
CARLOS CORONA, M.D.
W. FEINDEL, B.A., M.Sc.

NURSING STAFF

Supervisor	MISS EILEEN C. FLANAGAN, B.A., R.N.
Assistant and Ward Teacher	MISS BERTHA CAMERON, R.N.
Night Supervisor	MISS MARION BARROWMAN, R.N.
Night Assistant	MISS LILLIAN MCAULEY, R.N.
Operating Room Supervisor	MISS ELIZABETH MACRAE, R.N.

Operating Room Staff

MISS M. CURRIE, R.N.	MRS. CORA GRAY, R.N.
MISS FAITH LYMAN, R.N.	MISS K. DRISCOLL, R.N.
MISS BERYL FREED, R.N.	MISS M. HAGGART, R.N.
MISS M. HERRIOTT, R.N.	MISS I. BLOOMER, R.N.
MRS. EVELYN ATKINSON, R.N.	MISS E. MCLELLAN, R.N.

Head Nurses—Wards

MISS M. MACKENZIE, R.N.	(assistants)
MISS BRENDA DAVIS, R.N.	MISS B. THOMAS, R.N.
MISS M. CAVANAUGH, R.N.	MISS E. JOHNSON, R.N.
	MISS A. CROFT, R.N.

Dressing Room Assistants

MISS M. COMEAU, R.N.	MISS J. MACGREGOR, R.N.
MISS L. ROBICHAUD, R.N.	MISS E. MANSFIELD, R.N.
MISS I. MILLER, R.N.	MISS V. YOUNG, R.N.

General Staff Nurses

MISS G. FRASER, R.N.
MISS D. BILOKRELY, R.N.
MISS C. LAMOREUX, R.N.
MISS J. SEWELL, R.N.
MISS H. McALLISTER, R.N.
MISS O. McCONNELL, R.N.
MISS M. DAWSON, R.N.
MISS H. ELLIOTT, R.N.
MISS C. MILLER, R.N.

MISS L. FRAPPIER, R.N.
MISS F. GRATTON, R.N.
MISS H. COOKE, R.N.
MISS N. BROWN, R.N.
MISS A. FILION, R.N.
MISS J. POLLARD, R.N.
MISS M. FILER, R.N.
MISS E. BENNING, R.N.
MRS. V. FROST, R.N.

TECHNICIANS AND LABORATORY ASSISTANTS

MISS DORIS BROPHY, B.A., L.Sc., *Chemistry*
MISS H. CALLANDER, *Roentgenology*
MISS BARBARA FOGG, *Roentgenology*
MR. H.S. HAYDEN, F.R.P.S., *Photography*
MRS. L. LAFORTUNE, *Neuropathology*
MISS EUNICE MURPHY, R.N., *Neurophysiology*
MR. G. PELADEAU, *Neurophysiology*
MISS M.B. GOURLEY, R.T., *Chemistry*
MR. L. HENDERSON, *Electrophysiology*
MISS M. MATTHEWS, *Electrophysiology*
MR. F. PUTT, *Neuropathology*

SECRETARIAL STAFF

MISS A. DAWSON, *Departmental Secretary*

MISS C. CHASE, *Administration*
MISS E. FANNING, *Manuscripts*
MISS A. FORBES, *Electrophysiology*
MISS M.M. EDWARDS, *Social Service*
MRS. C. DEGUISE, *Office*

MRS. D. McNUTT, *Office*
MISS M.A. NESBITT, *Neuropathology*
MISS M. O'MARA, *Case Records*
MISS I. MACKENZIE, *Case Records*

Appointments held in General Hospitals of Montreal by Members of the Staff
of the Montreal Neurological Institute.

ROYAL VICTORIA HOSPITAL

DEPARTMENT OF NEUROLOGY AND NEUROSURGERY

<i>Neurologist and Neurosurgeon-in-Chief</i>	WILDER PENFIELD
<i>Neurologist</i>	DONALD McEACHERN*
<i>Neurosurgeon</i>	WILLIAM V. CONE
<i>Associate Neurologists</i>	JOHN KERSHMAN*
	FRANCIS L. McNAUGHTON
	ARTHUR W. YOUNG
<i>Associate Neurosurgeon</i>	ARTHUR R. ELVIDGE
<i>Clinical Assistant in Neurosurgery</i>	MURTON SHAVER
<i>Clinical Assistant in Neurology</i>	J. PRESTON ROBB

*On active military service.

THE MONTREAL GENERAL HOSPITAL

DEPARTMENT OF NEUROLOGY

<i>Neurologist</i>	FRED H. MACKAY
<i>Associates</i>	ARTHUR R. ELVIDGE
	NORMAN VINER
<i>Assistant</i>	FRANCIS L. McNAUGHTON
<i>Consulting Neurosurgeons</i>	WILLIAM V. CONE
	WILDER PENFIELD

HOTEL DIEU

Neurologist-in-Charge ANTONIO BARBEAU
Consulting Neurologist EMILE LEGRAND

HÔPITAL NOTRE DAME

Neurologist-in-Chief ROMA AMYOT
Assistant Neurologist JEAN SAUCIER

CHILDREN'S MEMORIAL HOSPITAL

Consultants FRED H. MACKAY
..... WILDER PENFIELD
..... COLIN K. RUSSEL
Neuropsychiatrist ARTHUR W. YOUNG
Assistant Neuropsychiatrist FRANCIS L. MCNAUGHTON
Neurosurgeon WILLIAM V. CONE

ST. MARY'S HOSPITAL

Physician in Neurology (in Chief) ARTHUR W. YOUNG
Consultant in Neurosurgery ARTHUR R. ELVIDGE

JEWISH GENERAL HOSPITAL

Chief of Department of Neuropsychiatry NORMAN VINER
Associate JOHN KERSHMAN
Consultant WILDER PENFIELD

WOMEN'S GENERAL HOSPITAL

Neurologist JOHN KERSHMAN
Consulting Neurosurgeon WILLIAM V. CONE

VERDUN PROTESTANT HOSPITAL

Neurosurgery Consultant WILDER PENFIELD
Neurosurgery Associate ARTHUR R. ELVIDGE

HOMOEOPATHIC HOSPITAL

Consultant in Neurosurgery WILLIAM V. CONE

ITEMS OF INTEREST

Lieut. Col. O. W. Stewart is now in charge of Neurosurgery at the Basingstoke Neurological and Plastic Surgery Hospital in England. Since D-Day an enormous number of injuries of the nervous system have passed through his hands. Many of these patients are returning for further care in the Montreal District.

Major Harold Elliott is officer in charge of #1 Canadian Mobile Neurosurgical Unit in Holland.

Most welcome news was received that Dr. George Chorobski and Mrs. Chorobska were still living in Poland last spring although earlier he had been reported killed. No further news has reached us except that he "was thinner than you have ever seen him."

Lt. Col. Donald McEachern and Major André Cipriani are attached to A.M.D. 8 in Ottawa, and have contributed to co-ordination of army medical research. Each was sent to England in connection with this work during the past year.

Martin Nichols has been a prisoner in Germany ever since his capture at the time of Dunkirk. Word comes that he has been active as surgeon and camp lecturer.

Perry Hewitt, Storer Humphreys, and Ralph Stuck have been heard from as medical officers in the American Army in the European theatre, and Wolfgang Klemperer in the Mediterranean theatre.

Major Donald Ross is a neuropsychiatrist in the R.C.A.M.C. and when last heard of was at Basingstoke, England.

Squadron Leader William Gibson is at R.C.A.F. Headquarters in Ottawa.

Dr. Edward Lotspeich is with the Department of Neurosurgery in Cincinnati under Dr. Joseph Evans.

Major Everett Hurteau has seen service in the American Army in England and Italy, and has recently returned home. He is now stationed in Memphis, Tenn.

Captain Eric Peterson is stationed at the Canadian Neurological and Plastic Surgery Hospital, Basingstoke, England.

Dr. Herbert Modlin is with the U.S. Army Air Corps. His last address was Keesler Field, Biloxi, Missouri.

Major Peter Lehman and Mrs. Lehman (née Rita Edwards, R.N.) are in Vancouver. He is second in command of the combined Neurosurgical treatment centre, at the Shaughnessy Military Hospital.

Guy Odom is in charge of Neurosurgery at Duke University, Durham, North Carolina, and returned to Montreal at the time of the meeting of the Neurosurgeons last autumn.

Captain Webb Haymaker has leave of absence from the University of California, and is Neuropathologist, the Army Institute of Pathology, Washington, D.C. Co-editor with Major Woodhall of a book, *Peripheral Nerve Injuries*, Saunders, 1945.

I. M. Tarlov is doing important research on the problem of nerve regeneration at the Brooklyn Jewish Hospital. He lectured on this work at the Institute last Autumn.

Lieut. Cmdr. Lyle Gage, U.S.N. was stationed in the Mediterranean area and has managed to find time from his war duties to publish a paper on "Immersion Blast" in the *United States Naval Medical Bulletin*, and another in *Cinema-therapy for Amnesia*.

Nathan Norcross is with the U.S. Navy and is at Great Lakes organising a Neurosurgical Service there.

Mrs. Mildred Lanthier is now a school attendance officer, Protestant Board of School Commissioners.

Squadron Leader John Kershman is in charge of the E.E.G. Consultation Service at several units across the country from Vancouver to Dartmouth, doing work for the Combined Services, as well as being consultant in Neuropsychiatry at #3 Regional Medical Board.

