

MONTREAL NEUROLOGICAL INSTITUTE

ANNUAL REPORTS

TWELFTH TO SEVENTEENTH

1946-47 - 1951-52

MONTREAL NEUROLOGICAL
INSTITUTE



McGILL UNIVERSITY
TWELFTH ANNUAL REPORT

1946-47

To

DR. F. CYRIL JAMES,

PRINCIPAL AND VICE-CHANCELLOR,

MCGILL UNIVERSITY,

MONTREAL.

Sir,

On behalf of the Executive Committee I have the honour to submit the twelfth annual report of the Montreal Neurological Institute. It includes a summary of the clinical work for the calendar year of 1946, together with the scientific and research record for the academic year of 1946-47, and the list of professional staff at the close of the academic year.

Respectfully submitted,

J. PRESTON ROBB, M.D.,

Secretary-Registrar.

*Executive Committee of the Montreal Neurological Institute:
Wilder Penfield, Chairman, W V Cone, A. R. Elvidge, H. H.
Jasper, J. Kershman, F. H. Mackay, D. S. McEachern, F. L.
McNaughton, Donald McRae, J. P. Robb, A. W. Young.*

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REPORT OF DIRECTOR

We face today a crisis in the affairs of the Montreal Neurological Institute. Twelve years it has been growing in this friendly, cosmopolitan, bilingual city; twelve good years filled with clinical triumphs and tragic failures, years of scientific study and of training a new and better generation of specialists. It is fair to say that this Canadian institute has come of age, has achieved international recognition.

But a year ago at the annual meeting it was pointed out that an impasse had been reached. The financial impetus given to the Neurological Institute initially through the organizing ability of Charles Martin, and by the generosity of the Rockefeller Foundation, the Province of Quebec, the City of Montreal, and generous citizens — McConnell, Holt, Reford, Hodgson, Duggan, Stewart — had spent itself. Rising costs and falling income from endowment had created a financial barrier which we of ourselves could never pass in spite of the ever increasing demands upon us from the sick and the suffering.

For a year we have carried on in spite of the threatening situation, with more patients than ever in the wards, the laboratories filled with keen fellows, graduates from many lands. But all the while we have been piling up an intolerable hospitalization deficit and eking out our scientific budget with piecemeal donations.

Obviously this cannot go on. We have no Board of Governors like most charitable institutions. It is true that I am making this report to the Principal of McGill University, but I know that the University cannot undertake financial responsibility for care of the sick, and I am aware that it has never found it possible to contribute from general funds to our scientific work. This Institute plays an academic role in the life of McGill University, and it has on its staff representatives of the University of Montreal, but, from a financial point of view, it must stand or fall according to the favour it may find in the eyes of the public. Therefore, I make this report through the University to the Canadian public, though realizing full well that my statement may never reach the ear of Canadians, or that, hearing, they may not heed. Nevertheless, here it is, and in brief:

A clinical institute is part hospital for care and treatment of patients and part laboratories devoted to scientific work upon the problems presented by these patients. Our hospitalization budget and our scientific budget are entirely separate.

HOSPITALIZATION SUPPORT

From the beginning of this Institute, hospitalization deficits have been met by fixed annual grants from the Province of Quebec and the City of Montreal. During the past two years this has become alarmingly inadequate. This year the remaining deficit will amount to \$ 56,000.00

Beyond that we are faced with the necessity of building a wing, to relieve the dangerous congestion in the non-fireproof portion of the Institute, at a cost of 800,000.00

and the accumulated clinical deficit is already 95,000.00

Province. To meet this situation, application has been made to the Province through the Minister of Health, Dr. Paquette. Furthermore, the Premier, Mr. Duplessis, has himself discussed the whole situation with us in a most sympathetic manner. But, up to the present no reply to the appeal has been received.

City. Application was made to the Executive Committee of the City Council, under the chairmanship of Mr. Asselin, and the whole situation explained to them. I have now received word from the Council through Mr. George Marler, and am permitted to announce, that the annual grant of \$15,000.00 will be raised to \$35,000.00 this year without promise as to the future. This is most welcome news, as far as it goes.

SCIENTIFIC SUPPORT

Our original scientific support came from the Rockefeller Foundation. They granted us \$50,000 a year for a few years and then made an endowment gift of \$1,000,000, the annual income from which has fallen progressively to \$35,000. Effective work in laboratories such as ours today demands a budget of more than twice that amount.

I may say at once that I have explored the possibility of further help from the Rockefeller Foundation by consultation with the Secretary of the Medical Sciences Division of that Foundation regarding our present dilemma. He pointed out to me that it is their policy to make major grants, such as ours was, to institutions which seem likely to earn local approval and local support for their continued life. It became obvious during our discussion that a second approach to the Foundation would be doomed to failure and also that such an application would be considered an acknowledgement that we had failed to achieve a success sufficient to satisfy Canadians.

Thus, it seemed necessary to turn to the Federal Government for help. We have not asked them for assistance in the care of the sick nor for the support of teaching. But we have asked for help to promote scientific development and research in the least understood department of medicine and in an institute whose work, I trust, may be looked upon as of national importance.

There are precedents for such action in many other countries. Even from the present Government of Spain, the Cajal Neurological Institute of Madrid is receiving an annual scientific budget of \$100,000. Ours is the only institute of its kind in Canada. In Great Britain the University Grants Committee of His Majesty's Treasury has been subsidizing university groups for over twenty years.

In the United States, President Roosevelt wrote shortly before his death to the Director of the Office of Scientific Research and Development of that country asking what his Government should do to aid "the war of science against disease" and the various scientific research activities in that country. His letter* ended as follows:

"New frontiers of the mind are before us and if they are pioneered with the same vision, boldness and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life."

*Science the Endless Frontier. Report to the President on a Program for Postwar Scientific Research, by Vannevar Bush, U.S. Government Printing Office: 1945.

In Canada, the Federal Government created the National Research Council in Ottawa following the last war. Through this Council money has been given to research projects in universities throughout Canada, and this became an important stimulus to investigations, some of them of a secret nature, during the war.

But the National Research Council is limited to the award of grants-in-aid of a specific research project. Except by giving fellowships, it can do nothing to support or to develop groups of men in university departments and institutes who are capable of undertaking such projects.

There must exist within the country men capable of spending grants-in-aid wisely and laboratories equipped for such purposes. Otherwise grants for specific research will ever be fruitless.

THE CANADIAN PUBLIC

It is appropriate now to examine the question as to how far this Institute deserves help from the public. Its attempt to treat the most difficult types of illness among the people of this City, Province and Country, and to lead in research and the training of specialists may be described under the headings of war and peace.

War. In 1941, while Britain alone stood in the path of the enemy, we conceived the idea of enlisting our laboratories in research-combat so as to make it a sort of total war for the Montreal Neurological Institute. Every problem of military medicine, broadly interpreted, that we could approach, with the guidance of the National Research Council or without it, was studied: fatigue in bomber crews, neurosis, healing of wounds, formation of adhesions, prevention of epilepsy from brain injury, treatment of headache following head injury, brain swelling, burns, ruptured discs, meningitis.

Seasickness in landing barges and aircraft seemed important. Consequently, hundreds of sailors, soldiers and hardy volunteers were swung in swings erected in the nearby Field House, or were rolled and tossed in a giant seasickness cradle that was built in the Institute squash court. This cradle was christened "H.M.S. Mal de Mer" and those poor fellows who succumbed to her undulating movement were given the inestimable privilege of returning again and again while one secret remedy after another was administered to them. Eventually with the cooperative assistance of another group working in the Banting Institute in Toronto, a remedy was found which would protect between 70 and 80 percent of the subjects against motion sickness.

A centrifuge was built, in the electroencephalographic laboratory, and in it monkeys were put through accelerations similar to those of fighter pilots. When the little beasts blacked out temporarily, secrets of scientific interest and of some practical importance to the R.A.F. and the R.C.A.F. were discovered.

Tantalum was used for the first time in our laboratories as a plate to fill skull windows. In a decompression chamber, the dangers and limits of air transportation of the wounded were studied, and our patients volunteered to be

placed in the chamber to demonstrate what was safe for Canadian comrades abroad.

After three years of this, in the spring of 1944, we concluded that the time for research except in the more practical aspects of clinical surgery had passed. At that time when the world was waiting fearfully for the dawn of the day of great battles, we realized that this building, with its wards, corridors and approaches full of beds, would not allow us to meet the increased demand that would yet be made of us. The census passed 100, more than doubling our stated capacity. There was an urgent press of "life-and-death" cases from other hospitals and from munition factories. Service patients were being flown here from great distances in this country, and yet the anticipated flow of wounded from overseas had not begun.

Finally, the Department of National Defence — Army — came to the rescue. Between D day and V-E day in 1945 they built an annex for 27 military beds and provided in it other rooms which allowed this institution to draw a long breath. But the Annex did not finally solve our problems. The real difficulty lay in the fact that patients waited on the wards days and weeks for their turn to pass through the operating and x-ray rooms, and the electroencephalographic laboratory. Increase in hospital population had done little to speed up our "turnover" and "output" because of these internal "bottle necks".

Help then came from an unexpected source. The Maple Leaf Division of the British War Relief Fund in New York City sent us \$100,000. To this McGill added \$80,000, and thus the vital internal alterations were made and the total output of clinical work soon reached a new level of speed and efficiency, to meet the peak load of war casualties.

All this is National Defence, although it wears no uniform. It is defence in the democratic pattern. In general it may be said that the value of such cooperation to a nation depends upon the type of institutions that nation supports.

Peace. And now the Institute faces its own peculiar problems: a) the necessity of replacing this temporary annex by a permanent structure; b) the call for other building changes to accomodate the irreversible features of our growth; c) the increasing inadequacy of scientific support; and finally, d) the menacing spectre of a rapidly mounting clinical deficit. All these problems must be solved if we are to deal with the problems of peace.

We live in a society of free enterprise. In it men may work without interference for causes that seem to them important. They may work singly or, in order to be more effective, they may band together in institutions to seek the solution of unsolved problems for the good of their fellow men. Such a group founded this Institute.

