

209

September
Nineteenth
1921.

C. J. Stuart, Esq.,
2129 St. Urbain Street,
Montreal.

Dear Mr. Stuart:-

On my return to Montreal after spending the summer on the other side I found awaiting me your letter of the first of August, enclosing demonstration of the problem of the trisection of an angle.

McGill is always very proud when any of her graduates are able to accomplish the solution of a problem which has appeared insoluble to all others. As far as my incomplete knowledge of mathematics goes I would say that it is necessary to distinguish between a practical and a theoretical solution of this problem. For practical purposes you know that any submultiple of an angle can be determined quite readily to a very high degree of accuracy by using properties of the straight line and circle alone, but in theoretical mathematics we know that such problems as the duplication of the cube and the trisection of an angle cannot, in general, be effected by line and circle. Angles of certain degree can be trisected by rule and compass, but mathematicians hold that you cannot trisect an angle of any magnitude by using properties of the line and circle alone.

I frankly admit that I am not an expert enough mathematician to offer an opinion of any value as to whether your deductions are scientifically correct or not, but I would suggest that you have a chat with Professor Murray or

C. J. Stuart, Esq., - 2 -

Professor Sullivan, both of whom are mathematicians of the highest order.

Before such a proof as yours could be given out under the backing of the University we would have to satisfy ourselves that your solution was scientifically and theoretically correct.

I would beg you earnestly to see either Professor Murray or Professor Sullivan.

I am returning herewith your demonstration.

Yours faithfully,

Principal.

Prof. Bullerian

Montreal 1 Aug 1921

Sir Arthur Currie

McGill University

Dear Sir - I am only a little gun, but a one time student in Applied Science at old McGill, - much interested in the approaching Centennial in October.

I have at hand a complete and final demonstration of the age old problem of the trisection of an angle. I was about to seek publication in the States, but the echo of such achievement is quite often the nerve force of a great University, and perhaps to some extent makes the dollars eddy in the mill race. I can just fancy some old classmates taking a heave at the cables themselves.

Besides I am Canadian and would like to keep the honors to the University if I could. If you will glance over the matter, I will hold my hand until I hear your views, or until after October if you so decide.

If you could favor me with a short talk on the matter before going far with "expert" advice I would be pleased, for to be frank you have some officers of instruction worthy of esteem, and some not. I have met scant courtesy from several, am a little sore, have a tomahawk in my wigwam, rubbed with bitter herbs. But you are well able

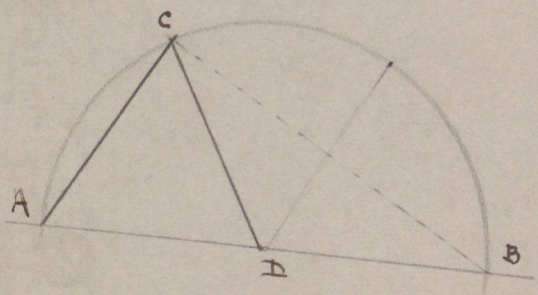
to judge this simple affair for yourself, or talk it over with Dean
 Moxee I fully trust his opinion

Of course I know German Professors have written books
 proving the trisection of an angle, - and other things - impossible, but
 you have known Germans reckon without the Celt before this. They
 always will be that way: and I believe you will chuckle with me
 at the unsuspected simplicity of the solution, when pieced put
 together right. While the geometric trisection of an angle is not
 an affair of pressing practical moment, yet like any record to the
 good it is an honor worth gathering in for Canada - and not
 the least of the value is the neat answer it gives to cheap wits
 who repeat that Canada is entirely absorbed with dollar
 problems, and has not time for cultivating pure knowledge, or
 absolute art.

Yours Respectfully

C. J. Stuart

c/o 2129. St. Urbain St.



$AC = CD = DB$ (made so)

Then angle $CAD = 2CBA$ for CB and AD are adjacent isosceles triangles, where
 where angles $BCD = DCB$ together equal $CDA = CAD$:

And the circular segment cut off by CAB ; is twice the circular segment cut off
 by angle CBA . - (detail of proof enclosed) C. J. S.