William Grant is teaching Neurosurgery at White Memorial Hospital and is developing an excellent Neuropathology Laboratory there.

Colonel David Reeves is still in Southern California as Neurosurgical Consultant to the United States Army.

Captain Theodore Rasmussen was still with an American Hospital on the Ledo Road when last heard from. He has carried out a study of causalgia which he has treated successfully by sympathectomy. He managed to get some skiing in the Himalayas at Christmas time.

On May 9th, Stanley Cobb, Bullard Professor of Neuropathology at Harvard Medical School and Psychiatrist-in-Chief to the Mass. General Hospital, delivered the tenth Annual Hughlings-Jackson Memorial Lecture to the Montreal Neurological Institute. The subject of his address was "Some Observations on Neurocirculatory Aesthesia."

As in recent years, we have received the utmost cooperation from the staff of the Royal Victoria Hospital and have been particularly appreciative of the continued interest and help of Dr. George F. Stephens.

ANNUAL MEETING

May 9, 1945.

Chairman, PRINCIPAL JAMES

The following reports were read :

A. FINANCIAL REPORT OF THE EXECUTIVE ASSISTANT ON HOSPITALIZATION

SQUADRON LEADER JOHN KERSHMAN, R.C.A.F.

The Montreal Neurological Institute has completed its tenth full year of hospital activity and it has again been a record-breaking year.

A measure of our expansion during these ten years is that the annual number of admissions and the annual number of days of hospital care have doubled, and the annual number of operations increased more than 2½ times what it was ten years ago.

The most striking feature of the past year was the very marked increase in our expenses. The cost of patient per day for hospitalization, exclusive of building and clinical laboratory maintenance, was 19.2% greater than in 1943. Most of this increase was due to the increased cost of supplies and necessary increases in salaries and wages. There has also been a slight increase in personnel to cope more effectively with the greater number of patients. It should be emphasized that while the total number of patients in the hospital is nearly twice what was originally planned, nearly all of this increase has been in the care of public patients. The number of rooms for private and semi-private patients is fixed by the exigencies of space, while the public wards have expanded, crowded, and overflowed. It is now realized widely enough that public patients do not pay the full cost of their hospitalization and that in every teaching hospital they are a financial burden, though a very necessary one. The net result has been that through the years, as the shift in our hospital population has been toward an ever greater proportion of public patients, it has placed a greater strain on our financial resources than was originally anticipated.

In most general hospitals there has been a trend toward an increased number of semi-private patients caused to some extent by the growing popularity of hospitalization insurance plans. Such plans, however, have made no provision for specialized hospitals such as ours in which the costs and some of the charges must necessarily be higher than in general hospitals.

The sharp rise in costs during the past year has necessitated a revision in our charges to patients. Small increases in the daily ward and room rates were made early in the year in conjunction with similar increases by all the other teaching hospitals in the city. Unfortunately, these increases did not produce sufficient revenue to cover the rise in costs and we ended the year in a less favourable financial position than in 1943.

While the total number of admissions was only 2% more than in 1943, the actual increase in number was made up entirely of D.V.A. and service patients. This group represented 21% of all our admissions, and there was an increase of 10% over 1943. We have continued to give them priority whenever possible, and with the building of the annex almost completed, there will be an expansion of our facilities for the care of service patients and veterans. To some extent it will also make it easier for the large waiting list of civilian patients needing care.

The D.V.A. has continued to pay an all-inclusive rate for the care of service patients, but in view of the rising costs and our lack of financial resources, it may be necessary to consider a revision of these charges.

In an attempt to see more clearly where hospitalization costs are incurred, an analysis and revision was made of the financial statements of the Institute. It is hoped in this way to place the burden of the cost of hospital care and the clinical laboratory costs in a more realistic relation to the cost of the more academic and scientific activities in the Institute. Naturally there is an intimately woven relationship between all of these functions of the Institute, but it is extremely important for our future that the scientific laboratories should not be starved by the expense of maintaining the hospital wards. Our scientific laboratories were specifically endowed by separate funds from the Rockefeller Foundation, and if the cost of hospitalization threatens to drain these limited resources then the roots of our work become stagnant and devitalized.

By this reorganization of our financial statements, it is hoped to show more accurately what hospitalization costs are, and try to maintain them on as self-sufficient a basis as possible.

It should be pointed out that, as compared with the beginning, when the annual grants of City and Province were established, the Institute is caring for twice as many public patients and the anticipated deficits have risen in proportion. It may soon be necessary to test the generosity of the City and Province still further. In return for this financial help, the rates for patients from the City and Province have always been slightly lower.

B. REPORT OF THE NURSING SUPERVISOR

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

The Nursing Department has once again completed a year of very active service given under the most difficult conditions. Our staff, has, like all others, been subject to the constant demands of the armed services, the Red Cross, U.N.R.R.A., and industrial war establishments.

The nursing care of the patients has been fairly adequate, but it is more difficult than ever to carry on a proper teaching programme for the graduate and undergraduate student nurses. A full time instructor should be obtained as soon as possible in order to co-ordinate the teaching and supervision of the various categories of nurses.

Again this year, I would like to draw attention to the matter of housing accommodation for the Nursing Staff. Also, again, I wish to point out the need for an annual bursary to enable a member of the Nursing Staff to obtain outside experience.

We have to thank the members of the Red Cross Nursing Auxiliary, the V.A.D.'s, for the very considerable contribution of 8,488 hours of voluntary nursing service,—without this help, we could not possibly have taken care of as many patients.

The private duty nurses also have come to our assistance many times and helped to keep the nursing service covered.

755 special duty nurses were on duty during 1944, giving 5,080 nursing periods.

Sixty student nurses of the Royal Victoria Hospital were given six weeks experience each.

We have to thank the Medical and Surgical Staffs for giving considerable time in ward clinics and lectures.

C. ADDRESS OF NEUROLOGIST

COLIN K. RUSSEL

The strongest and most persistent impression to report this year is a common one in all hospitals, but whereas in former years it was felt chiefly by the Medical side of the Institute, I gather, this year the Surgical side is also affected. I refer to the relative shortage of hospital beds which becomes more trying each year. Except in a case of emergency, it has been impossible to get a medical patient admitted in less than three or four weeks. One result of this is the difficulty of having such teaching material as such an Institute should produce and which the University might expect. This shortage of beds has been mentioned in previous reports and I must again point out the serious handicap it causes in the University teaching. The shortage of nursing help is also felt and would be more serious were it not for Miss Flanagan's good management.

The number of Medical admissions this year have numbered four hundred and seventy-five and we have been requisitioned to see two hundred and twenty-eight cases in other parts of the hospital. In the Out-Patient Department four hundred and seventy-one new cases are reported and two thousand, nine hundred and seventy-two old patients. I wish here to express our appreciation for the co-operation and help given us by Dr. George Stephens, the Superintendent of the Royal Victoria Hospital, in arranging accommodation for the ambulatory treatment of multiple sclerosis patients under Dr. Arthur Young, who reports as follows :

Patients with multiple sclerosis are being treated with histamine, given intravenously in normal saline. Six beds have been made available in the Out-Patient Department of the Royal Victoria Hospital, and Miss Gladys Taylor, graduate nurse, placed in charge. These patients come to the hospital each afternoon, five days a week, to receive the treatment and have, in all forty to sixty intravenous injections.

At this stage, all that can be said is that it does not take long for news to travel, for many patients in all phases of the disease are coming out of hiding or appearing for the first time and asking for treatment. It is too soon to predict the results but it looks as if no permanent or lasting effect can be expected, though during the treatment practically all the patients show some improvement.

The Out-Patient Clinic for epileptics has been called to my attention, partly because of the better results of improved methods of treatment and probably also because in the present state of almost universal employment, more of these patients are able to keep their jobs so long as they continue treatment regularly, and being employed, it is not such a burden to pay for their medication. It is, however, a hardship for these patients to have to get off work in order to attend an afternoon clinic. A night clinic, which might coincide in time and arrangement with the Genito-Urinary night clinic, would, I think, fill a real need and, I think, deserves serious consideration.

D. ANNUAL REPORT OF THE NEUROSURGEON

DR. WILLIAM CONE

It is a happy co-incidence that this Annual Meeting comes at the time of Germany's surrender, a time of thanksgiving and great seriousness.

The number of major operations a surgical department has to record is apt to be taken by lay people as the final measurement of the activity of that department. There were eight hundred and sixty-four major procedures carried out by the Department of Neurosurgery during 1944. These figures prove what a busy year it was and I am pleased to report it. Further analysis adds points of significance however, which give an idea of the department's activity which the total number of major operations and their classification do not include, a human side which has to do not only with the patients concerned but with the entire staff. These considerations also give a clear idea of the demands on the surgical department and how they have been met.

A surprisingly large number of the operative procedures were emergency ones, so urgent as to make it necessary to interrupt completely the planned work in the ward, in the x-ray and in the operating room. Approximately ten per cent of the operations were carried out within six hours of admission; nineteen per cent within twenty-four hours and twenty-five per cent within forty-eight hours. In other words, about two hundred and sixteen of the patients were so seriously ill when they arrived that they required priority of consideration over others, who coming for treatment earlier could safely wait a bit.