An institute is a place for fundamental research in a restricted field. But a clinical institute must combine research on the one hand with the care and treatment of sufferers in that field on the other. Nowhere in the biological field is the need so great as in neurology, for there is no department in which ignorance can be so profound. There are millions of living cells in the nervous system, sending millions of messages along miraculously insulated nerve fibres. This permits the neurologists to exceed all other specialists in the breath

and the depth of his ignorance! Nevertheless, it may well be that in this same field will come the solution of many of man's social as well as physical problems.

The Montreal Neurological Institute has an equipment for its work that is second to none. It has a staff with special training for the care and treatment of the sick and for fundamental research. More important than that there is in this institution a spirit, a morale that unites doctors, nurses and social workers, secretaries and technicians into an effective team.

It is their unfailing loyalty to the ideal of service as well as the intellectual distinction of individuals that is responsible for such contribution as we may have made to science and to society. Whatever the future may hold for us I express to them my gratitude and the gratitude of the chiefs of each department whose reports follow this one.

In conclusion it is obvious that the future, indeed the very existence of this institute hangs in the balance. Ten years of active directorship remain to me (God willing) under the University statutes and I would ask no better fate, provided this Institute is to fulfill a reasonable destiny. But for the purposes of retrenchment, should that become necessary, a new director would have to be found.

If, in order to achieve all of our essential objectives it should seem wise to launch a campaign, it will be a national campaign conducted with vigour among such friends as we may have. With this possibility in mind we allowed press photographers to enter the Institute last winter in order to picture to the public our routine activities.

This may have brought censure upon us in some quarters. But it also brought to the Institute a surprising number of unsolicited letters. One of them was signed by a woman whose maiden name was English and whose married name was French. It enclosed a small contribution from her husband and herself and from each of three grandchildren.

"I have heard of you from time to time", she wrote, "of your wonderful work. After seeing (the paper) yesterday; I feel, although we are only poor working class people; God himself will bless the little we give willingly."

This report is intended to state a question that may be summed up as follows: Has the Montreal Neurological Institute a permanent place in this city, this province, this country? The answer to that question must come from the public.

WILDER PENFIELD,

*Director and Professor of
Neurology and Neurosurgery.*



Back Row: F. H. O'BRIEN, A. CONDE, D. DALY, D. B. TOWER, M. BORNSTEIN, R. RABINOVITCH,
 T. J. SPEAKMAN, N. SLOAN, J. I. BATES, J. CHANDY, W. K. WELCH, F. C. PALMA.
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Honorary Neurologists

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

Chief of Neurological Service

DONALD McEACHERN, M.D.

Associate Neurologists

JOHN KERSHMAN, B.Sc., M.D., C.M., M.Sc.
FRANCIS McNAUGHTON, B.A., M.Sc., M.D., C.M.
PRESTON ROBB, B.Sc., M.D., C.M., M.Sc.
ARTHUR 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

ALLAN BAILEY, M.D., M.S.
WILLIAM GIBSON, B.A., M.Sc., Ph.D., M.D., C.M.

Chief of Neurosurgical Service

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Associate Neurosurgeons

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KEASLEY WELCH, B.S., M.D.

Roentgenologist

DONALD McRAE, M.D.

Assistant Roentgenologists

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DELBERT WOLLIN, M.D.

Consulting Roentgenologist

CARLETON PEIRCE, 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.

Senior E.E.G. Fellow

DAVID DALY, B.A., B.S., B.M., M.D.

Junior E.E.G. Fellow

JOHN HUNTER, M.B., B.S.

Anaesthetist

RONALD STEPHEN, B.Sc., M.D., C.M., D.A.



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Director of Social Service
ELABEL McL. DAVIDSON

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<i>Resident Neurologist</i>	BERNARD GRAHAM
<i>First Ass't. Resident</i>	
<i>Neurosurgeon</i>	FRANK O'BRIEN
<i>Second Ass't Resident</i>	
<i>Neurosurgeon</i>	ERIC PETERSON
<i>Interne in Neurosurgery</i> (1)	JACOB CHANDY, MAITLAND BALDWIN
(2)	LAMAR ROBERTS
(3)	JOHN HUNTER, CHARLES CURE
(4)	WILLIAM FRAZIER, RICHARD MURPHY, WILLIAM GIBSON
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<i>Externe in Neurology</i>	KELVIN FLEMING

*Assistant Resident on rotation from Medicine, Royal Victoria Hospital.

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<i>Night Supervisor</i>	MISS ELIZABETH BARROWMAN, R.N.
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<i>Operating Room Supervisor</i>	MISS ELIZABETH MACRAE, R.N.
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Secretary-Registrar PRESTON ROBB
Executive Assistant JOHN KERSHMAN
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Secretary to the Director MISS ANNE DAWSON

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MISS HELEN CALLENDER, X-ray
MISS BETTY CHAMBERS, X-ray
LEM DIAMOND, Electroencephalography
MISS SHIRLEY FYLES, Electroencephalography
LESLIE GEDDES, Electroencephalography
JOHN GILBERT, Neuropathology
MISS BETH GOURLEY, Neurochemistry
LEWIS HENDERSON, Electroencephalography
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Electroencephalography
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Fellow in Neuropathology KEASLEY WELCH
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Research Neurochemist K. A. C. ELLIOTT
Neurophysiologist HERBERT JASPER
Associate Neurophysiologist BORIS BABKIN
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RESEARCH FELLOWS OF
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LI CHOH-LUH, M.D. (Shanghai)	KEASLEY WELCH, B.S., M.D. (Yale)

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Associate Professor of Neurosurgery.....	WILLIAM CONE
Clinical Professor of Neurology	F. H. MACKAY
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	DONALD MCEACHERN
	FRANCIS MCNAUGHTON
	ARTHUR YOUNG
Assistant Professor of Neurosurgery	ARTHUR ELVIDGE
Assistant Professor of Neurological Radiology.....	DONALD MCRAE
Assistant Professor of Neurophysiology.....	HERBERT JASPER
Lecturer in Neurology.....	JOHN KERSHMAN
Lecturer in Neurosurgery	THEODORE RASMUSSEN
Demonstrators in Neurology.....	ALLAN BAILEY
	PRESTON ROBB
Demonstrators in Neurosurgery.....	HAROLD ELLIOTT
	HARRY STEELMAN
	O. W. STEWART
Demonstrator in Neuropathology.....	KEASLEY WELCH

B. *Faculty of Medecine of the University of Montreal.*

Professeur de Psychiatrie	EMILE LEGRAND
Professeur de Neurologie	ANTONIO BARBEAU
Professeurs Agrégés de Neurologie	ROMA AMYOT
	JEAN SAUCIER

C. *Department of Neurology and Neurosurgery, McGill University Faculty of Graduate Studies and Research.*

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Associate Professor (in charge of graduate studies)	WILLIAM CONE
Assistant Professors	K. A. C. ELLIOTT
	FRANCIS MCNAUGHTON
	DONALD MCEACHERN
	HERBERT JASPER

GENERAL HOSPITALS OF MONTREAL
BY MEMBERS OF STAFF

ROYAL VICTORIA HOSPITAL

<i>Neurologist and Neurosurgeon-in-Chief</i>	WILDER PENFIELD
<i>Neurologist</i>	DONALD McEACHERN
<i>Neurosurgeon</i>	WILLIAM CONE
<i>Associate Neurologists</i>	FRANCIS McNAUGHTON
	ARTHUR YOUNG
<i>Electroencephalographer</i>	HERBERT JASPER
<i>Associate Neurosurgeon</i>	ARTHUR ELVIDGE
<i>Clinical Assistant in Neurosurgery</i>	THEODORE RASMUSSEN
<i>Clinical Assistants in Neurology</i>	JOHN KERSHMAN
	PRESTON ROBB

MONTREAL GENERAL HOSPITAL

<i>Neurologist</i>	FRED H. MACKAY
<i>Associate Neurologists</i>	ALLAN BAILEY
	FRANCIS McNAUGHTON
	NORMAN VINER
<i>Associate Neurosurgeon</i>	ARTHUR ELVIDGE
<i>Assistant Neurologist</i>	PRESTON ROBB
<i>Clinical Assistant in Neurosurgery</i>	HAROLD ELLIOTT

HOTEL DIEU

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

HOPITAL NOTRE DAME

<i>Neurologist-in-Chief</i>	ROMA AMYOT
<i>Assistant Neurologist</i>	JEAN SAUCIER

ST. MARY'S HOSPITAL

<i>Consultant in Neurology</i>	ARTHUR YOUNG
<i>Consultant in Neurosurgery</i>	ARTHUR ELVIDGE

JEWISH GENERAL HOSPITAL

<i>Chief of Department of Neuropsychiatry</i>	JOHN KERSHMAN
<i>Consultants</i>	WILDER PENFIELD
	NORMAN VINER

HERBERT REDDY MEMORIAL HOSPITAL

<i>Consulting Neurologist</i>	FRED H. MACKAY
<i>Consulting Neurosurgeon</i>	ARTHUR R. ELVIDGE
<i>Attending Neurologist</i>	JOHN KERSHMAN

VERDUN PROTESTANT HOSPITAL

<i>Neurosurgery Consultant</i>	WILDER PENFIELD
<i>Neurosurgery Associate</i>	ARTHUR R. ELVIDGE

CHILDREN'S MEMORIAL HOSPITAL

<i>Honorary Consultants</i>	FRED H. MACKAY
	COLIN RUSSEL
<i>Consultant</i>	WILDER PENFIELD
<i>Neurologist</i>	ARTHUR W. YOUNG
<i>Associate Neurologist</i>	FRANCIS L. MCNAUGHTON
<i>Neurosurgeon</i>	WILLIAM V. CONE
<i>Associate Neurosurgeon</i>	ARTHUR R. ELVIDGE
<i>Clinical Assistants</i>	ALLAN BAILEY
	PRESTON ROBB
<i>Radiologist-in-Chief</i>	DONALD MCRAE
<i>Assistant Radiologists</i>	MALCOLM LEVER
	DELBERT WOLLIN

QUEEN MARY VETERANS' HOSPITAL

<i>Chief Consultant of Neurology and Neurosurgery</i>	WILDER PENFIELD
<i>Consultant</i>	WILLIAM CONE
<i>Consultant</i>	ARTHUR ELVIDGE
<i>Director of Neurosurgery</i>	HAROLD ELLIOTT
<i>Director of Neurology</i>	ALLAN BAILEY
<i>Consultant</i>	FRED MACKAY
<i>Consultant in Electroencephalography</i>	JOHN KERSHMAN

REPORT OF THE NEUROLOGIST

DR. DONALD MCEACHERN

The past year has been one of increasing growth and activity for the Neurological Service. Bed occupancy has been higher, and the out-patient clinics have continued to expand. There has also been an increase in the number of post-graduate students, and our twice-weekly ward rounds have been well attended.