Engineering Building,
Sept. 17th 1921.

General Sir Arthur Currie,
Principal, McGill University.

My dear Sir Arthur; I regret that
imperative duties in connection with
the Fourth Year School of Surveying have
prevented me from being in my office for
several days. Consequently I have only this
late P.M. received your communication
accompanied by Mr Stuart's erroneous
Mathematical Speculations.

It would require much space to
supply Mr Stuart with the full information
he evidently requires on this problem. I
therefore, confine my remarks to a few
salient points. It is necessary to distinguish
between a practical and a theoretical
solution of the problem in question.

Those who are familiar with surveying or astronomical instruments know full well that any rational submultiple of an angle can be determined very readily to a high degree of accuracy by using properties of the straight line and circle alone. Those who are acquainted with modern Mathematics know equally well that such problems as the duplication of the cube, the trisection of an angle, etc. can not in general be effected by line and circle. Certain angles can be trisected by rule and compass, and any angle can be trisected by making use of a certain quartic curve - called the Conchoid of Nicomedes.

In Lemma I, ^{Stuart} makes the tacit assumption that B, D, A are collinear, and in the Euclidean plane his final result is valid only when the angles of the triangle are: $30^\circ, 60^\circ, 90^\circ$. Lemma II can scarcely be regarded as a theoretical construction and therefore has no bearing on the problem. In Lemma III use is made of I and II,

and these can not be admitted.

It is rather unfortunate that Mr Stuart is not aware that he can not trisect an angle of any magnitude by using properties of the Line and Circle alone.

I am,

Yours sincerely,

C. J. Sullivan

MCGILL UNIVERSITY

MONTREAL

THE MACDONALD PHYSICS LABORATORY

December 19th. 1931.

Sir Arthur Currie,
Principal,
McGill University,
Montreal.

Dear Sir Arthur,

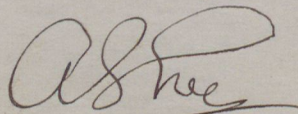
Mathematics at McGill University

I read with interest the account in the "Star" of your speech at the dinner given to Dean Brown, with which for the most part I concur.

We have the staff! Let us give them a little more freedom and opportunity. It seems to me that there is some lack of courage, or enterprise, in making advances in Mathematical training, more particularly in Engineering, where the standard is practically the same as when I first came to McGill and taught Mathematics in the Engineering Faculty twenty-eight years ago. At least the abler students should be given more opportunity, it may very well be that the training of the average student is about as good as it can be.

We have here a very able and genial graduate student, a Russian, named Kruming, a friend of the Porters, who married Sir Stopford Brunton's sister. He has just come from the Massachusetts Institute of Technology, where he spent more than a year. He stated before the Porters and others, when I was present, "The M.I.T. has wonderful apparatus, but they have not got a King, and they have not got a Gillson". It is true! These two professors are giving excellent graduate courses to joint classes of mathematicians, physicists and engineers, rather a choice band of students.

Yours very sincerely,



A. S. Eve,
Director of Physics.

MATHEMATICS.

No of students majoring in
mathematics for the years ---

1929-30	1
1928-29	0
1927-28	1
1926-27	0
1926-27 Mathematics & Physics (M.Sc)	3
1925-26	0
Mathematics & Physics (M.Sc)	1
1924-25	0
1 special student	<u>1</u>
	7

March 13, 1930.

NUMBER OF STUDENTS MAJORING IN MATHEMATICS

	M.A.	M.Sc. (Mathematics and Physics)
1929/30	1	0
1928/29	0	0
1927/28	1	0
1926/27	0	3
1925/26	0	1
1924/25	0	0
	<hr/>	<hr/>
	2	4
1924/25 (Special Student)		
	1	

Total number of students majoring in Mathematics
and Mathematics 1924-25 to 1929-30 inclusive -
six.

Special student: one.

J. C. Harrison

UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA
THE GRADUATE SCHOOL

MATHEMATICS

August 11, 1930.