In the group operated on within six hours there were numerous examples somewhat as follows. The patients coming from out of town or from another hospital were taken directly to the x-ray room where, in the interval of waiting to see the films, the history was being reviewed, the examination done on the x-ray table, the head shaved, and then the patient was transferred to the operating table and taken to the theatre. It is surprising that the operative mortality in this group constituting about eighty cases was as low as it was, considering the condition of these patients at the time of admission. It is gratifying to review the follow-up results.

Various steps were taken to prevent dislocation of planned work by patients who fell into the groups operated on within twenty-four and forty-eight hours and were lesser emergencies. The dressing rooms on the wards have served as operating rooms for minor surgical procedures required in diagnosis and treatment, procedures previously done in the operating rooms. Twist drill hole openings in the skull in preparation for ventriculography were quite commonly done in the ward dressing rooms, skull tongs for cervical fractures were applied there,

tumor biopsies, abscess aspiration and irrigation, and the application of casts, all have been done in ward dressing rooms and do not show on the statistical report. If this practice is continued, a record book similar to that kept in the operating room will need to be started.

This past year, we accepted the responsibility for treatment of these emergencies whole-heartedly, if somewhat grudgingly, due to the overcrowding. It is certainly our responsibility to reduce their number by the frequently repeated dissemination of facts that will enable the medical profession to recognize the necessity for neurosurgical treatment earlier and also by an increase in our bed capacity so that after diagnosis admission will not be delayed.

The volume of the more routine work of the department makes it difficult to investigate many of the problems arising out of the clinical work as completely as is desirable. We were fortunate that Captain Jasper was kept here by the Army to continue in Neurophysiology. We have leaned heavily on his department. We welcome Dr. Elliot to the Institute staff and feel certain that the chemical approach he brings will be productive of valuable facts which will help make diagnosis and treatment better. Whereas years ago, patients felt that laboratory investigations meant experimentation, they now realize that it is a helpful aid to accurate diagnosis and adequate treatment.

When the resident staff is adequate, sorting and sifting of the facts collected by the careful investigation of individual cases will be a constant source of valuable information and training which we have had to neglect somewhat during this emergency period. This should be considered just as important a part of the scientific work of the Institute as the laboratory research. Therefore, we should have more help in the wards.

This next year promises to be one with less stress and strain. Re-organization of the x-ray and operating room arrangements are already nearing completion. These will correct bottle necks which have seriously limited the department's efficiency. Steps are being taken to see that the lack of anaesthetists, another serious handicap, will be corrected. There are still urgent problems to be faced, among which are adequate facilities for the hospitalization of infants and young children so that cross infections are lessened; further arrangements for the hospitalization of female patients. The military annex will do much to correct the bed shortage but more beds are still needed.

We have been thinking over the past few years of "The World We Mean to Make" when this war is completed. Now that the end is in sight and assured, we can begin to put thought into action. In this small part of the whole, we have much to think about and to do, to make treatment the best, training of the resident staff in research and practical work better, teaching superlative and the scientific work more productive. We could look forward with greater confidence to the future if we were not losing Dr. Childe whose splendid work has meant so much to every phase of the Institute's activities.

E.

ADDRESS OF DIRECTOR

DR. WILDER PENFIELD

1945

This tenth Annual Report comes at a time of great change. On the day before yesterday, victory was declared in Europe ; the full flood of military casualties is now reaching Canada ; crowding of civilian patients is at a maximum; the teaching of medical students on an accelerated plan is soon to be terminated, and refresher courses for returning medical officers are prepared ; war-time research is now to be oriented toward the Pacific, and peace-time research re-established. This statement will therefore be made under three headings ; the care of Canadian military casualties, the care of civilians, scientific and academic needs.

WAR CASUALTIES

Two years ago I reported to this annual meeting that our proposal to the Department of Pensions and National Health that a wing should be built here to accommodate service patients had been refused, not doubting that there were adequate reasons why they did not wish us to undertake the task for them in this district. But a year ago we were still struggling to care for war injuries here on an inadequate basis without provision having been made elsewhere. Consequently, it was pointed out that no general plan had yet been put into effect for specialized treatment of war casualties, although a deluge of wounded was soon to be expected. That annual meeting took place eight days before "D" day and the landing in Normandy.

Today the situation is altered. A comprehensive Dominion-wide scheme of treatment has been evolved and will very soon be completely set up, a scheme which already has begun to meet the needs of casualties and which reflects great credit upon those who are now in charge of the medical services.

Under the leadership of the Army Medical Service and with the excellent cooperation of the Medical Services of Navy, Air and the Department of Veterans' Affairs, a Committee on Special Treatment Centres was created. In addition to the regular service hospitals, this committee set up Combined Services Treatment Centres in Vancouver, Edmonton, Winnipeg, Toronto and Montreal. In each of these centres there are separate units for orthopaedic surgery, plastic surgery, general surgery and neurosurgery, each with a staff of specialists.

For this military district, neurosurgical patients have been cared for from the beginning by cooperation between the Ste. Anne's Military Hospital of the Department of Veterans' Affairs and the Neurological Institute, but a third hospital has been added, and the three will shortly function as one unit called the Combined Services Neurosurgical Centre. The newcomer is the Montreal Military Hospital, which will soon be opened officially on Queen Mary Road. There the army has been converting the Nazareth Institute into a first class 800 bed hospital, and neurosurgical wards will be occupied there shortly.

At Ste. Anne's, accommodation has been modernized, and an excellent department of physiotherapy established.

The Montreal Neurological Institute is in the process of clinical expansion for service cases. To this end, an Annex at the back of this Institute is now all but completed by the Department of National Defence—Army. It is a temporary structure that will house 27 additional beds. At the same time, the University is in the process of making alterations within the Institute that will bring about a more rapid turnover of cases, without which the increase in beds would be to no purpose whatever. These alterations, which will not be completed for several months, will enlarge the Operating, X-ray, and Electroencephalographic Departments. During this process the Neurochemistry Laboratories are being enlarged and a Neuroanatomy Laboratory added.

Fortunately, through the influence of a group of loyal Canadians in New York City, the Maple Leaf Division of the British War Relief Fund has contributed money which already amounts to \$63,580.00 (Canadian). This money is being used to buy extra equipment devoted to the treatment and comfort of service patients, and has been used to purchase a splendid ambulance to facilitate transfer between Ste Anne's and the Institute.

Thus, at this Institute the Army has enlarged the bed capacity, the University is expanding the facilities for treatment and diagnosis, and the Maple Leaf Fund has supplemented the work of the two so as to produce first class efficiency in the handling of service patients.

In conclusion, it is fair to say that the Neurosurgical Treatment Centre in this district is a remarkable example of cooperative effort, including a Veterans' Affairs Hospital, an Army hospital, and a civilian University hospital. Between these institutions patients from all the Services will be shifted freely for treatment and care. In order to coordinate this interchange and standardize treatment, it has been arranged by Major General Fenwick, D.G.M.S., Army, that all three neurosurgeons of this Institute should enter the Army Medical Service on a part-time basis.

Yesterday was Victory Day in Europe, and the overthrow of the military might of Japan seems to be only a matter of time. Nevertheless, our work on the medical home front is not finished ; indeed, it will reach its peak in the year that lies before us. Restoration and Rehabilitation is not alone an economic problem. First, there is the human problem of restoration of body and reorientation of mind. This is a problem that is medical, but one which the public must realize, and with which it can help.

Many men went out to fight. Some will not return. For them the struggle is over, the sacrifice complete. But the rest are coming back and among them is a great company whose lives were saved over there by good surgery, prompt evacuation to hospital, blood transfusion, and new drugs ; and many in this company are not through with their struggle, for they return to us crippled in one way or another.

Orthopaedists, plastic surgeons, neurosurgeons and others face an urgent task, made greater than ever before because, thanks to sulphonamide and penicillin, many return who would otherwise have died.

In our own field there is a variety of conditions : men with peripheral nerve paralysis, others with chronic headache or back pain. They must have the pain relieved, the nerves sutured, the limbs treated. Men with defects in their skulls

which should be closed; men who have developed, or who will yet develop, focal epilepsy as the result of healed brain wounds, and who then present surgical problems.

There is also a large group of paraplegics, with legs and bladders paralysed as the result of spinal injury. These men, who might have died in the last war, must now be rehabilitated with braces, on crutches and by retraining, even if we cannot cure them. The Department of Veterans' Affairs has adopted a far-seeing plan for this group, which, in this district, will be supervised by Dr. Arthur Elvidge. It is for the paraplegic particularly, but also for the others that the public could give us great assistance, in raising their morale, in teaching them new ways to earn a living, and in finding jobs for them when they are ready. Here is an opportunity for public spirited societies and loyal individual citizens.

I have referred in some detail to the final stage in the problem of military medicine. The Neurological Institute will continue to play a role in the solution of this problem, largely by handling more complicated surgical procedures which our equipment and specially trained personnel make possible. Our staff will gladly relinquish actual work in the other hospitals of this Neurosurgical Centre when adequately trained medical officers return from overseas. But complete cooperation will continue.

CARE OF CIVILIANS

The second heading of this report is civilian hospital care, for this is primarily a civilian and not a military hospital. What of the future? The military annex is temporary. It is not entirely fireproof, and it does not suit our future needs. It should be torn down as soon as it has served its immediate purpose.