We have become very proud of our out-patient clinics, which sometimes can be but an appendage to a Department. The Neurological Clinics, under the direction of Dr. A. W. Young and Dr. J. Kershman, have been increasingly busy, but the calibre of diagnostic work and the care of patients have, I believe, been better than ever before. Of the special clinics set up to meet pressing needs, the Seizure Clinic, under the direction of Dr. Francis McNaughton, is the largest and, I think, sets a new standard of excellence for the hospitals of the country. Two new clinics have been organized this year to meet special needs. One, a neurological treatment clinic, the other for the special care of patients with neuromuscular diseases.

The treatment clinic, under the direction of Dr. A. W. Young and our able Resident Dr. Bernard Graham, was set up with the assistance of Dr. J. C. Meakins and Miss Rita Ackhurst. Here we carry out difficult forms of intravenous treatment, nerve injections and other procedures for ambulant patients each week-day. Miss Etter is in direct charge of this clinic which is filled to capacity and answers a sore need. The neuromuscular disease clinic, under the supervision of Dr. R. Rabinovitch, has been organized to provide special diagnostic facilities and care for those suffering from these little-understood conditions. Methods of great promise are available to these patients. The Clinic forms the groundwork for a new attack upon the problem which is being supported by a generous gift of \$4,000 per year for three years from the Viobin Corporation and the Ogilvie Flour Mills.

Last summer, Montreal was again visited by a considerable epidemic of Infantile Paralysis. Through the energy and foresight of Dr. William C. Gibson, and with the backing of Dr. G. F. Stephens, a diagnostic clinic for Poliomyelitis was organized. This provided free diagnostic facilities to all physicians in Montreal and surrounding areas. One hundred and thirty-six patients were examined at this clinic, which was equipped to carry out all the specialized procedures. Dr. Gibson's account of this experience has been awarded the annual prize of the Montreal Medico-Chirurgical Society, and will be published in due course.

This past year, the Rockefeller Foundation generously made a grant of \$10,000 per year for a five year period to support work on the neurochemical basis of epilepsy and psychotic states. This work is now under way and presages a frontal attack on these problems by a combined group of workers which includes Dr. Wilder Penfield, Dr. Ewen Cameron, Dr. K. A. C. Elliott and others. It is a fundamental approach to a subject in which this Institute is peculiarly fitted to take leadership.

In conclusion, mention should be made of the Diploma Course in Neurology. This course, which covers some three and a half years of post-graduate

work, has sufficient, carefully selected candidates enrolled to fill the vacancies for several years to come. In addition, we are now beginning to get Diploma Course men from Psychiatry and from Neurosurgery for the Neurological part of their training. The selection, and the provision of first rate training for these men, we look upon as a particular responsibility; for tomorrow they will be the leaders in this field, and will carry with them to all parts of Canada and the world, the name of this great Institution.

REPORT OF THE NEUROSURGEON

DR. WILLIAM CONE

"Medicine is an imperfect science sadly inadequate for patients' needs." Medical facilities have never been what they should be and often not what they could be. This holds true on the neurosurgical service. There are great gaps to be filled in if we are to do a better job and more closely approach the ideal.

From the standpoint of routine work, and it must be called that, for there has not been much time for contemplation, we have reached a saturation point. It seems impossible that any further alteration or rearrangement of the present building can increase the turnover. Patients needing treatment urgently plead to be admitted, and too frequently must await admission until they become emergencies. It is now in part due to this fact that no further reduction in the number of operations, necessary shortly after admission of patients to the hospital, has been possible. For example, 23% of all operations done in 1946 were carried out within forty-eight hours after admission; 17.2% within twenty-four hours; 9.5% within twelve hours and 6.3% within six hours. Under such circumstances it is impossible to prevent interruption of planned work. The urgency of the problems to be faced has often prevented the gathering of facts important not only to the treatment of the patient but also to the scientific aspects of neurosurgery and neurology.

From the standpoint of beds alone, it would have been impossible to have taken care of this year's patients had it not been for the splendid co-operation of Professor Barbeau and Dr. Desrochers at the Hotel Dieu, of Dr. Amyot and Dr. Saucier at the Notre Dame Hospital and Dr. Charest at the Verdun General Hospital; also other neurologists who permitted the return of patients to their respective services for periods of post-operative convalescence or for post-operative x-ray therapy. The Montreal Convalescent Hospital has also provided excellent care for many of the convalescent surgical cases, and freed beds at the Institute.

We are indebted for help this past year to so many departments connected with McGill and its teaching hospitals. Professor Foster in the Department of Physics took time off from nuclear physics to help us with the simple principles involved in the siphon as we use it in tidal irrigation of the paralyzed bladder.

Professor E. G. D. Murray and Professor Fred Smith have continued to advise us regarding problems of asepsis in the operating room. We owe much to them for the satisfactory, practical and superior operating room technique now in use. To Dr. Gertrude Kalz we are particularly grateful too for the bacteriological study of the patients and the controls she has provided in their management.

We have called increasingly on the Department of Psychiatry for the assessment of patients with organic disease from the psychological standpoint. They have provided guidance and motivation for patients which have made surgical treatment more effective. The recent appointment of Dr. Donald Hebb as Professor of Experimental Psychiatry at McGill is welcomed enthusiastically. It is hoped that he can be interested again in problems arising in neurosurgery.

Dr. John Palmer, in the Department of Medicine, has worked intimately with this Department on hypertension and its surgical treatment. The survey of the results of surgical treatment which he has been carrying out with Dr. Fisher should be completed soon.

Dr. Turner and Dr. Petrie from the Department of Orthopaedics have helped much in the study and management of that group of patients with spinal cord and vertebral column injuries. Dr. Emerson Smith and his staff in Urology have made significant contributions to the treatment of the bladder paralysis in these patients also.

The most significant recognition of the work done in the Department of Neurosurgery this past year is that accorded to Dr. Penfield. He gave the Ferrier Lecture in London before the Royal Society. The subject of his address was "Some Observations on the Cerebral Cortex of Man."

While it is recognized that every patient who is carefully studied provides some facts of scientific interest, facts which help with treatment, provide answers to research problems, and while we have taken care of a wide variety of neurosurgical lesions, certain problems have continued to claim special attention. Among these are: cerebral localization, hypertension, tumours, discs, wound healing and operative technique. One simple and practical contribution provided by Miss McRae with Stanley Ellis's help has been the replacing of talcum powder with sulfathiazole powder used with sterile gloves. Dr. Stephen has done much work on the patients' vital capacity in various positions in which they are placed on the operating table, and correcting the faults in posture has led to smoother anaesthesia, better haemostasis and fewer post-operative complications. His studies on myanesin suggest that it may be a valuable adjuvant in anaesthesia and may be helpful in medical neurological conditions where tremors or spasticity are troublesome.

Dr. Elvidge has served as liaison officer with Dr. Peirce's Department of Radiotherapy. The results of medullo-blastoma treated by deep x-ray therapy alone promise to be as satisfactory as that by operation followed by x-ray treatment. The positive diagnosis has been possible by biopsy. When the patient is considered from the humanitarian standpoint, radiotherapy has much to offer, and if Dr. Peirce could be provided with adequate beds for hospitalization, it is obvious that much more could be done for patients.

This brief survey of the year's activities is inadequate. Much has been accomplished. Much remains to be done before the ideals held for neurosurgery can be approached. It may seem that an impasse has been reached but this is not admitted.

Increased facilities for patients must be made available. Increased funds for scientific study of patients are imperative. What we plan for is arrangement of the work "to free the faculties and widen consciousness, so that our lenses to

observe be kept bright and the mirror polished." Then "tastes, significances, values and meanings of what we are doing will provide us with an ever increasing diversity of what is interesting and useful" and medicine will be a less imperfect science.

REPORT ON HOSPITALIZATION — 1946

DR. JOHN KERSHMAN

The persistent upward trend of hospitalization costs which began in 1941 continues unabated. In 1946 the cost per patient per day was nearly 19% higher than in 1945. Compared to 1941, the present costs are 69% higher. Unfortunately, there is no indication that any new level of stabilization has yet been reached.

Analysis of the causes for the increase during 1946 reveals that 50% of it was due to salaries and wages. This figure is almost identical with the experience of other institutions. All hospitals have been forced to a belated recognition of the fact that for some time the salaries of nurses and other full time hospital workers were disproportionately low and that this was one of the reasons for producing a serious shortage of adequate personnel. The rising costs of living, and the appeal of other channels of employment have made a readjustment of scales of pay absolutely necessary. This, in turn, has raised the cost of hospital care to such an extent that considerable discussion has arisen about possible alternative solutions.

The increased cost of food and provisions was the second most important factor in raising costs during 1946. Expenses on these items were more than one-third higher than last year, and were responsible for 24% of the total increase in costs.

It is of interest that the cost of other forms of supplies did not climb as steeply as in the past, indicating perhaps that in these fields there may be a levelling off in the near future. The only exception is drug supplies but this cost is usually directly recoverable from the patient.

In line with other hospitals throughout the city, the Institute raised some of its charges to patients in an attempt to equalize the burden of increased costs. As a result, the earning capacity of the hospital was increased by 14%. Cash collections were quite good and showed an increase of 17% over 1945. This is attributable to the increased activity of our Social Service Department in admitting, and to the active cooperation of the administration in the Royal Victoria Hospital. But while the amount collected per patient per day during 1946 would have been quite adequate by 1945 standards, the rapidly increasing costs again over-shadowed the income. The net result was a greater deficit than in 1945.