Sir Arthur Currie,
McGill University,
Montreal.

My dear Sir Arthur, - This is just a line to thank you for the increase in salary, of which I recently received notice. It is a definite encouragement to receive this recognition and I shall do my best to show myself deserving of it.

Aside from rather too much hot weather, conditions here have been very pleasant. I have an interesting and industrious group of students and am deriving a lot of benefit from my experiences here.

Hoping that you are having a good vacation and are in the best of health, I am

Yours very sincerely,
W. L. G. Williams

Dr. Williams of the Department of Mathematics at McGill has been offered and has accepted an appointment to give courses in mathematics during the coming summer quarter at the University of Chicago. He will give two courses, one in Calculus and the other in Higher Mathematics to advanced and graduate students.

The Mathematical Department at the University of Chicago is one of the greatest in America; to be offered a position on its staff is justly esteemed a great honour.

307½, COLLEGE AVENUE,
ITHACA, NEW YORK.

13 May 1924.

Sir Arthur Currie,
Principal and Vice-chancellor,
Mc Gill University, Montreal.

Dear Sir Arthur, - I am writing to
say that I shall accept your invitation
to come to Mc Gill as assistant
professor of Mathematics. I was impressed
during my visit to Mc Gill by the
very friendly spirit existing there and
am looking forward to very pleasant
associations in my work.

I'm writing to Professor Murray
I am asking him to consider trying to
get for the library a set of the
"Jahrbuch über die Fortschritte der

Mathematik". On account of the extraordinary conditions in Central Europe, mathematical books usually very difficult to obtain and, especially, complete sets of the most important mathematical journals are now obtainable. This unusual situation makes it very desirable, in my opinion, that special appropriations be made at the present time to strengthen the mathematical library. The most important mathematical publication that the library lacks is the one mentioned above. It gives in each volume a review of all the work which appeared during the year covered by the volume in all the important mathematical journals in the world. It is almost indispensable for research work in mathematics.

Dr. Murray, Dr. Sullivan and I were talking the other day of the desirability of getting a set for the Mc Gill library, but we did not know at that time when a set would be available or what the price would be. I find that within a week a catalogue has been received here offering a set complete from the first volume (1868) as far as 1913 [44 volumes] at a cost of 950 gold marks. On account of the war only one or two more volumes have appeared and there could be obtained from the publisher, I think.

The sum is so small in comparison with the importance of the acquisition that I hope,

that it can be obtained. I
am writing Dr. Murray the name
of the bookseller who has it so that
it can be ordered at once if the
money can be found.

Williams

With kind regards to Lady
Currie and to yourself I am

Yours faithfully

Lloyd Williams

Committee
to Finance
or Governors Meeting
W.C.

White Hall,
Cornell University,
Ithaca, New York,
December 24, 1923.

Sir Arthur W. Currie,
Principal and Vice-Chancellor,
McGill University,
Montreal.

Dear sir, - I am very sorry to hear of the death of Professor Harkness. The standard work which he wrote with Professor Frank Morley did a great deal to advance the knowledge of the theory of functions both here and in England and it probably remains after a quarter of a century the best book in English on the subject.

In pursuance to your recent letter, I have asked three of my teachers at the University of Chicago to write to you and I am also asking the president of Miami University, where I taught for five years and Professor J. H. Tanner of Cornell to write to you concerning me. I enclose herewith a somewhat detailed account of my life as student and teacher

and I shall be very happy to furnish you any
other information.

My memory of two recent visits to
Montreal is a very pleasant one and I should be
delighted if your committee should consider
me worthy of the honour of being called to Mc Gill.

yours faithfully,
W. L. G. Williams

Publications

Fundamental Systems of Formal Modular Seminvariants of the Binary Cubic: Transactions of the American Mathematical Society, January, 1921, pp. 56-79.

The Infinite and Imaginary in Algebra and Geometry: a Reply: The American Mathematical Monthly, November, 1923, pp. 384-391.

Fundamental Systems of Formal Modular Protomorphs, accepted for publication in Transactions of the American Math. Soc.