Shall we after that leave things as they are and be satisfied to continue as "the smallest Neurological Institute in the world" as far as bed space is concerned? Or should we hope to continue to expand indefinitely so as to meet the demand for beds that comes to us from an ever widening region on this continent?

I would suggest a middle course. Let us seek to expand the bed capacity sufficiently to enable us to give adequate care to patients sent us from this province and city, and to enable us to continue to accept interesting and complex cases from a wider public. This would mean a moderate enlargement and would provide us with adequate teaching material. It would allow us again to admit less urgent cases to the neurological service of the type necessary for teaching purposes instead of placing such a high preferential priority on emergency neurosurgical admissions.

To do this a permanent wing will be needed to add about 40 beds and thus raise the total capacity to 100, 60 in the present building (instead of 45 as originally planned or 100 as has occasionally happened in these days of dangerous crowding). In this expansion there should be adequate semi-private accommodation in accordance with the future demands of Hospital Insurance schemes, and enough private accommodation to help to carry the hospitalization costs.

The University did enquire into the possibility of building this wing so as to make unnecessary the construction of the temporary Annex. However, the costs at this time seemed prohibitive, and consideration of the project was therefore left under the heading of unfinished business until after the war.

Such enlargement would not care for all the neurosurgical needs of this community. It therefore seems appropriate to urge the formation of one or two neurosurgical units in other hospitals of Montreal. This would establish buffer units that would protect us from the urgent demand of emergency neurosurgical cases which now enter the other hospitals and are transferred to us with high priority. At the same time it would be our desire to establish close association with the neurosurgeons who might undertake these other clinics, an association in scientific interest such as now exists, I am happy to say, between this Institute and the neurologists of nearly all of Montreal's hospitals. I refer to Dr. F.H. Mackay, Professor Antonio Barbeau, Professor Emile Legrand, Dr. Roma Amyot, Dr. Jean Saucier, and Dr. Norman Viner.

SCIENTIFIC ACTIVITY

Finally, let us consider scientific and academic activity.

Since the foundation of this Institute there have been five years of peace and now nearly six years of war. The initial nice adjustment of clinical work with research and teaching has come to be more and more disturbed. Part of this disturbance has been due to the war, and we are, of course, glad to be playing our part. We are proud that service patients have crowded the wards and that research of military importance has been, and still is, being carried on here ; proud that Colonel Hurst Brown has seconded for research here Captain Herbert Jasper and Dr. K.A.C. Elliott, and others, and that the Naval Medical Service has loaned us Surg. Lt. Cmdr. Preston Robb to help with the overwhelming burden of clinical administration after the death of Dr. Petersen.

At the same time, we recognize that the increased pressure of clinical work has decreased research and interfered with the very existence of combined ward and laboratory studies which once justified our use of the word "Institute" instead of "hospital." The Research Fellows, who were wont to spend a few productive years after finishing their graduate training and before striking out for themselves in neurology and neurosurgery, have vanished, and when a new generation of enquiring minds returns to us after the war they will find accommodation reduced, and their living quarters occupied because of the shifts to enlarge clinical facilities.

This demand will come soon and with great force, for this has been a long war, and medical officers will soon be discharged in large numbers whose training is inadequate for civil practice.

We must go forward. Otherwise we will go backward. I would propose to the University that during this coming year, as soon as the expansion of operation, x-ray and electroencephalographic laboratories is completed, that new quarters should be erected to house the surgical offices, which now temporarily occupy the converted squash court and Fellows' bed rooms. If this can be done, we will be prepared to receive immediately for training six or eight graduate fellows.

In closing, a word regarding scientific and academic work outside these walls, and now I would speak for our Department in the University. During the war the Canadian Government has entered the field of medical research by creating medical research committees under the National Research Council. Support has been given chiefly for investigation of medical problems which are of obvious importance to the health and treatment of soldiers, sailors and airmen. Many of these grants have been made to universities and they have borne much good fruit. Surely this support will not now be withdrawn. Surely a medical research council will emerge and continue for peace time problems. Surely the National

Research Council scholarships will be expanded so as to provide support for outstanding Canadian scholars. This country is far behind other countries, such as Scotland, in the provision of fellowships for higher education.

The statement has been made that support of educational institutions is the primary responsibility of the Provinces and not of the Federal Government. But grants can be made for the solution of problems of national importance and for the development of selected departments in Canadian universities without infringing the rights of the provinces.

After the last war the British Parliament created the University Grants Commission. This was a non-political and non-partisan body which gave millions of pounds to certain university departments that were judged capable of great contributions to the arts and sciences. This was done without demanding in return any forfeiture of independence on the part of the recipient universities.

Although our Government has not yet undertaken such assistance, the situation here is similar to that in England. Allow me to quote from the Report* of the Council of the Royal Society, London, made last January :

“In the past, research in the universities has derived much support from private benefactions, from trusts and corporations and from industry, but in the future those sources of revenue, though much to be encouraged, will be insufficient to meet the needs, and the financing of research through the University Grants Committee, or whatever government body assumes the responsibility, is essential. The welfare of research in the Universities is becoming a national interest, and its support should be on such a scale as to ensure that the scientific departments of the universities are free to devote themselves to the search for new knowledge and to the training of students in the sciences and in methods of research.”

Our Department of Health and Public Welfare has recently initiated the giving of money bonuses to needy families for the benefit of their children. This is, no doubt, a most acceptable innovation. But contribution to medical research would also benefit those children and the whole country as well.

Furthermore, the establishment of university fellowships would enable the brilliant child from a poor family to acquire a university education and also to contribute to the national welfare.

Enough to eat and enough to wear and social reforms are not enough. If Canada would do the comparative during the years that lie ahead, she might well follow the example of Great Britain and Russia (and of Germany too in those far off decades that preceded the war of 1914). Discriminating Government support of research would enable this country to occupy the position of leadership of which the Canadians are capable.

It was only four years ago, at the time of this annual meeting, that the outcome of the German bid to conquer the world seemed to hang in the balance. Dr. Cone, Dr. Russel, Dr. Childe and Dr. Stewart and many of our nurses were in England awaiting invasion, and we who remained here were laying plans to help the cause in any way we could devise; by secret study of blackout in fighter pilots, fatigue in bomber pilots, seasickness, brain wounds, psychoneurosis, and other subjects.

Now, thank God, the menace of Nazi domination is gone, and we know that, when final peace comes, it will be to a world that is free, not slave.

* The Royal Society : “Report on the Needs of Research in Fundamental Science after the War.” London, January, 1945.

F. REPORT OF THE ACTING REGISTRAR

SURGEON LIEUTENANT COMMANDER J. P. ROBB, R.C.N.V.R.

CARE OF PATIENTS

The clinical services in the public wards of the Institute are subdivided into, (1) a neurological service which is under the immediate direction of Dr. Colin Russel, and Dr. Francis L. McNaughton, and (2) a neurosurgical service which the direction of Dr. William V. Cone and Dr. Arthur Elvidge. The Director holds a supervisory control over both services while the Registrar and the Executive Assistant act as Executive officers. 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. In addition to the patients hospitalized in the Montreal Neurological Institute the Department of Neurology and Neurosurgery also takes care of the neurological and neurosurgical patients in the Royal Victoria Hospital.

The clinical work in the Institute has increased year by year. While our original complement of beds was 47, at times we have had as many as 100 patients in the Institute. The progressive increase in the work done in the Institute is indicated by the following figures :

	PATIENTS CARED FOR	HOSPITAL DAYS	AVERAGE STAY	DEATH RATE	AUTOPSY RATE	OPERA- TIONS
1934 (3 mos.) ..	190			5.21%	86.8%	92
1935	841	14928	17.8	6.29%	77.6%	348
1936	912	17667	19.4	5.18%	82.8%	456
1937	953	18315	19.2	5.18%	85.4%	508
1938	999	18856	18.9	4.95%	89.4%	608
1939	1079	19742	18.3	4.72%	72.1%	517
1940	1093	19428	17.8	6.79%	86.8%	600
1941	1179	20482	17.4	6.03%	88.5%	566
1942	1416	23939	16.9	4.53%	83.3%	700
1943	1623	29718	18.3	3.97%	77.0%	742
1944	1657	30501	18.4	5.1 %	65.0%	864

The increase in the number of patients cared for in 1944 over those cared for in 1935, the first full year of operation of the Institute, was 97%. The increase of hospital days in 1944 over 1935 was 104%. The increase in operations was 148%.