During the past year, an approach was made to the City of Montreal and to the Province of Quebec for an increase in their annual grants, and for financial assistance to clear up previous deficits. This was preceded by a thorough review of the existing financial structure. In doing so, a more realistic apportionment of the cost of the various laboratories was made between the clinical and scientific budgets. Although any attempt to draw a sharp distinction of this kind is necessarily artificial, it is essential that some arbitrary standards should be set up. The income from the scientific endowment has shrunk considerably during the

past few years, and to ensure that it be used with maximal effectiveness it must be protected from encroachment by the increasing clinical losses.

It is a pleasure to report that our official reception by both the City and the Province was most sympathetic and understanding. Both groups showed a keen appreciation of the work being done at the Institute. It is too soon to know what concrete help will be forthcoming, but we have reasons to hope that their annual grants will be raised to a point that will permit the continuance of the hospital activity of this Institute. Even if that hope should be fulfilled, however, the continually rising costs indicate that we may have underestimated our future deficits.

Most general teaching hospitals in this area have a capacity consisting of 50-60% of public ward beds and the rest is equally divided between semi-private and private accommodations. Last year 76% of the patients in the Institute were public. In 1945 the proportion was 77%. Since public patients pay much less than the actual cost of their care, this places an unusually heavy financial burden on the Institute. Increased space for semiprivate and private patients is therefore an essential need. From the patient's point of view, the greater numbers now participating in hospitalization insurance plans which entitle them to semi-private care have made our present facilities quite inadequate. Plans for a building addition to take care of this have been drawn up and include better provision for women and for children than are at present available. The present annex is only a temporary building and cannot be used indefinitely to house patients, so that replacement of this structure is included in the plans. The constant waiting list of 100 to 120 patients stresses the need for more beds. What is urgently required is the financial assistance that will make these plans a reality.

REPORT OF THE REGISTRAR

DR. PRESTON ROBB

CARE OF PATIENTS

Once a year the figure pertaining to admissions and discharges are gathered together. In this way we get an estimate of the amount of work done by this hospital. Each year, since the Institute opened, there has been an increase in the number of patients handled. In 1946 there were 190 more than in 1945. This is a significant increase but in 1946 there were 792, 67% more than in 1939. To handle this increase we have added 30 more beds in the annex, a new operating room, a second x-ray table, and a second E.E.G. apparatus.

With this increase we must ask ourselves one very important question. Has it meant a decrease in the care given each patient?

Under Dr. Cone's tutelage and Miss Flanagan's and Miss Cameron's direction, the nursing services here are better than I have seen anywhere in my travels. Not only that, I saw procedures that started here being practiced in other centers. The Social Service Department is carrying on an expanding program of service to the patients as well as an important social research program. The demand for the services of our X-ray, E.E.G., and Chemistry departments speak for themselves. No, I am sure that with the great increase in work done there has not been a fall in the individual service to each patient. On the contrary, a much fuller service is offered than ever before.

The progressive increase in work done in the Institute is indicated by the following figures:—

	Patients cared for	Hos- Pital 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
1945	1681	34223	21.4	4.28%	64.5%	955
1946	1871	35521	19.9	2.9 %	67.7%	864

The total admissions to the Montreal Neurological Institute and the Royal Victoria Hospital under the care of the Staff of the Institute and the Department of Neurology and Neurosurgery of the Royal Victoria Hospital were 1930 as compared to 1776 for 1945. The number of admissions to the Institute per day was 4.6.

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

	Neu- rology	Neuro- surgery	Totals
New Cases	559	385	944
Revisits	2926	684	3610
	3485	1069	4554

There were 279 more cases seen in the Outpatient Department in 1946 than in 1945. It must be pointed out what great service the Social Service Department has given, not only in handling the social problems of the patients, but also in directing the clinic. Most of the new patients are referred by outside doctors. Every effort is made to send out a written report on each new case.

REPORT OF THE NURSING SUPERVISOR

MISS EILEEN C. FLANAGAN

The Nursing Department has, like the Institute, now completed twelve years of service, almost equally divided between peace time and war time.

It has doubled in size, while the patients nursed have considerably more than doubled. In spite of all difficulties working hours of the staff have been cut from about 60 hours a week to 48 hours a week, and the three period system is

almost entirely in effect. This, I believe, is responsible for the fact that we have had very little illness among the staff, which, like all others, works under great pressure. We have during the twelve years trained 200 post-graduates, 21 in 1946, who have come from all parts of Canada, from the United States, South America and other countries. Much of this teaching, I may say, was carried on under the greatest of difficulties, especially during the war, when the trained staff was severely depleted. We have now, in spite of the general shortage of nurses, a well trained, adequate staff, who I feel do their utmost to assist the Doctors in every way possible, and to give the patients excellent nursing care. During the last year there were 902 special nurses on duty for 6,965 nursing periods, while in 1945 there were the same number 902, giving 8,470 nursing periods. This means that there was a decrease of 1,505 nursing days given by special nurses, and in consequence, a greater load on our own staff.

Living accommodation continues to be our severest trial — many nurses have to travel long distances, which is a hardship at night in winter. Twenty-five of our staff took the course of lectures in Ward Supervision and Teaching given at night by the School for Graduate Nurses, while two are taking the two year course. Again we would thank all the members of the Medical Staff who gave so much of their valuable time to assist with teaching both in the Classroom and in the Wards.

DEPARTMENT OF SOCIAL SERVICE

MRS. ELABEL DAVIDSON

This report represents, as does the entire work of the department, a joint effort. Mrs. Joan Thomas has carried the brunt of the load this year and in a manner prompting both gratitude and pride.

In trying to sum up and evaluate our work of this busy, crowded year, we have asked "what has been our role with the patient, with other departments of the hospital and with the community outside"?

Judging by the increased demands upon our department we have reason to assume a general agreement on the part of the three, patient, hospital and community, that social service is an essential part of the medical care. It is clear that the greater volume of work is not due only to the number of clinic patients and the additional patients cared for on the wards this year. Nor is it just a matter of the more one does the more there is to do. Rather, we find that our service has become more a part of the total care of the patient, that the worker has not only interviewed and planned with the patient on his admission and discharge, but she has been used, with increasing frequency, to share in treatment where social and emotional problems were factors in the patient's illness. It is trite to repeat that medical treatment cannot be divorced from a consideration of the patient's problems. Problems which are brought into focus by the strain and suffering of illness must often be resolved, or the patient's attitude toward them changed, before treatment can be effective. It is in the day by day work with the doctor and nurse, sharing in the understanding and planning to help the patient meet his problems, be they environmental or due to personal limitations, that the social worker has made her contribution. We are aware that what social service can do depends in large measure upon the understanding and acceptance

of the staff, and we have welcomed this type of service. We have regretted only that we do not have sufficient workers to meet adequately the demands made upon us.

Another sign of growth has been the wider use of the department in determining the effect of hospital policies which concern patient and community relationships. In our contact with each patient admitted to ward and clinic we have a unique and strategic opportunity to observe the effect of hospital policies on the sick person, on his family and on the community. This opportunity carries with it responsibility and we would like to consider, as an objective for another year, a more careful analysis of our observations, and a means of pooling our findings with those of other departments.

As an indication of our relationships in the community, we worked, last year, with nearly 90 different public officials and social agencies in behalf of patients under care of ward and clinic. Our responsibility cannot end with reporting or referring to another agency, rather we must point out wherein the community fails to provide facilities for our patient and indicate what can and should be done to meet his needs, be they training, employment or care. Medical science has made great advances in the care of the sick. The social provisions for the patient whose life has been prolonged have not kept pace. We are beginning to recognize the inter-dependency as witnessed by the failure to provide for the chronically ill. We need factual knowledge of the social costs which are the result of disease. Such facts would confirm in human terms the need for scientific medical research and community support.

On this premise we are glad to be able to report the continuation of our study of the social problems confronting some 300 of our epileptic patients. Mrs. Doris Laverty has made a splendid beginning and already there can be noted a change of attitude, a better understanding on the part of parents and the community in general of the epileptic and his handicap. The appointment of Miss Gabrielle Bourque to succeed Mrs. Laverty with Miss Francoise Belanger as assistant, has been made possible through the generous co-operation of the Provincial Government, with a grant of \$4,000 per year for three years.

With the initiation of the clinic for treatment of neuro-muscular diseases, a sum of \$500 was allotted to our department to be used toward a study of the social aspects of these diseases. This is a small beginning but we hope of sufficient value to continue on a more extensive basis.

Last year we reported our Province-wide survey of paraplegics. This year it is gratifying to note the progressive step taken by the Federal Government in accepting civilian paraplegics in D.V.A. hospitals and the consideration being given to the establishment of a rehabilitation centre in the community. The battle is not yet won, there are too few beds available, the discrepancy between D.V.A. charges and the Q.P.C.A. allowance has not yet been reconciled and the plans for the rehabilitation centre are not in effect.

A number of students from the McGill School of Social Work have continued to come to the department for field work training and this year we have had the privilege of giving a brief course to the post graduate nurses. This widening of horizons through students, nurses and social workers, has been an enriching experience for our department and it was with sincere regret that we were forced, because of limitations of staff and space, to decline students from the University of Montreal School of Social Work.

We feel both humble and proud as we review the record of the year, and how we have shared in the treatment of the patient. Not as a tumour case, a fractured skull, an epileptic, but as a man, woman or child who, in addition to the burden of illness, carried fear, anxiety and worry with which he or she needed our help. Not as separated from medical treatment but as an integral part of that treatment. Not assuming any responsibility belonging to the doctor and nurse, but as an added service contributing to the patient's ultimate recovery. Economic security and high intelligence quotients grant no immunity from such strains so again we are glad to serve in a hospital where our service is made available to every patient and for the fact that you have made use of us.

DEPARTMENT OF RADIOLOGY

DR. DONALD McRAE

During the year 1946, 6066 roentgenological examinations were performed using a total of 27,203 films. Three hundred and eighty seven of these examinations were myelograms and seven hundred and fifty nine were pneumograms.

The space and equipment of the x-ray department proved barely adequate for the load. The work of the department increased by twenty-one per cent over last year. The current year is expected to show still further increase. A third radiographic room must be planned for, as it will be a very definite necessity in a year or two. A replacement of the oldest x-ray unit has been tentatively approved. Funds have been granted for remodelling the dark room and this will allow us to increase our developing capacity 200 per cent.