On the Formal Modular Invariants of the Binary Cubic, accepted for publication in Journal de Mathématiques Pures et Appliquées.

Member, American Mathematical Society
American Association of University Professors
The Research Club of Cornell University
President (1923-24) Oliver Mathematical Club,
Cornell University.

Academic Record of W. L. G. Williams.

Born, 1888.

Student, Haverford College, 1905-7, 1908-10; B.A., 1910.

Rhodes Scholar, Merton College, Oxford, 1910-13.

B.A. (Oxon), Honour School of Mathematics, 1913.

M.A. (Oxon) 1916.

Ph. D. in Maths., (magna cum laude), Univ. of Chicago, 1920.

Teaching Experience.

Miami University, 1913-18.

Pennsylvania College, 1918-19.

College of William and Mary, 1919-20.

Cornell University, 1920 to date.

Now Assistant Professor of Mathematics, Cornell University.

During the year 1923-24, holding a stipend from the Heckscher Research Council, Cornell University, for the purpose of carrying on mathematical research.

I have had experience not only in teaching all the ordinary elementary courses in mathematics, but also while at Cornell in teaching graduate courses and in directing thesis work for the Ph. D. degree.

McGill University.

FACULTY OF APPLIED SCIENCE.

MEMORANDUM

TO

The Principal

FROM

J. A. Murray

April 30, 1924

Dear Sir Arthur:

I have written in confidence to an old reliable friend, the senior professor in the department of mathematics at Cornell, asking him whether he thinks Dr Williams would be interested in an assistant professorship here. If my friend is at home, a reply should be received from him within the next few days. Should he think that there is a chance of our securing Dr Williams, I fear, should you approve, go to Cornell next week to see Dr Williams and have a talk with him.

In the meantime it seems advisable to postpone writing Mr. M. B. W. Sew, whose papers have come from England, until we know whether we can secure Dr Williams as Assistant Professor. I will consult you immediately after hearing from my friend at Cornell. I remain, with kind regards,
Yours sincerely,
J. A. Murray.

May 17th, 1924.

Dr. Lloyd Williams,
307 $\frac{1}{2}$ College Avenue,
Ithaca, New York.

Dear Dr. Williams:-

In the absence of the Principal I wish to acknowledge your letter of the 13th of May advising us of your intention to accept the position of Assistant Professor of Mathematics. You will in due course receive official notice of your appointment.

As regards the book to which you refer, the purchase has involved some complications owing to the fact that we are just at the end of our financial year. We have, however, cabled to obtain it if still available, having been enabled to do so by a very generous contribution from Dr. Murray.

We shall be pleased to welcome you at the beginning of the coming session and hope that you may look forward to a pleasant and satisfactory career at McGill.

Yours faithfully,

Wilfrid Bovey.

December 18th, 1923.

Dr. Livingston Farrand,
President, Cornell University,
Ithaca, New York.

My dear Dr. Farrand:-

I am to-day in receipt of a letter from Mr. W.L.G. Williams, of the Department of Mathematics of Cornell University, who asks that his name be considered for any vacancy in the Department of Mathematics at this University.

Perhaps you know that on the morning of December 10th last Dr. James Harkness, Head of our Mathematics Department, died very suddenly. The present staff has arranged to take over his work until the end of the session next May. We, of course, must make an addition to the staff and whoever we appoint must be prepared to begin next Autumn.

Will you please send me an appreciation of Mr. Williams, with particular reference to his teaching ability, his future prospects, his influence on the student-body, and his relations with his associates. Any information about his personal qualities, his wife (if he is married) will be much appreciated.

Martin leaves tonight to spend Christmas in Victoria, B.C. Lucky dog to get away for a few weeks from the snow and ice of Montreal.

With all good wishes for Christmas and the New Year, I am,

Yours faithfully,

December 18th, 1923.

Dr. W.L.G. Williams,
White Hall,
Cornell University,
Ithaca, New York.

Dear Dr. Williams:-

Your letter of December 14th addressed to Professor James Harkness has been handed to me for reply.