ADMISSIONS TO HOSPITAL

	1944	1943
Total admissions to the Montreal Neurological Institute and the Royal Victoria Hospital under the care of the Staff of the Montreal Neurological Institute and the Department of Neurology and Neurosurgery of the Royal Victoria Hospital	1768	1713

Admissions to the Montreal Neurological Institute	1657	1569
Admissions to the Department in the Royal Victoria Hospital	111	144
Daily average number of patients	83	81
Deaths	117	96
Deaths within 48 hours of admission	27	29
Death rate (on deaths after 48 hours)	5.1%	3.97%
Percentage of autopsies obtained	65.0%	77.0%
Admissions per day	4.5%	4.4%

CHIEF DIAGNOSES IN FATAL CASES

Hydrocephalus	3
Acute Meningitis, tuberculous	3
Acute Meningitis, influenzal	1
Acute Meningitis, streptococcus	3
Acute Meningitis, pneumococcus	2
Acute encephalomyelitis	1
Acute cerebritis	1
Intracranial abscess	6
Intracranial trauma	30
Spinal trauma	4
Intracranial tumour	41
Spinal tumour	3
Carcinomatosis	4
Subarachnoid haemorrhage	3
Multiple sclerosis	1
Guillain-Barre Syndrome	1
Raynaud's Disease	1
Acute Barbiturate poisoning, depressive psychosis	1
Hypertensive encephalopathy	1
Amaurotic family idiocy	1
Cerebral haemorrhage and thrombosis	6

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OUTPATIENT DEPARTMENT

Outpatient Clinics are held Five Days Each Week
in the Royal Victoria Hospital

Monday and Thursday	Neurology		
Wednesday	Neurology (Epileptic)		
Tuesday and Friday	Neurosurgery		
	Neurology	Neurosurgery	Totals
New Cases	471	366	837
Revisits	2972	628	3600
Total Outpatient Visits	<u>3443</u>	<u>994</u>	<u>4437</u>

During 1944, there were 471 new patients admitted to the Neurological clinics of the Out-Patient Department, and 2,292 revisits. Of these, the greater proportion were epileptic patients with all the resulting social problems to be found among this unfortunate group.

Patients living outside of the city often present us with another set of problems—parents bringing a child for examination, a man who finds increasing difficulty in working, a woman who is nearly blind—arrive with no appointments made, no place to stay, little money. Both prompt and adequate must be the arrangements for care and treatment. Often all services are taxed to meet the need.

Definite recommendations regarding follow up of patients both when they are discharged from the ward and on attendance at clinic would make for more adequate and satisfactory treatment.

NEEDS

(1) A night clinic for epileptic patients who are at work. We, who are so well aware of the obstacles which every one of these patients must overcome, might well remove the difficulty of attending clinic during working hours. Earnings are usually small, responsibilities often heavy, insecurity a constant companion. To buy medication regularly is a necessity, but to lose time from work is an added strain—both financially and in the further disadvantage among his fellow workers.

(2) A supply of glutamic acid for those patients unable to pay for it. The effectiveness of this medication is still being proven, but believing as we do that a patient's treatment is determined by his need and not by his ability to pay, we should like to make it possible for doctors to prescribe the medication for any patient for whom he considers it indicated.

REPORTS OF SUBDEPARTMENTS

A. DEPARTMENT OF ROENTGENOLOGY

DR. A. E. CHILDE, *Roentgenologist*

There has been a steady increase in the activities of the Department of Roentgenology since the opening of the Institute. As shown in the attached statement, 4540 examinations were carried out during 1944 representing an increase of 716 over 1935, and 22,527 films were exposed. There has been a slight drop in the number of encephalograms but spine examinations have increased by nearly 50% and oil myelograms have reached the unprecedented figure of 369.

It has been difficult to accomplish this volume of work, but the addition of an extra technician has helped considerably. Miss Barbara Fogg was taken on the staff on January 1st, 1944, and in August she became chief technician when Mr. Dreisinger resigned to join the Picker X-Ray Corporation. Our new assistant is Miss Helen Callander, who is rapidly becoming very useful, although she had had no previous training in roentgenography before coming here. It has become necessary to increase our staff to two stenographers working practically full time for the X-ray Department. We lost Miss Marshall to the Social Service Department and recently Miss M. Beighton has been engaged.

Whilst there has not been much time to study any individual problem, the radiographic findings in myelography, particularly in respect to herniated intervertebral discs, have been summarized. These have been presented to the National Research Council and published by them for limited distribution. As mentioned in last year's report the frequency of multiple disc herniations is higher than originally thought. A number of patients have been seen with signs and symptoms resembling those due to disc herniation who have really been suffering from various types of neoplasms. In most instances it is possible to differentiate between a disc herniation and neoplasm by myelography although occasionally, particularly when a complete block is present, such differentiation may be difficult. The cervical disc problem also has proven interesting and examinations of the cervical region are now much easier now that pentopaque is again available. This has been on the market since last summer. It is very much easier to inject and aspirate than lipiodol and it is still felt that at the present time it is definitely the contrast medium of choice for myelography.

An increasing number of patients have been referred to the Department of Roentgenology for examination by members of our staff and by members of the medical profession in Montreal. It has been necessary to carry out such examinations on an appointment basis. In the very near future the Department will be moved and enlarged so that two complete x-ray machines will be available. Under these circumstances it should be considerably easier to perform the necessary volume of work but the addition of the Army Ward which is under construction will undoubtedly still further increase our activity. The routine reporting and myelography now constitute a formidable problem and will soon necessitate at least a part time assistant.

	1944	1943
Total examinations	4540	3824
Films used	22527	18870
Encephalograms	397	435
Ventriculograms	167	134
Myelograms (oil)	369	.

B. DEPARTMENT OF BIOLOGICAL CHEMISTRY

DR. K. A. C. ELLIOTT, *Acting Neurochemist*

The following clinical determinations were carried out during the year 1944 :

CEREBROSPINAL FLUID

Pandys	1598
Proteins	1598
Sugars	206
Chlorides	253
Langes	370
Blood and Spinal Fluid bromides	5
Blood, Spinal Fluid and Urine sulfonamides	1534
B.M.R.s	136
TOTAL	5700
Private and Semiprivate	1253
Public	4447

Routine urinalysis in the third floor lab has been carried out by this department and the number of determinations averaged about 200 a month. From January 1st, until May 1st, Miss Gourley took the blood Wassermanns and did blood counts for the Institute.

Dr. McEachern has been absent on leave of absence while serving with the R.C.A.M.C. Owing to his absence no research was carried out in the department for the greater part of the year.

In October, 1944, Dr. K.A.C. Elliott joined the staff of the Institute and took charge of the Chemical Laboratories. In cooperation with Dr. Jasper and the Physiology Department studies on the nature of brain swelling, and on the effects of irrigation fluids on exposed brain, were commenced. This work is part of a program under the direction of Dr. H.H. Jasper, and is sponsored by the Associate Committee on Army Medical Research of the National Research Council.

C. DEPARTMENT OF ELECTRO-ENCEPHALOGRAPHY

Dr. H. H. JASPER, *Electroencephalographer*

There were 1,378 electroencephalographic examinations carried out during the past year on 1,151 different patients, making a total of 227 re-examinations. These figures are very close to those of the last two years, giving further confirmation to the opinion that the capacity of this Laboratory has reached the saturation point with present staff and equipment. New equipment has been

ordered which should increase our capacity during the coming year.

The principal diagnoses, with the number of patients from the wards of the Montreal Neurological Institute* compared to those examined from other sources (Out-Patients' Department, other hospitals, and from referring physicians) are presented below. The number of service patients examined for the Department of Veterans' Affairs is also listed, separately.

	IN- PATIENTS	OUT- PATIENTS	D.V.A.	TOTAL
Epilepsy	168	459	79	627
Cerebral Neoplasm	86	28	14	114
Post-traumatic Syndrome	42	68	39	110
Acute Head Injury	33	2	1	35
Migraine and Headache	11	42	19	53
Subdural and Epidural Hæmatomata	16	3	1	19
Behaviour Disorder	2	11	1	13
Narcolepsy	3	13	8	16
Chorea		1		1
Miscellaneous	57	48	21	105
Deferred	26	32	8	58
TOTALS	444	707	191	1151
Percent	39%	61%	8%	

Clinical investigation of the diagnostic value of the electroencephalogram in post-traumatic and other forms of epilepsy has been carried out in this department with the collaboration of Squadron Leader John Kershman and presented in a report to the Associate Committee on Army Medical Research of the National Research Council.

D. DEPARTMENT OF NEUROPATHOLOGY

DR. W.V.CONE, *Neuropathologist*
 DR. MURTON SHAVER, *Assistant Neuropathologist*
 MR. WILLIAM FEINDEL, *Neuropathological Fellow*

During 1944 both the routine and experimental activities of the Laboratory showed an increase over the previous year. The number of examinations carried out were as follows :

Surgical	523
Autopsies	75
Miscellaneous	13
Experimental	29

The miscellaneous examinations consisted chiefly of specimens on outside cases which were referred for diagnosis or pathological study.

The experimental work during the academic year included studies on the perineural sheath by Dr. Chen Chao-Jen and histological preparations related to the problem of experimental brain injuries by Mr. John Meyer. Dr. Lotspeich completed a series of investigations on the use of oxidized cellulose and human fibrinogen as dural substitutes and we hear recently that he is continuing some of this work at Cincinnati. Dr. Feindel carried out work using the same materials for wrapping peripheral nerves following end-to-end suture and began experiments on the comparison of rubber and plastic tubing as used in ventriculostomy. Dr. Elvidge has recently started experiments on the effect of ultra-violet radiation on the exposed brain cortex. The results of the studies on brain œdema by Dr. Prados assisted by Mr. Strowger and Mr. Feindel will be published shortly.

* Including a few patients on M.N.I. Consultant Service in other Departments of the Royal Victoria Hospital.

Several seminars covering the more common neuropathological subjects were given at the request of the junior internes and the visiting internes from the Services. With a view to aiding the teaching facilities a demonstration set of gross specimens was begun and a collection of kodachrome lantern slides to depict the commonest neuropathological lesions was initiated.