A full time assistant radiologist has proven necessary and valuable. Dr. M. A. Lever filled the post for the last six and a half months of the year faithfully and well. He then exchanged with Dr. D. G. Wollin, assistant radiologist at the Children's Memorial Hospital.

Much profitable time was spent on the radiologic examination and analysis of Dr. Reuben Rabinovitch's collection of excised spines and his series of artificial disc injuries in *Macacus rhesus* and the cat. Stereoscopic oblique films of the cervical spine have proven to be of great value in the study of cervical nerve root lesions. The physiological aspects of myelography have still not yet been worked out completely. Interesting changes in the amount of protrusion of abnormal discs on standing, lying and bending are observed, but for some reason the changes are unpredictable. Some protruded discs disappear on lying prone, others remain unchanged. We are still using six to nine cc. of pantopaque at each myelogram and feel that the value of the procedure is best shown by the fact that less than ten spinal explorations out of a total of two hundred and seventy eight were carried out during the year without a myelogram having been done.

During his three month period in the department, Dr. William Gibson made an interesting study of electro-encephalograms and pneumo-encephalograms in a series of one hundred patients with tumours of the cerebral hemispheres.

Certain research problems were begun during the year. Their completion is not yet in sight. The relationship of spinal anomalies to spinal cord and meningeal abnormalities awaits more pathological material and more time for experimental work on frog embryos. The reason for asymmetrical filling of the occi-

pital horns of the lateral ventricles is not yet clear. It seems that the horn of the dominant hemisphere is more likely to fill with oxygen than the opposite horn. We have followed the subdural effusions of infancy with repeated encephalograms and have seen them disappear without operation or aspiration. They have apparently drained through the hole in the dura and arachnoid produced by the lumbar puncture needle. The suspicion that the size of an individual pair of ventricles is not fixed but varies from hour to hour has not yet been proven. It is hoped that the passage of another year will see work on these problems near, or at, completion.

No diploma course students in radiology have been assigned to neuro-radiology but arrangements have been made whereby a four or six month period of study is available to such students. A similar offer has been made to the internes in the departments of radiology at the Montreal General and Royal Victoria Hospitals.

For the first eight months of the year all emergency examinations except pneumograms were done by the Royal Victoria Hospital. I wish to take this opportunity of thanking Dr. Peirce and his staff for their kind assistance.

DEPARTMENT OF NEUROCHEMISTRY

DR. DONALD McEACHERN

DR. K. A. C. ELLIOTT

The laboratory has been increasingly active in both routine and research spheres. As regards space, it is almost splitting at the seams. Hospital work has increased about 20 per cent.

Routine

a) *Main Laboratory*

Chemical Determinations—Private and Semi-private	1828
Chemical Determinations—Public	5295
CSF Proteins	2337
CSF Pandys	2337
CSF Sugars	263
CSF Chlorides	243
CSF Langes	437
Blood & CSF sulfa levels	367
Blood sugars	962
B.M.R.'s	177

b) *Ward Laboratories*

Hemoglobins	336
White blood counts	404
Red blood cell counts	140
Sedimentation rates	124
Differential counts	32
Compact cell volume	124
Blood Wassermanns taken	1871

Research

Dr. Elliott has continued his studies on cerebral edema and on improved solutions for brain irrigation. A study of the swelling of brain tissue *in vitro* was completed. This work was carried out in part under the Associate Committee on Army Medical Research, N.R.C.

As part of a biochemical study on epilepsy, Dr. Alfred Pope, with Drs. H. H. Jasper, K. A. C. Elliott, A. Morris and W. Penfield, completed interesting work on the cholinesterase activity of focal epileptogenic brain tissue. Studies on the local pH of epileptogenic cortex *in situ* were made by the same team. Dr. Elliott is determining blood guanidine levels in epilepsy and surveying the various aspects of energy metabolism in focal, epileptogenic and normal brain tissue.

Under Dr. Elliott's direction, Mrs. Marion Birmingham is studying the effects of pH and of carbon dioxide, and Mr. James Webb, the nature and role of the acetyl group in brain metabolism.

A grant has been received by Dr. McEachern from the Rockefeller Foundation for research on the neurochemistry of epilepsy and psychotic states. Some of the above work contributes to this plan. In addition, other phases are being pursued and should result in a broad program to knit the fields of brain energy metabolism, neurochemical transmission and clinical neurology.

Dr. Donald Tower, with the assistance of Mr. Murray Bornstein, is determining the possible alteration of acetylcholine and various electrolytes in the brain during clinical epileptic seizures. Dr. Tower's review of present knowledge of this subject is very fine. Miss Doris Brophy is carrying out the cholinesterase assays.

Dr. Reuben Rabinovitch and Dr. McEachern, under a grant from the Viobin Corporation and the Ogilvie Flour Mills, have embarked upon a clinical and experimental study of wheat germ fractions in neuro-muscular diseases. This is a definitive attempt to assess the value of these substances, and considerable machinery has been set up to this end.

DEPARTMENT OF ELECTROENCEPHALOGRAPHY

DR. HERBERT H. JASPER

There has been a 53% increase in the number of electroencephalographic examinations carried out in this department during the past year. About one-half (1078) were on patients referred from outpatient clinics and private offices and the remainder (1088) were from the Montreal Neurological Institute or other divisions of the Royal Victoria Hospital. The greatest demand for this examination is still in patients with epilepsy as shown by the following table of the number of examinations in each of the principal diagnostic groups.

Number of E.E.G. Examinations 1946

Epilepsy	1043
Head Injury	181
Brain Tumour	164
Mental Disorder	130
Polioencephalitis	15
Brain Abscess	11
Miscellaneous	614
TOTAL	2158

There were 27 examinations during the past year in which the E.E.G. (electrocorticogram) was taken directly from the exposed brain surface during operations performed by Dr. Penfield on patients with focal epilepsy. With improved technique and added experience in the interpretation of these records, they are becoming of increased usefulness as a guide to the surgical treatment of epilepsy. Further work is needed to explore the possible value of direct recording of the electrical activity of the brain, and other parts of the nervous system, as an aid to other forms of neurosurgical procedure. New applications of electrographic techniques appear to be developing, especially with regard to brain tumours, and lesions of the spinal cord and peripheral nerves.

Many improvements in recording techniques are being developed, or have been installed, as a result of the investigations being carried out continuously in our laboratories by Mr. Leslie Geddes. His excellent work, together with that of his assistant Mr. L. Diamond, has not only made possible the smooth operation of the many complicated set-ups in this laboratory, but has provided us with much new electrophysiological apparatus of original design. The cooperation and assistance of the Department of Electrical Engineering (Professors Christie and Howes) has been of great value in this aspect of our work.

The most extensive research carried out in this department was the establishment of the slow intravenous metrazol technique to supplant pitressin hydration as a method for the induction of epileptiform discharges in the E.E.G. and for the controlled observation of the form of an epileptic seizure for diagnostic purposes. The major portion of this work was carried out by Dr. Charles Cure. The results were so successful that this method is now in routine use for epileptic patients whose E.E.G. and patterns of spontaneous seizure are obscure.

A detailed study of the "basal lead" for the detection of abnormality in the electrical activity of diencephalic and other basal cerebral structures not accessible to ordinary electroencephalography was carried out in collaboration with Dr. Jacques Faure and Mr. Lewis Henderson.

Electromyographic examinations have been added to the clinical services of these laboratories following the development of this technique for the examination of peripheral nerve injuries during the war. With the assistance of Mrs. Miller Ballem (physiotherapist) the electrical activity of muscles and their response to different forms of electrical stimulation is being used to aid in the diagnosis of various forms of neuromuscular disease. Special studies of this nature were made on patients with poliomyelitis during the recent epidemic in Montreal. These studies are being assisted by a grant from the National Research Council.

Investigations of electroencephalographic abnormalities in patients who have had polioencephalitis have begun in collaboration with Drs. Goldbloom and Brickman of the Children's Memorial Hospital.

With Dr. Penfield our studies are being continued on the epilepsies. Special attention has been directed during the past year to petit mal epilepsy and studies of the mechanism of epileptic automatisms. These studies have led us to emphasize the importance of certain areas in the diencephalon which seem to exert a control on cortical activity with special reference to consciousness. Epileptic automatisms seem most frequently associated with focal discharge within the temporal region, often deep-seated.

DEPARTMENT OF NEUROPATHOLOGY

DR. WILLIAM CONE

The period of growth which more than doubled the work of the Department in five years is now ended and in 1946 there were 705 cases, but few more than in the preceding year. Of these 618 were surgical specimens, 80 were autopsies and 7 were sent in from elsewhere.

During the year, Dr. Reuben Rabinovitch completed his study of the pathology of intervertebral disc disease. Much of Dr. Ira Jackson's investigation of the etiology of acute post-operative aseptic meningitis was carried out in this laboratory. The changes in the hypothalamus due to transtentorial herniation of the brain have been observed by Dr. Josef Pavrovsky and the growth of gliomas in transplant to foreign species has been investigated by Dr. Keasley Welch. Dr. J. Droogleever-Fortuyn has used the facilities of the Department for anatomical control of his studies on thalamo-cortical relationships. Dr. William Gibson has modified his double silver impregnation and applied it to the demonstration of boutons terminaux in the cerebral cortex. A study of the conditions necessary for the formation of meningo-cerebral adhesions has been undertaken by Dr. Jacob Chandy and a review of the astrocytomas has been begun by Dr. Arlindo Conde.

Drs. Revis Lewis, William Gibson and Norman Sloan have helped in the routine work and Dr. C. L. Li has recently come to work in the Department.

DEPARTMENT OF NEUROPHYSIOLOGY

DR. HERBERT H. JASPER, *Neurophysiologist*

PROFESSOR BORIS BABKIN, *Associate Neurophysiologist*

The past year has marked the end of active research in military medicine in this department and the transition to problems of peace-time neurophysiology and experimental neurosurgery. The task of reviewing the mass of data collected during the war in search for observations of more general importance has been only partially completed. The work on "black out", carried out in collaboration with Dr. Cipriani, has been reviewed and summarized in a chapter for a monograph on acceleration being prepared under the auspices of the National Research Council (U.S.). The work on experimental head injury, cerebral oedema, and peripheral nerve injuries is still in preparation for open publication.

The flood of post-graduate students, seeking to complete advanced studies in neurology and neurosurgery interrupted during the war, is still rising at the end of this year. As for other graduate departments, the work of this division of neurophysiology has been stimulated to greater activity of a more fundamental character and of more general interest.

This principal work of this department during the past year has been concerned with experiments on epilepsy. In collaboration with Drs. Pope, Morris, Elliott, and Penfield, electrophysiological and biochemical studies have been made of chronic focal cortical epileptogenic lesions in monkeys, using the alumina cream method of Koppelof and Barrera. These studies have served to demonstrate that this technique gives a faithful reproduction of the electrographic and clinical characteristics of focal epileptogenic lesions as they appear in man, and they have served to give suggestive evidence for the approach to a biochemical basis for such epileptic discharges.

Researches on thalamocortical systems in the cat, with Dr. Droogleever-Fortuyn, have served not only to elucidate some of the normal dynamic relationships between the thalamus and cortex, but have revealed a small area in the thalamus which exerts a widespread control over the electrical activity of the cerebral cortex, simulating many of the characteristics of the electroencephalogram in petit mal epilepsy.

Several investigations in experimental neurosurgery were conducted, at least in part, in these laboratories. Dr. Ira Jackson has studied aseptic meningitis by experimental operative procedures and cisternal punctures in dogs. Dr. Harry Steelman has studied the electroencephalographic changes following different types of cortical excision in cats and monkeys. Drs. Morris and Elvidge conducted experiments on the effect of ultra-violet radiation on the vascular reactions and electrocorticograms from the exposed cortex in cats. Drs. Browning, Penfield, and Elliott studied the effects of the intravenous injection of kiton green dye as to toxicity in dogs, and with regard to the possibility of its use in the selective coloration of chronic epileptogenic lesions of the cortex exposed at operation. The latter observations were carried out on monkeys with experimentally produced epileptogenic lesions. Operations for continued pathological studies of intervertebral discs were performed by Dr. Rabinovitch. Drs. Morris and Cone performed experimental operations for pathological studies of the reaction of the brain and other tissues to Arolax and thrombin.

Experiments on the electromyographic changes accompanying peripheral nerve and cord lesions were continued in man, with some experimental studies in collaboration with Dr. Lecuire.

For the above activities, there were 150 major operative procedures carried out, and 558 other experiments or minor procedures. Many animals were supplied, and some maintained, for experiments being carried out in other departments of the Institute (Neurochemistry, Neuropathology, and Neuroanatomy). Expenditures were more than double the amount originally estimated, due to the increased volume of work and increased cost of apparatus, animals and maintenance. With further increases in volume of work anticipated, and steadily increasing costs, a considerable revision of the budget will be necessary during the coming year if the work of this department is to continue uncurtailed.

DEPARTMENT OF NEUROANATOMY

DR. FRANCIS MCNAUGHTON

The Laboratory is being equipped slowly as materials and instruments become available.

Among teaching activities have been:

1. The Undergraduate Course in Neuroanatomy for second year students, given in the Department of Anatomy with the assistance of Doctor A. A. Bailey.
2. The lecture-demonstration course in Advanced Neuroanatomy, which was well attended.
3. Brain Modelling. There have been two groups this year.
4. Lecture demonstration for Fellowship Candidates.

A number of short-term post-graduate students have used our facilities for gross brain dissection and review of neuroanatomy. Dr. Josef Pavrovsky has carried out anatomical studies of the incisura tentorii and its relationships. Mr. John Lord has prepared experimental tract degenerations for the teaching collection. Mr. John Meyer is making detailed studies of a brain showing hypothalamic lesions.

Demonstrations of Brain Modelling as a teaching method, and of nerves in human dura mater were prepared for the 1947 meeting of the American Association of Anatomists.

DEPARTMENT OF PHOTOGRAPHY

DR. JOHN KERSHMAN

The following work was done during 1946

Total number of photographs	2300
Total number of operation photographs	457
Total number of patient photographs	488
Photomicrographs	261
Miscellaneous	1094

There was considerable increase in the amount of work done in the department during 1946. There were many reasons for this: the return of the staff to full peace-time activities; the increase in the number of research fellows and the increased amount of investigative work being done; the greater amount of teaching and lecturing in undergraduate and graduate courses; and the increased number of operations.

There is a very urgent need for a better system of cataloguing and filing of the material in the department. During the past year a modest attempt was made at re-organization, but this is a very complex undertaking and it will need much more help than is at present available.

THE FELLOWS' LIBRARY

DR. FRANCIS McNAUGHTON

The most important event of the year in the Library has been the complete re-cataloguing of all our books and journals and their re-arrangement. This brings it into harmony with the classification used by the University Medical Library, and will add greatly to its usefulness. Each book now has its permanent place on the shelves and can be easily located.

We now boast a library of over 900 volumes and 1,382 volumes of bound journals. We receive 60 separate journals, dealing with neurology or related subjects, from all parts of the world. During the past year, 68 new books have been added to the shelves of the main library or assigned to various departments for their special use.

It would seem worthwhile saying a word regarding the place of the Library in an Institute such as this. The Library is, in a sense, the "central laboratory" of the Institute in which every student, interne and research fellow must start his training, no matter what his particular interest or problem may be. To serve its purpose, this "laboratory" must provide readily at hand, a fairly complete record of accepted knowledge in the field of neurology, in its broad sense. It must include the classic neurological writings, as well as a broad selection of textbooks, monographs, handbooks and reviews in several languages — which sum up the tradition of neurology. Details of technique and experimental methods used in the various fields related to neurology must be supplied. The library must have a wide selection of old and current journals, recent periodical lists, up-to-date subject bibliographies, and a borrowing service for books and journals not owned by the library itself. At the same time there must be a valued place for books which relate neurology to the larger problems of medicine and human life, and which give it perspective.

These are the indispensable "tools" which each worker must learn to use very deliberately in the mastery of his problems, until they become, like good tools, virtually a part of himself. It is to be hoped that our Library is approaching this ideal.

THE FELLOWS' SOCIETY

DR. KEASLEY WELCH, *President*

DR. IRA JACKSON, *Secretary*

With the increase in the number of fellows at the Institute, the activities of this Society have increased. The program consisted of guest speakers, addresses by fellows, and neuropathological seminars under the direction of Dr. Welch. The guest speakers were:

Dr. J. Lecuire — Lyon, France.
"Commissural Myelotomy"

Professor A. Shroeder — Montevideo, Uruguay.
"Echynoccus Disease of the Central Nervous System"

Professor D. Denny-Brown — Boston, Mass.
"Experimental Head Injuries"

- Dr. Jefferson Browder — Brooklyn, N.Y.
 "Treatment of the Phantom Limb by Section of the Posterior Column"
- Professor Wilder Penfield
 "Physiological Observations on the Human Cerebral Cortex"
- Dr. J. H. Quastel — Cardiff, Wales
 "Neurochemical Aspects"
- Dr. Fred. Mettler — New York, N.Y.
 "The Extra-Pyramidal System"
- Dr. A. M. Lassek — Charleston, South Carolina.
 "The Pyramidal System"
- Dr. Francis Grant — Philadelphia, Pa.
 "Meningeomas"

MONTREAL NEUROLOGICAL SOCIETY

OFFICERS FOR 1947-1948

<i>Chairman</i>	DR. FRANCIS McNAUGHTON
<i>Vice-Chairman</i>	DR. JEAN SAUCIER
<i>Secretary-Treasurer</i>	DR. THEODORE RASMUSSEN

Meetings of the Montreal Neurological Society were held weekly from the first of October to the middle of May inclusive. An interesting selection of clinical problems was presented at the Clinical Conferences which were held at the Neurological Institute, the Montreal General Hospital, Hotel Dieu, Notre Dame Hospital, and, this year for the first time, at the Queen Mary Veterans' Hospital.

The following addresses were given before the Society during the year 1946-1947.

- DR. A. MCGHEE HARVEY, Johns Hopkins University.
 "Physiological & Clinical Observations on Drugs which Inhibit Cholinesterase Activity"
- DR. W. K. LIVINGSTON, U.S. Naval Hospital, Oakland, California.
 "Physiological Effects of High Velocity Wounding"
- DR. DEREK DENNY-BROWN, Harvard Medical School.
 "Neurological Syndromes Resulting from Prolonged Nutritional Deficiency in Prisoners of War"
- DR. HEBBEL HOFF, McGill University.
 "Cardiac After-Potentials and their Functions"
- DR. ALFRED POPE
 "Histochemical and Action Potential Studies on Epileptogenic Areas of Cerebral Cortex"
- DR. J. DROOGLEEVER-FORTUYN
 "Experimental Studies on Thalamo-Cortical Mechanisms"
- DR. GREY WALTER, Burden Neurological Institute, Bristol, England.
 "Automatic Frequency Analysis of the EEG as an Aid in the Localization of Brain Tumours and in the Analysis of certain Epileptic Discharges".