Dr. Guy Morton very ably took over the charge of the laboratory for the month of August. Since the beginning of 1945, Dr. Chen Chao-Jen has performed most of the autopsy examinations. The staff of the Pathological Institute were most co-operative with regard to the handling of autopsy material as well as in consultations on surgical cases.

E. DEPARTMENT OF NEUROPHYSIOLOGY

DR. H.H. JASPER, *Neurophysiologist*

The Associate Committee on Army Medical Research of the National Research Council and the Research Directorate of the Royal Canadian Army Medical Corps have sponsored the greater portion of work done in these Laboratories during the past year. Both financial aid and research personnel have been provided. The studies of certain medical problems associated with the transportation of the sick and wounded by air were completed during the early part of the year. Our efforts have since been directed by a comprehensive programme of research into medical and surgical problems of traumatic injuries to the nervous system.

The principal subjects of investigation were as follows :

The Effect of Morphine Sulphate and Sulphathiozole on Altitude Tolerance.
Dr. E.W. Peterson, Mr. Murray Bornstein and Captain H.H. Jasper.

The Physio-pathological Nature of Brain Swelling and Œdema following Traumatic Injury or Exposure.
Dr. K.A.C. Elliott, Captain H.H. Jasper and Mr. John Meyer.

The effect of various kinds of irrigation fluids on the local pH pial vessels, functional stage and subsequent condition of the cerebral cortex exposed at operation.
Captain H.H. Jasper, and Dr. K.A.C. Elliott.

Clinical and Experimental Studies of Changes in Electrical Skin Resistance in Peripheral Nerve Lesions.
Captain H.H. Jasper and Lieutenant-Commander J.P. Robb.

Electromyography in Peripheral Nerve Lesions with Histological Controls.
Captain H.H. Jasper, Mr. Ralph Notman and Mr. John Meyer.

The Presence and Action of Acetylcholine in the Cerebrospinal Fluid following Experimental Trauma of the Head.
Mr. Murray Bornstein.

Analysis of Changes in the Electrical Activity of the Brain produced by Experimental Trauma.
Captain H.H. Jasper and Mr. Murray Bornstein.

Studies of the Perineural Space.

Dr. Chen Chao-Jen and Dr. W.V. Cone.

Experimental and Clinical Studies of Aseptic Meningitis

Dr. Carlos Corona.

For the above studies there have been a total of 489 procedures carried out on experimental animals, and a number of additional experiments involving human subjects. The valuable technical assistance of Mr. George Peladeau and of Miss Eunice Murphy is gratefully acknowledged by all those working in this Department.

F. DEPARTMENT OF NEUROANATOMY

DR. F.L. McNAUGHTON, *Neuroanatomist*

The work of this Department has been curtailed during the past year because of the pressure of clinical duties, but a number of anatomical demonstrations and lectures have been arranged for students and internes and for two groups of graduates undergoing post-graduate training in anæsthesia.

The course in advanced neuroanatomy (brain modelling) had to be omitted this year but it is hoped that this can be given a larger group during the coming year.

A new laboratory is under construction and this will provide space and equipment for a programme of research and teaching.

G. DEPARTMENT OF SOCIAL SERVICE

(MRS) E. MCL. DAVIDSON, *Director, Social Service Department*

During the past year there has been a great increase in the volume of work. The large number of patients cared for in ward and clinic immediately reflected in the calls upon the department. In reporting briefly the highlights of the year we would remind you that Mrs. M.S. Lanthier as Director of the Social Service Department until May 15th, 1944, shared in the work accomplished and is responsible for the excellent foundation upon which the work is based.

On October 1st, of last year, a valued service which has for several years been limited to patients admitted to the public wards was extended to include all indoor patients, namely social admitting. Experience has proven that an interpretation of the costs of medical care which takes into account the social factors involved results in a fairer adjustment for both patient and hospital and often a saving in human and financial values. This would seem to apply particularly to the out of town patient, of whom we have so many, and to the patient whose illness results in a radical change in his way of life.

It was only by an increase in staff in the person of Miss Jean Stewart, an able and well-qualified medical social worker, that this extension of the work has been possible and that we have been able to give more continuous attention to the problems and needs of certain of our patients.

We have noted a growing utilization by the doctors of the social worker in areas in which she can be of service and have been particularly concerned for the group of patients most frequently referred, namely, the epileptic. Medical science has made great strides in the treatment of epilepsy but we have not kept pace in helping the epileptic patient adjust to his complex social problems.

Recognizing this, the social service department, under the leadership of the attending physicians, proposes to make a medical-social study of the epileptic patients under the care of the Institute. This study, we believe, will not only give us an understanding of our individual patient but indicate the extent of the epileptic problem in our community, provide facts with which to combat the ignorance and hopelessness too often surrounding epilepsy, reveal resources and lack of resources for the education, training, and employment of epileptics, form a basis for medical social research in other clinics, and may even be the means of stimulating interest and action in other sections of the country.

Mr. George Savoy recognized the value of such a study in selecting those among our patients most likely to profit by the training offered by the new school at St. Hilaire, and has made a most generous contribution. For the additional funds required for the project an application has been made to the Provincial Government.

Another development on which it is gratifying to report is the recent action of the Department of Veterans' Affairs in extending the service of its medical social department to the veterans who are patients in the Institute. We are glad for this recognition of the need for this service and proud to be the first civilian hospital to be granted this cooperation.

As always, a large share of the responsibility for the necessary help or opportunity for our patients has been met by community agencies. During the year no less than 60 health and welfare agencies have given a special service to one or more of our patients. Special appreciation is due to the Montreal Convalescent Hospital and the Julius Richardson Convalescent Home for their cooperation and for the care given our patients in these splendid institutions. It will be a glad day for those patients who are chronically ill when the community provides as adequate care for them. No problem is more pressing nor more deserving of our support than the current effort to arouse the community to the need. We would call to your attention the recent survey and excellent report on the chronically ill to which Mrs. Lanthier and Dr. McNaughton contributed so much.

Since September, 10 Royal Victoria College students have served in the department as volunteer clinical aids. Other equally helpful volunteers have been recruited through the Woman's Volunteer Services. To each we are deeply indebted for faithful and efficient service. But it is to the Institute family we are most grateful—for your unfailing helpfulness and understanding through a busy and happy year.

TEACHING

McGILL UNIVERSITY

DEPARTMENT OF NEUROLOGY AND NEUROSURGERY

<i>Professor of Neurology and Neurosurgery,</i> <i>Chairman of Department</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 Professors of Neurology</i>	{ DONALD MCEACHERN* FRANCIS L. MCNAUGHTON ARTHUR W. YOUNG
<i>Assistant Professor of Neurosurgery</i>	ARTHUR ELVIDGE
<i>Assistant Professor of Neurological Radiology</i>	ARTHUR CHILDE
<i>Assistant Professor of Neurophysiology</i>	HERBERT JASPER*
<i>Lecturers in Neurology</i>	{ JOHN KERSHMAN* W.D. ROSS* NORMAN VINER
<i>Lecturer in Neuropathology</i>	MURTON SHAVER
<i>Demonstrators in Neurosurgery</i>	{ GUY K. MORTON* O.W. STEWART*
<i>Demonstrator in Neurophysiology</i>	ANDRE CIPRIANI*
<i>Demonstrator in Neurosurgery</i>	ARTHUR A. WARD, JR. { CHEN, CHAO-JEN M. BORNSTEIN ERIC PETERSON*
<i>Research Fellows at Montreal Neurological Institute</i>	{ C. VILLAVICENCIO W. FEINDEL C. CORONA

The Department of Neurology and Neurosurgery cooperates intimately with the Departments of Medicine, Surgery, Pathology and Radiology in their regular teaching. Thus the teaching of neurology, neurosurgery, neuropathology and neurological radiology is carried out as part of the regular course planned by the Chairman of these other Departments.

FACULTY OF GRADUATE STUDIES AND RESEARCH

<i>Professor</i>	WILDER PENFIELD
<i>Associate Professor</i> <i>(In charge of Graduate Studies)</i>	WILLIAM CONE
<i>Assistant Professor</i>	{ K.A.C. ELLIOTT HERBERT JASPER* FRANCIS MCNAUGHTON ARTHUR ELVIDGE
<i>Lecturers</i>	{ DONALD MCEACHERN* A.E. CHILDE

* On military service

COURSES OF INSTRUCTION

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

Undergraduate teaching in Neurology and Neurosurgery is carried out in the third and fourth years of the medical course and consists of formal lectures, seminars, ward teaching, and case presentations to small groups in the outpatient department. Throughout the academic year a special elective course, with weekly lectures is given including Neuroanatomy, Electrophysiology, Biological Chemistry and Roentgenology.

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

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

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

REFRESHER COURSE IN NEUROLOGY FOR MEDICAL OFFICERS

The Department of Neurology and Neurosurgery has prepared a Refresher Course in Neurology for members of the Armed Services who have been discharged. The course is to be of six weeks duration. Not more than three men will be accepted every three weeks.

Three mornings a week, instruction will be given by Dr. Arthur Childe on interpretation of x-rays of the head and spine. Three mornings a week, Dr. Herbert Jasper will give instruction in the interpretation of electroencephalograms, and two mornings a week, there will be opportunity to study Neuroanatomy under the guidance of Dr. Francis McNaughton. Dr. K.A.C. Elliott will instruct in the chemical examination of the spinal fluid once a week.