- DR. THEODORE LIDZ, Johns Hopkins University Medical School.
 "An Analysis of the Behavioural Pattern following Damage to the Left Frontal Lobe"
- DR. W. G. LENNOX, Harvard Medical School.
 "Medical Aspects of the Treatment of Epilepsy"
- DR. W. PENFIELD
 "Surgical Aspects of the Treatment of Epilepsy"
- DR. E. JEFFERSON BROWDER, Brooklyn, N.Y.
 "Consideration of the Surgical Treatment for Parkinsonism"
- DR. ANDRE CIPRIANI, Chairman of the Medical Investigation Branch of the Atomic Energy Division of the National Research Council in Canada.
 "Some Medical Applications of Radioactive Isotopes"
- DR. ROBERT CLEGHORN, McGill University.
 "Blood Loss and Bodily Reactions in Battle Casualties"
- ASSOCIATE PROFESSOR C. P. LEBLOND, McGill University.
 "The Use of Radioactivity in Biology"
- DR. PAUL WEISS, University of Chicago.
 "Growth of Neurones"
- PROFESSOR BORIS P. BABKIN, McGill University.
 "Origin of Conditioned Reflexes: Sechenov, Hughlings Jackson, & Pavlov"
- PROFESSOR A. T. RASMUSSEN, University of Minnesota.
 "The Components of the Lemniscus System"
- DR. ROBERT MALMO, Allan Memorial Institute.
 "Psychological Aspects of Neurosurgery in Mental Disorder"
- DR. PRESTON ROBB.
 "Observations on the Care of Neurological Patients in Baltimore, Boston and New York"
- DR. IRA JACKSON.
 "Aseptic Meningitis, a Clinical and Experimental Study"
- DR. HARRY STEELMAN.
 "Treatment of Focal Epilepsy by Cortical Excision"
- DR. FRANCIS GRANT, University of Pennsylvania, Philadelphia.
 "Surgical Methods for the Relief of Pain"

CLINICAL APPOINTMENTS AND FELLOWSHIPS

The following positions are available:

- Interne or Assistant Resident in Neurosurgery — one year's duration — available January 1st and July 1st.
- Resident in Neurosurgery — This position is of one or two years' duration and no candidate is considered unless he has had previous experience on the Neurosurgical Service and in the laboratory.
- Interne in Neurology — Six to twelve months' duration — Available January 1st and July 1st.
- Resident in Neurology — This position is of six to twelve months' duration and no candidate is considered unless he has had previous experience on the Neurological Service.
- Fellowship in Neuropathology — Twelve months' duration — available July 1st. to those who have already worked in the laboratory.
- Senior Fellowship in Clinical Electroencephalography — six months' duration — available January 1st and July 1st.
- Junior Fellowship in Clinical Electroencephalography — six months' duration — available January 1st and July 1st.
- The Diploma in Neurosurgery, McGill University, requires at least four years of study including periods of investigative work and neurology.
- The Diploma in Neurology, McGill University, requires at least three years of study including periods of investigative work, neurosurgery and psychiatry.
- Applicants for Clinical Services are preferred who have a speaking knowledge of the French language.

COURSES OF INSTRUCTION

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 each of the above Departments.

In the Faculty of Graduate Studies and Research, courses are offered leading to the degrees of Master of Science and Doctor of Philosophy. Throughout the year the following elective courses are given for graduate students, fellows and members of the house staff. Open to undergraduates by arrangement.

ELECTIVE COURSES

- A. Seminar in Neuropathology, 1 hour weekly (52 weeks). Gross and microscopic demonstration to be supplemented by collateral work.
Fridays, 5 P.M. Drs. Cone and Penfield

- B. Seminar in Neuroanatomy, 4 hours weekly (12 weeks). Lectures and construction of brain model.
Two evenings, beginning in November Drs. McNaughton and Kershman
- C. Seminar in Neurophysiology, 3 hours weekly (12 weeks). Laboratory demonstrations, lectures and discussions.
Mondays, 5-6 and 8-10 P.M. beginning in February Dr. Jasper
- D. Neurochemical basis of Neurology and Psychiatry, 1 hour weekly.
10 lectures — Allan Memorial Institute Dr. Elliot
5 Laboratory exercises — Montreal Neurological Institute. Dr. McEachern
- E. Colloquium in Experimental and Clinical Neurology, 1 hour weekly.
Discussions and Lectures before Fellows' Society.
(Academic Year) Supervised by Dr. Rasmussen
- F. Colloquium in Clinical Neurology, 2 hours weekly. Clinics and Lectures.
Wednesdays, 5 P.M. Dr. McEachern
Colloquium in Neurosurgery and Electroencephalograph, 1 hour weekly.
- G. Colloquium in Neurosurgery and Electroencephalography, 1 hour weekly.
Fridays, 4 P.M. (10 months) Drs. Penfield and Jasper
- H. Colloquium in Neurological Roentgenology, 1 hour weekly.
Mondays, 9 A.M. (10 months) Dr. McRae

DONATIONS

1946-47

From Estate of George H. Duggan	\$20,000.00
From Rockefeller Foundation	20,000.00
For neurochemical studies of epilepsy	
From Mr. J. W. McConnell	10,000.00
For research in neurology	
From Viobin Corporation	4,000.00
For research in neuromuscular disease	
From Cancer Research Society	2,500.00
For Tumour Research	
From Mrs. H. A. Springle	500.00
For Hobart Anderdon Springle Memorial Fund	
From Dr. Lewis Reford	500.00
For Research Fellows' Fund	
From Mrs. Lester Wieder	250.00
For Penfield Research Fund	
<i>To Clinical Relief and Transfusion Fund</i>	
Mr. Moe Freedman	\$50.00
M. & Mrs. H. P. Hamel and Family	40.00
Mr. B. Roseman	25.00
Mr. & Mrs. T. E. Stack and Family	50.00
Original Twelve Club	5.00
Mrs. E. Westleman and Friends	10.00
Mr. D. Freedman	10.00
Ven. Archdeacon G. R. Harrison	10.00
Mr. Sam Saltzman	50.00
<i>To Cone Research Fund</i>	
Mr. Mendel Lecker	\$ 25.00
Mrs. Samuel Polisky	100.00
Mr. & Mrs. Samuel Lupovich	100.00
Mr. & Mrs. Josef Aron	200.00
Mr. Moses Bidner	50.00
Mr. Leo Schumer	100.00
Mr. Richard Schumer	15.00
Mrs. D. MacIntosh	100.00
Mr. Jack Strauss	100.00
<i>To the Social Service Department</i>	
Rotary Club of Montreal	\$ 94.38
For appliances for crippled patients	
J. W. McDonnell	37.00
For (a child) convalescence in the country	
Mr. & Mrs. Ross Hutchins	50.00
For Outpatients' clinic fund	
Health Department, Province of Quebec	4,000.00
For epileptic study	

PUBLICATIONS

1946-47

DR. ALLAN BAILEY:

Psychosomatic Medicine. J. Canad. M. Serv. 3: 227-234, 1946.

MR. MURRAY BORNSTEIN:

Presence and Action of Acetylcholine in Experimental Brain Trauma. J. Neurophysiol. 9: 349-366, 1946.

DR. K. A. C. ELLIOTT:

Biological Oxidations and Reductions. Ann. Rev. Biochem. 15: 1-34, 1946.

Swelling of Brain Slices and the Permeability of Brain Cells to Glucose. Proc. Soc. Exper. Biol. & Med. 63: 234-236, 1946.

(with MARYON HENRY)

Studies on the Metabolism of Brain Suspensions. III Respiration at Low Oxygen Tension. J. Biol. Chem. 163: 351-359, 1946.

(with MARYON HENRY)

Studies on the Metabolism of Brain Suspensions. IV Anaerobic Glycolysis. J. Biol. Chem. 163: 361-374, 1946.

DR. ARTHUR ELVIDGE:

(with HAMILTON BAXTER)

Neurosurgical and Plastic Repair of Cranial and Dural Defect. Canad. M.A.J. 56: 202-204, 1947.

DR. WILLIAM GIBSON:

(with MIGUEL PRADOS)

Pio Del Rio-Hortega 1882-1945. J. Neurosurg. 3: 275-284, 1946.

DR. HERBERT H. JASPER:

(with JOHN KERSHMAN)

Electroencephalography. In *Progress in Neurology and Psychiatry*, Ed. E. A. Spiegel, New York, Grune & Stratton, 1946, Chap. 23.

DR. JOHN KERSHMAN:

See Dr. Herbert Jasper, joint author.

DR. ARTHUR A. MORRIS:

Method of Ventricular Fluid Replacement following Ventriculography. J. Neurosurg. 3: 351-354, 1946.

DR. DONALD McEACHERN:

Medical Research and Development in the Canadian Army during World War II, 1942-1946. National Research Council of Canada, 1946.

(with GUY MORTON and ANDRE CIPRIANI)

Mechanism of Motion Sickness. Arch. Neurol. & Psychiat. 57:58-70, 1947.

(with WILDER PENFIELD)

Surgical Denervation in Fifty Patients with Epilepsy. Tr. Am. Neurol. A. 72: 1946.

DR. JOSEF PAVROVSKY:

The Subdural Fluid. *The Czech Surgical Review*, 1947.

Hypothalamus in Transtentorial Herniations of Brain. *The Czech Surgical Review*, 1947.

Anatomy of the Tentorial Incisura. *The Czech Surgical Review*, 1947.

DR. WILDER PENFIELD:

Neurosurgery in the War Period. Proceedings of the 2nd Annual Meeting of the American-Soviet Medical Society, Philadelphia, Dec. 15, 1945.

Ur of the Chaldees. Bulletin of the History of Medicine. XIX, No. 2: 133-147, 1946.

Notes on Operative Technique in Neurosurgery. Ann. Surg. 124: 383-385, 1946.

Psychical Seizures. Brit. Med. J. 2:639-641, 1946.

Neurobiology. Archivos de Histologia Normal Y Patologica 3: 5-7, 1946.

Obituary—Nikolai Nilovich Burdenko. Arch. Neurol. & Psychiat. 57: 231-232, 1947.

(with W. FEINDEL)

Case Report: Medulloblastoma of the Cerebellum with Survival for Seventeen Years. Arch. Neurol. & Psychiat. 57: 481-484, 1947.

See Dr. Donald McEachern, joint author.

DR. REUBEN RABINOVITCH:

(with A. A. MORRIS)

Malignant Chordoma of the Lumbar Region. Arch. Neurol. & Psychiat. (in press).

DR. THEODORE RASMUSSEN:

(with H. FREEDMAN)

Treatment of Causalgia; an Analysis of 100 Cases. J. Neurosurg. 3: 165-173, 1946.

(with W. J. FARR)

Paravertebral Injection of Procaine for Pain produced by Aortic Aneurysm. J. Neurosurg. 3: 267-270, 1946.

(with A. A. ALESSI)

Chemical Production of a Prolonged Sympathetic Paralysis. Surgery 20: 360-363, 1946.

DR. NORMAN VINER:

Treatment of Mental Disease: Especially the Psychoneuroses. Canad. M.A.J. 55: 101-105, 1946.

DR. ARTHUR W. YOUNG:

(with ARTHUR E. CHILDE)

Pneumographic Diagnosis of Intraventricular Epidermoid. Radiology, 48: 56-60, 1947.

DR. ROMA AMYOT:

Le Traitement des Meningites Aigues par la Penicilline. L'Union Médicale du Canada, 75: 291, 1946.

Myoedème et Myotonie. L'Union Médicale du Canada, 75: 654, 1946.

Walter Edward Dandy. L'Union Médicale du Canada, 75: 743, 1946.

Quelques Notions Récentes Sur La Paralysie Infantile. L'Union Médicale du Canada, 75: 1073, 1946.

L'Administration du Tridione doit être Surveillée. L'Union Médicale du Canada, 75: 1194, 1946.

Contribution à L'Etude du Lipome du Corps Calleux. L'Union Médicale du Canada, 75: 1391, 1946.

STATISTICAL DATA — 1946
CLASSIFICATION OF DISEASES

Nervous system generally:

Neurosyphilis	48
Multiple sclerosis	56
Motor neurone disease	11
Myasthenia gravis	7

Meninges:

Meningocele or myelomeningocele	40
Chronic adhesive arachnoiditis	5
Acute purulent meningitis	8
Meningitis, other types	16
Benign lymphocytic choriomeningitis	1
Spontaneous subarachnoid haemorrhage	9
Subdural effusion	3
Post-traumatic headache	18
Other headaches	33
Subdural haematoma	33
Epidural haematoma	7

Brain:

Congenital anomalies	6
Hydrocephalus	22
Birth injury of the brain	20
Brain abscess	5
Cerebral concussion	31
Cerebral contusion and/or laceration	40
Epilepsy	209
Migraine	12
Encephalopathy, chronic and of undetermined etiology	17
Paralysis agitans	7
Cerebral arteriosclerosis	12
Cerebral haemorrhage, thrombosis or embolism	46
Intracranial aneurysm	15
Cerebral atrophy	29
Encephalitis	12

Tumours of the Nervous System:

Glioma	91
Perineurial fibroblastoma	8
Meningeal fibroblastoma	21
Pituitary adenoma	7
Craniopharyngioma	6
Tuberculoma	7
Miscellaneous tumour	18
Unclassified tumour	8
Unverified tumour and tumour suspect	15
Secondary tumour of brain and spinal cord	12
Haemangioma	11

Spinal Cord:

Chronic myelopathy	9
Dorsal lateral sclerosis	10
Compression of the spinal cord	27
Concussion, contusion or laceration of the cord	14
Vascular lesion of the cord	3
Syringomyelia	5
Poliomyelitis	8

Cranial and Peripheral Nerves:

Lesions of the optic nerves	7
Trigeminal neuralgia	42
Peripheral facial palsy	3
Nerve deafness	5
Meniere's syndrome	7
Lesions of the brachial plexus and branches	16
Multiple neuritis	5
Other neuralgias	4
Traumatic peripheral nerve lesions	2
Raynaud's disease	1

Mental Diseases:

Mental deficiency	13
Alcohol or drug addiction	12
Psychoneurosis	52
Manic-depressive psychosis	8
Schizophrenia	2
Miscellaneous	5

Other Systems and Miscellaneous:

Skull defect	25
Herniation of the intervertebral disc (cervical)	38
Herniation of the intervertebral disc (lumbar)	285
Fracture of the skull	129
Fracture and/or dislocation of the vertebral column	43
Gun-shot wound of the head	8
Gun-shot wound of the spine	1
Lacerations, contusions, abrasions and/or haematomas	20
Carcinoma and sarcoma	19

Diseases of the Body as a Whole:

Hypertension	76
Diseases of the cardiovascular system	13
Diseases of the respiratory system	8
Diseases of the gastrointestinal system	3
Diseases of the genito-urinary system	3
Diseases of the endocrine system	5
Diseases of the locomotor and integumentary system	19
Diseases of the eyes, ears, nose and throat	6
Low-back pain	70
Causalgia	1
Miscellaneous	21
Diagnosis deferred	20
Paget's disease	10
Carotid sinus syncope	4
Muscular dystrophy	8

CLASSIFICATION OF OPERATIONS

Craniotomy

and biopsy	2
and decompression	12
and drainage of abscess	4
and drainage of subdural haematoma	30
and drainage of intracerebral haematoma	8
and drainage of extradural haematoma	4
and excision of cicatrix	19
and excision of focal area of brain	13
and excision of aneurysm	1
and exploration	12

and incision and drainage of cyst	2
and obliteration of cyst	4
and removal of adhesions	1
and removal of tumour	124
and rhizotomy	13
and sinusectomy	6
and sinusotomy	1
and lobotomy	1
osteoplastic, miscellaneous	5
myoplastic, miscellaneous	4
Trepanations or craniocentesis	10
and biopsy	4
and drainage of subdural space	12
and placement of electrodes	2
and ventriculography	4
Elevation depressed skull fracture	24
Plastic repair skull defect, tantalum	13
Plastic repair skull defect, bone	7
Suture of lacerated wound of scalp	7
Ventriculocisternostomy (Torkildsen)	3
Ventriculovenostomy	9
Ventriculostomy	4
Laminectomy or Hemilaminectomy	4
and anteriolateral chordotomy	2
and decompression of spinal cord	6
and exploration	4
and removal of adhesions	2
and removal of tumour	16
and spinal fusion, Hibbs	5
and spinal fusion with bone graft	13
and discoidectomy	226
Cervical laminectomy	16
Sympathectomy (Hypertension):	
Supradiaphragmatic Ganglioneurectomy—unilateral	4
Supradiaphragmatic Ganglioneurectomy—bilateral	27
Supra and Infra-Diaphragmatic Ganglioneurectomy—unilateral	5
Anterspinal Rhizotomy	14
Sympathetic ramisection cervical	1
Sympathetic ganglioneurectomy—cervical, dorsal, lumbar	8
Plastic repair cranium bifidum	6
Plastic repair spina bifida	21
Cerebral arteriography	19
Ligation of artery	1
Exploration of nerve	8
Removal of neuroma	2
Nerve suture	4
Reopening of wound and exploration	10
Reopening of wound and evacuation of clot	8
Miscellaneous operations	67
TOTAL	864

CHIEF DIAGNOSES IN FATAL CASES

Cranio-cerebral injury	29
Intracranial tumour	27
Cerebral haemorrhage and thrombosis	10
Acute encephalitis	3
Tubercular meningitis	5
Acute purulent meningitis	3
Communicating hydrocephalus	3
Epilepsy	2
Ruptured intervertebral disc	2
Ruptured congenital aneurysm	2
Brain abscess	2
Traumatic lesion of spinal cord	1
Progressive muscular atrophy	1
Progressive muscular dystrophy	1
Tuberculoma	1
Subdural cyst of posterior fossa	1
Myocardial infarction	1
Trigeminal neuralgia	1
Carcinoma of base of skull	1
Schilders disease	1
Meningo-encephalocele	1
Hypertensive cardiovascular disease	2
Meningomyelocloradiculitis	1
TOTAL	102

ITEMS OF INTEREST

A great honour was conferred on our director, Dr. Penfield, when he was asked to give the Ferrier Lecture of 1946 before the Royal Society, London. His subject was "Some Observations on the Cerebral Cortex of Man".

On October 16, 1946, an outstanding event of the year was the twelfth annual Hughlings Jackson Lecture delivered by Sir Henry Dale, O.M., M.D., F.R.S., on October 16th, 1946. He spoke on "Chemical Transmission and Central Synapses".

Dr. Jerzy Chorobski of Warsaw is now on this continent and plans to spend a month this summer at the Institute. Dr. Arne Torkildsen of Norway is also planning a visit here in the near future.

We are pleased to hear that Dr. Everett Hurteau has opened an office for the practice of neurosurgery in Akron, Ohio.

Dr. Claude Bertrand is at present working with Professor Le Gros Clark in Oxford on the interstitial fluids of the brain. He reports having visited Norway, Sweden and France. Dr. William Feindel is also in Oxford. Both these men have received Rhodes Scholarships.

Dr. Penfield is to be congratulated on having recently been made a corresponding member of the Academie National de Medecine of France.

Dr. Herbert Jasper has recently been elected president of the newly formed American Society of Electroencephalography.

Dr. Walter Bremner has recently returned to Canada from England. We were pleased to hear that he had been awarded the Diploma in Psychological Medicine.

Dr. Donald Ross has been the Registrar at the Allen Memorial Institute during the past year. Also on the staff there are Dr. Karl Stern and Dr. Miguel Prados.

Dr. Roma Amyot has recently been made President of the Executive of the Board of Directors of Notre Dame Hospital.

Dr. Yi-cheng Chao, who was at the Institute for nine months in 1939, is now practising surgery in Tientsin. He reports that about half his cases are of a neurosurgical nature.

We are proud to report that Dr. Herbert Jasper has recently received a Doctorate Honoris Causa from the University of Bordeaux at their five hundredth anniversary celebrations.

Dr. William Grant is practising neurosurgery in Los Angeles.

Dr. William Lister Reid is carrying on a very active neurosurgical practice at the Royal Prince Alfred Hospital, Sydney, Australia. He is particularly interested in Epilepsy and the excision of cortical scars. He and Mrs. Reid (formerly of Montreal) are reputed to be expert horticulturists (orchids particularly).

Dr. Robert Wilson is now doing psychiatry with the D.V.A. in Vancouver and is about to go to Philadelphia for further study.

Dr. Chen Chao-jen (James) is at present at the Mayo Clinic completing his work in neurology.

Dr. Peter Lehman is practicing neurosurgery in Vancouver and is on the staff of the Shaughnessy Veterans and the Vancouver General Hospitals.

Dr. Guy Morton is associated with Dr. Hepburn in Edmonton in the University of Alberta Hospital. He was at the Institute last fall for a short course in electroencephalography.

The social event of the year was the marriage of Dr. Arthur Morris to Miss Barbara Rhea which took place just before his departure. He is now doing neurosurgery in Memphis.

Many old friends of Dr. Boris Babkin will be pleased to hear that he has recently joined the research staff of the Institute to work on autonomic functions of the brain.

Dr. Ralph Stuck, of Denver, Colorado, made a short but welcome visit to the Institute in December, 1946.