Neurosurgical ward rounds will be held on Mondays, and Neurological ward rounds on Fridays.

Each afternoon will be devoted to work in the Outpatients' Department of the Montreal General Hospital, the Children's Memorial Hospital, and the Royal Victoria Hospital. Friday afternoon, following the Outpatient Department, ward rounds will be made in the Montreal General Hospital.

The evenings have been kept free to provide time for reading and study. The Fellows' Library, and the McGill Medical Library may be used for this purpose.

UNIVERSITY OF MONTREAL

FACULTY OF MEDICINE

<i>Professeur de Psychiatrie</i>	EMILE LEGRAND
<i>Professeur de Neurologie</i>	ANTONIO BARBEAU
<i>Professeurs agrégés de Neurologie</i>	ROMA AMYOT
	JEAN SAUCIER

THE FELLOWS' SOCIETY

WM. FEINDEL, *Chairman*

The meetings of the research fellows and clinical internes have, during the past year, proved valuable chiefly as a medium for teaching purposes, particularly for the officers posted from the Services for short-term undergraduate courses in the Institute. The members of the Senior Staff have been most generous in contributing their time for this program and in the course of the year gave review lectures and discussions on most of the common neurosurgical and neurological problems. The usual presentations by the Fellows have been restricted both by the increased clinical activities and because of the confidential nature of the research being carried on at the present time.

Among visiting speakers were Dr. Franc Ingraham and Dr. Orville Bailey who discussed the use of human fibrinogen in neurosurgery. Dr. Theodore Erickson presented some problems of the scalenus anticus syndrome. Lt. Col. H. Botterell gave an interesting review of war neurosurgery and of some aspects of the activities at No. 1. Neurological Unit, Basingstoke, England.

The 9th floor still remains as a nucleus for a post-war Fellows' Society and continues to cater to those who subscribe to its humble fare, while more recently it has been the source of harmonious strains from the newly organized Neurosurgical Singers. The walls of the kitchen have been brightened recently by the addition of a silk-screen reproduction of Thoreau MacDonald's "Wild Geese," which was presented by Dr. and Mrs. Penfield.

FELLOWS' LIBRARY

DR. F.L. McNAUGHTON, *Acting Librarian*

During the past year the Library has expanded by the addition of 115 feet of new shelves, which were very much needed. The Library lighting system has also been improved. Twenty-five new books have been acquired.

With the expansion of the Department of Biochemistry, four new chemical journals have been added to our list and other books acquired to form the nucleus of a departmental library in Biochemistry. In the same way a departmental library for the Social Service Department is being built up including three social work journals. In this manner, the scope of the Fellows' Library is enlarging in several different directions for the benefit of a number of specialized departments. All these books and journals are indexed in the Fellows' Library.

As in the past, new acquisitions are indexed in the Medical Library, McGill University, and are available on request to members of the Library. Through the Medical Library we have been able to meet requests received from different parts of Canada.

THE MONTREAL NEUROLOGICAL SOCIETY

OFFICERS FOR 1945-46

Chairman DR. F.H. MACKAY
 Vice-Chairman DR. H.H. JASPER
 Secretary-Treasurer DR. F.L. McNAUGHTON

The Society has maintained its policy of weekly meetings throughout the period from October to May—and the interest in these meetings, as shown by the attendance of members, students and visitors, would seem to justify the continuation of this policy, in spite of wartime demands elsewhere. As in past years, clinical meetings have been planned as far as possible to alternate with scientific presentations by local speakers and invited guests from other centres, and a varied range of subjects related to neurology and neurosurgery has been discussed.

One feature of the past year's program has been the number of joint meetings held with other Sections of the Montreal Medico-Chirurgical Society. Five such meetings have been held with the Psychiatric Section, one with the Pædiatric Section, and one with the Montreal Ophthalmological Society. Clinical meetings have been held at the Montreal Neurological Institute, the Montreal General Hospital, Hotel-Dieu, and Notre Dame Hospital for discussion of cases.

The following is a list of scientific meetings held during the 1944-45 period :

- | | |
|--|---|
| "Post Discharge Problems in the Neuropsychiatric Group." An analysis of 500 Recent Discharges from the Canadian Army | DR. W.O. GLIDDEN,
<i>Dept. Veterans' Affairs,
 Ottawa.</i> |
| "Plasma Clot Suture of Nerves" | DR. I.M. TARLOV,
<i>Brooklyn.</i> |
| "Studies and Speculations on Brain Metabolism" | DR. K.A.C. ELLIOTT,
<i>Montreal Neurological
 Institute.</i> |
| "Subdural Hematoma in Infancy" | DR. FRANC INGRAHAM &
DR. ORVILLE BAILEY,
<i>Boston.</i> |
| "The Stress Tolerance Test—An objective measure of recovery in cases of operational fatigue" | DR. M. HARROWER-
ERICKSON,
<i>Madison, Wisconsin.</i> |
| "Erotomania as an Expression of Cortical Epileptiform Discharge" | DR. T.C. ERICKSON,
<i>Madison, Wisconsin.</i> |
| "New Methods of Examination for Peripheral Nerve Lesions" | CAPT. H.H. JASPER &
SURG.LT.CMDR. J.P.ROBB
<i>Montreal Neurological
 Institute.</i> |
| "The Treatment of Certain Chronic Behaviour Disorders by Convectomy as a Substitute for Lobotomy" | DR. W.G. PENFIELD,
DR. D.E. CAMERON,
DR. M. PRADOS. |

“Discussion of Neuroanatomical and Neuro-physiological Implications of Frontal Removals”	DR. W.G. PENFIELD,
Operative Treatment of Otosclerosis”	DR. W.J. McNALLY, <i>Montreal</i>
“Brain Injury ; Pathological and Clinical Observations”	DR. JOSEPH P. EVANS, <i>Dept. of Surgery, University of Cincinnati</i>
“Management of Nerve Injuries in the Late Stages”	DR. FRANK TURNBULL, <i>Vancouver.</i>
“Changes with Age in the Spinal Cord”	LT. COL. A.A. BAILEY, <i>R.C.A.M.C., Montreal</i>

CLINICAL SERVICES AND FELLOWSHIPS

An internship of eighteen months' duration is available on January 1st, and July 1st. The internes live in the Royal Victoria Hospital and have their meals there. Ordinarily the appointment consists of six months' service in neurology, six months in neurosurgery, and six months as senior interne in neurosurgery. Modifications in this routine are made, however, from time to time.

The appointment of neurological and neurosurgical Resident is of two years' duration. No candidates are considered unless they have had previous work in 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 and surgical specimens, under the supervision of the Neuropathologist.

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 appointments must have demonstrated the fact that they are capable of independent work.

There is an 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 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.

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.

Applicants for clinical services should have a speaking knowledge of the French language or should study it while awaiting their appointments. The City of Montreal and the Province of Quebec have a French speaking majority and many of our patients speak only that language. In our desire to render the best service possible to them we make every effort to have a bilingual staff.

DIPLOMA IN NEUROLOGY

In order to qualify for the diploma in Neurology, the candidate must complete the following units, A, B, C, D, E, and F, which require a minimum of three academic years. His prerequisite training must include graduation in medicine from a recognized university and a year's internship in medicine in a recognized hospital.

A.—One academic year of work in a basic science which leads successfully to the degree of *Master of Science* in the Graduate Faculty of McGill University. This basic science must be in a related field, such as neuropathology, neurophysiology, neuroanatomy, biochemistry. The work may be carried out as arranged either in the Department of Neurology and Neurosurgery or in some other department at McGill University. The project must receive approval from the head of the Department of Neurology and Neurosurgery in the Graduate Faculty.

B.—Six months in *psychiatry* in the Department of Psychiatry at McGill University. (Note : Under special circumstances the candidate may substitute six months in the Department of Psychiatry in some other accredited hospital or university).

C.—Six months in *neurosurgery* at the Montreal Neurological Institute. (Note : Under special circumstances a candidate may substitute neurosurgical training received in the neurosurgical department of some other accredited hospital or university).

D.—One year of service in *clinical neurology* at the Montreal Neurological Institute, including work in neuroanatomy.

E.—A three month period during which the candidate will devote his mornings to x-ray and electroencephalography and his afternoons to work in out-patient clinics at the Montreal General, the Royal Victoria and the Children's Memorial Hospitals. He will also carry out the commoner biochemical tests in use in clinical studies of the nervous system. In case the candidate has had extended experience in any of these subjects, this quarter may be altered according to his qualifications.

F.—*Oral Clinical Examination* :

Before receiving the diploma, the candidate must be prepared to pass an oral examination in clinical neurology and neurosurgery, the examiners to be one internal and one external.

DIPLOMA IN NEUROSURGERY

In order to qualify for the diploma in Neurosurgery, a candidate must complete the units A, B, C, D, and E, described below, which require a minimum of four academic years. The prerequisite training of a candidate must be as follows : He must be a graduate in medicine of a recognized university. He must have had a satisfactory internship of at least one year in general surgery. The candidate may then complete the units to be described below without regard to the order in which these units are completed.

A.*—One academic year of work in a basic science which leads successfully to the degree of *Master of Science* in the Graduate Faculty of McGill University. This basic science must be in a related field, such as neuropathology, neurophysi-

ology, neuroanatomy, biochemistry, together with the usual required minor courses. The work may be carried out as arranged either in the Department of Neurology and Neurosurgery or in some other department at McGill University. The project must receive approval from the head of the Department of Neurology and Neurosurgery in the Graduate Faculty.

B.—Six months in *clinical neurology* at the Neurological Institute. (Note : Under special circumstances, credit for six months of clinical neurology in some other accredited hospital or university department of Neurology may be accepted).

C.*—Six months special work in a *related field*, such as neurophysiology, neuroanatomy, neuropathology, biochemistry, endocrinology, metabolism, or psychiatry, acceptable to the Professor of Neurology and Neurosurgery.

D.—Two years in *clinical neurosurgery* at the Montreal Neurological Institute.

E.—*Oral clinical examination* :

Before receiving the diploma, the candidate must successfully pass a final oral examination on clinical neurology and neurosurgery to be conducted by an internal and an external examiner.

* Either unit A or unit B must be carried out in the Department of Neuropathology at the Montreal Neurological Institute.

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 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 function 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 public ward rate, 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. 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 a 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.

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 the endowment given by the Rockefeller Foundation.

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

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. There is a need for at least two such endowed beds in the public wards.

C.—Research Fellowships. The sum 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, \$400.00 a many-volume handbook of neurology and \$900.00 the back file of a neurological journal.

FORM OF DONATION

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

DONATIONS

From Mrs. Hobart Springle, Oka, Que. :
 For the Hobart Anderdon Springle Research Fund \$ 800.00
Anonymous :
 For the Margaret Gordon Neurosurgical Fund \$2,500.00
*Anonymous donation through Mr. Atkin of the Maple Leaf
 Division, British War Relief Society \$ 442.20*

Maple Leaf Fund

From the British War Relief Society (Maple Leaf Division)
 July. 1944, Packard Ambulance \$4,700
 Sept. 1944, \$20,300
 Oct. 1944, 12,500

Dec.	1944,	5,000
Jan.	1945,	7,000
Mar.	1945,	12,500

\$57,800
in United States Funds

TOTAL Canadian Funds \$63,580.00

<i>From Mr. George Savoy,</i>	
For the Epilepsy Fund	1,000.00
<i>From Mr. E.J. McGuire,</i>	
For the Epilepsy Fund	50.00
<i>From Mr. George Savoy,</i>	
For the Social Service Fund	50.00
<i>From Miss Susan Goodchild,</i>	
For the Social Service Fund	50.00
<i>Anonymous,</i>	
For the Social Service Fund	7.50
<i>From Mrs Rebecca Brodsky,</i>	
For the Social Service Fund	25.00
These gifts have been designated for the purchase of a wheel chair.	
<i>In His Name Society,</i>	
For the purchase of dentures for patient	18.00
<i>Montreal Lions Club,</i>	
For the purchase of an accordeon for a crippled patient	93.60

CLASSIFICATION OF DISEASES

Nervous System Generally:

Neurosyphilis	38
Multiple sclerosis	52
Motor Neurone Disease	10
Myasthenia Gravis	3
Friedreich's ataxia	1
Encephalomyeloradiculitis	4

Meninges:

Meningocele or Myelomeningocele	22
Chronic adhesive arachnoiditis	4
Acute purulent meningitis	7
Meningitis, other types	12
Benign lymphocytic choriomeningitis	3
Meningoencephalitis	2
Extradural abscess	1
Spontaneous subarachnoid hemorrhage	14
Traumatic meningeal hemorrhage	25
Subdural effusion	7
Post-traumatic headache	16
Other headaches	22

Brain:

Congenital anomalies	7
Hydrocephalus	22
Birth injury of the Brain	7
Brain Abscess	13
Cerebral concussion	67
Cerebral contusion and/or laceration	49
Meningocerebral or cerebral cicatrix	3
Cyst of the brain	2
Epilepsy	155
Migraine	14
Narcolepsy	2
Chronic encephalopathy	8
Bulbar Palsy	0
Paralysis agitans	5
Cerebral arteriosclerosis	13
Cerebral hemorrhage, thrombosis or embolism	60
Intracranial aneurysm	7
Intracranial calcification	2
Porencephaly	1
Cerebral atrophy	24
Encephalitis	3

Tumours of the Nervous System:

Blood Vessel tumour	7
Glioma	64
Perineurial fibroblastoma	11
Meningeal fibroblastoma	19
Sarcoma	5
Pituitary adenoma	9

Carcinoma	11
Craniopharyngioma	4
Tuberculoma	4
Neurofibromatosis	4
Cholesteatoma	2
Miscellaneous tumour	30
Unclassified tumour	7
Unverified tumour and tumour suspect	8
<i>Spinal Cord :</i>	
Motor neuronitis	1
Chronic myelopathy	3
Dorsal lateral sclerosis	3
Compression of the spinal cord	13
Concussion, contusion or laceration of the cord	3
Vascular lesion of the cord	1
Syringomyelia	6
<i>Cranial and Peripheral Nerves :</i>	
Lesions of the optic nerves	7
Trigeminal neuralgia	38
Peripheral facial palsy	5
Nerve deafness	1
Meniere's syndrome	8
Lesions of the brachial plexus and branches	11
Lesions of the lumbosacral plexus or branches	6
Multiple neuritis	4
Other neuralgias	3
Traumatic peripheral nerve lesions	18
Raynaud's disease	2
<i>Mental Diseases :</i>	
Mental deficiency	4
Alcohol or drug addiction	10
Psychoneurosis	85
Manic-depressive psychosis	6
Schizophrenia	8
Miscellaneous	12
<i>Other Systems and Miscellaneous :</i>	
Spina bifida and cranium bifidum	8
Tumours of the skull	7
Herniation of the intervertebral disc	258
Fracture of the skull	144
Fracture and/or dislocation of the vertebral column	43
Gun-shot wound of the head	7
Other fractures and dislocations	20
Gun-shot wound of the spine	2
Lacerations, contusions, abrasions and/or hematomas	33
Carcinoma and Sarcoma	8
<i>Diseases of the Body as a whole :</i>	
Diseases of the cardiovascular system	48
Diseases of the respiratory system	13
Diseases of the gastrointestinal system	2
Diseases of the genito-urinary system	2
Diseases of the hematopoietic system	6
Diseases of the endocrine system	19
Diseases of the locomotor and integumentary system	33
Diseases of the eyes, ears, nose and throat	37
Low-back pain	47
Osteomyelitis of the skull	4
Causalgia	1
Miscellaneous	31

CLASSIFICATION OF OPERATIONS

Craniotomy, miscellaneous	21
" Decompression	2
" Removal of tumour	117
" Removal of focus	18
" Drainage intracerebral cyst	4
" Evacuation intracerebral haemorrhage	7
" Excision of cicatrix	7
" Drainage of abscess	15
" Rhizotomy	16
" Removal of subdural haematoma	11
" Removal of epidural haematoma	6
" Separation of adhesions	2
" Convolectomy	2
Craniectomy	3
Torkildsen procedures	5
Laminectomy, miscellaneous	16
" antero-lateral cordotomy	7
" Removal of tumour	20
" Rhizotomy	6
" Removal of herniated disc	215
Spinal fusions	13
Application of traction tongs for skull traction	11
Repair of spina bifida	17
Plastic repair skull defects, Tantalum	12
Plastic repair skull defects, Bone	1
Trepanation, miscellaneous	63
" sub-dural insufflation	7
" Drainage sub-dural space	4
" Drainage sub-dural haematoma	6
Cerebral arteriography	2
Elevation depressed skull fracture	27
Debridement and suture lacerated wound	22
Exploration of nerve, removal neuroma and nerve suture	8
Neurolysis, neurectomy	7
Sympathectomy and ganglionectomy	29
Removal exploration bone flap	11
Miscellaneous	124
TOTAL CASES	864

PUBLICATIONS

1944

MURRAY BORNSTEIN :

Cerebrospinal Fluid Pressure under Conditions Existing at Altitude. Arch. Neurol. & Psychiat. 52 : 400-408, November, 1944. (with Eric Peterson and Herbert Jasper).

DR. ARTHUR E. CHILDE :

The Role of X-Ray in the Study of Local Atrophic Lesions of the Brain. Am. J. Psychiat. 101 : 30-35, July, 1944 (with Wilder Penfield).

DR. WILLIAM V. CONE :

Intracranial Pressure in the Human Subject at Altitude. Arch. Neurol. & Psychiat. 52 : 520-525, December, 1944. (with Eric Peterson and S/L. Basil Kent).

DR. ARTHUR ELVIDGE :

Treatment of Multiple Fractures of the Facial Bones with an extended Pin Fixation Splint. McGill Medical Journal, XIII, 469-475, 1944. (with Hamilton Baxter).

WILLIAM H. FEINDEL :

Notes on the Development of Hemostasis in Neurosurgery. McGill Medical Journal. XIII, 385-401, December, 1944.

CAPT. HERBERT H. JASPER :

Cerebrospinal Fluid Pressure under Conditions Existing at Altitude. Arch. Neurol. & Psychiat. 52 : 400-408, November, 1944. (with Eric Peterson and Murray Bornstein).

DR. FRANCIS McNAUGHTON :

Head Injury : A Study of Patients with Chronic Post-Traumatic Complaints. Arch. Neurol. & Psychiat. 52 : 255-269, October, 1944. (with W.D. Ross).

DR. WILDER PENFIELD :

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