You will be sorry to learn that Professor Harkness died suddenly early in the morning of December 10th. Naturally, his loss means that there is a vacancy in the Department of Mathematics at McGill. The present staff has arranged to carry on the work until the close of the term next May. We must, of course, provide an additional Professor to begin work when the University opens next Autumn.

I give you the assurance that your application will receive the serious attention of the Committee dealing with the vacancy. I shall be very glad to receive from you any testimonials or other information which would help us come to a decision.

Yours faithfully,

Principal.

CORNELL UNIVERSITY
ITHACA, NEW YORK

OFFICE OF THE PRESIDENT

January 3, 1924

Sir Arthur W. Currie
McGill University
Montreal, Canada

Dear Sir Arthur:

You must pardon my delay in replying to your letter of December 18th with its inquiry regarding Mr. W.L.G. Williams of the Department of Mathematics. My personal acquaintance with Mr. Williams was not close enough to allow me to speak with any conviction and on account of the holidays I have not been able to get all the information I would wish to transmit. Even now there are a few points I would like to confirm further.

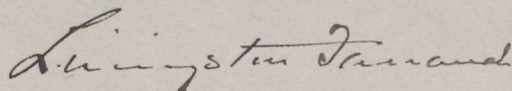
A preliminary confidential inquiry which I have made yields a pretty enthusiastic comment upon him. It appears that Mr. Williams is both a highly competent mathematician and a man of delightful personality. He has been a student both at Haverford and Oxford and is doing admirably here at Cornell. My confidential informants tell me that they would regard him as probably exceptionally well qualified to meet the situation which you have at McGill.

I was also incidentally warned by the Dean that he would be very loath to see him leave Cornell and he would wish to make every reasonable effort to hold him. This last I presume is as good a sign as you could have of his competency.

I have as yet no information about Mrs. Williams and I will write you further after the vacation when I may have learned other facts of interest.

I look back with keenest pleasure on my recent visit to McGill and only wish it might have been longer. At any rate, I am very grateful for all the courtesy shown me and am, with kindest regards to you and very best wishes for the New Year,

Very sincerely yours,



Livingston Farrand

THE QUADRANGLE CLUB

Chicago Dec 27 23

Sir Arthur Currie,
McGill University.

Dear Sir:

I am writing in behalf of the
Candidacy of W. L. G. Williams of
Cornell U. for the vacant professor-
ship in Mathematics at McGill.

Williams wrote his Ph.D. thesis under
my direction and showed unusual
ability and originality in research.
His later published researches
(+ those in progress) prove that he
has the ability, industry, + enthusiasm
for research to guarantee a
successful career in research.

He is of delightful personality,
is liked by everyone, and is sure
of success as a College professor, and
of proving a congenial and valued
member of a faculty.

I recommend him for the professorship
without any reservation. Sincerely yours,
L. E. Dickson
Prof. of Math., Univ. of Chicago.

January 18th, 1924.

Dr. G. A. Bliss,
Department of Mathematics,
University of Chicago,
Chicago, Ill.

Dear Dr. Bliss:-

I thank you for your letter of
January 12th regarding Mr. W. L. G. Williams.

Mr. Williams' application is on
file and I can assure you that his claims will
receive every consideration when the appointment
is made.

Yours faithfully,

The University of Chicago

Department of Mathematics

January 12, 1924

Sir Arthur W. Currie
Principal and Vice-Chancellor
McGill University
Montreal, Canada

Dear Sir:

Mr. W. L. G. Williams, a former student in our Graduate Department of Mathematics, has written to me recently asking me to write you with regard to his qualifications for a position in the Department of Mathematics at McGill University. Mr. Williams had most of his training for the Doctor's Degree elsewhere, but he took his last year with us and was awarded the Degree some four or five years ago. Professor Dickson of our Department would know more intimately his ability as a research student, since it was under the supervision of Professor Dickson that he did his thesis work. I always found Mr. Williams a most interested and able student in my courses, and he impressed me as a man who would succeed in the classroom as an instructor. Since he received his degree, he has been at Cornell University in the Department of Mathematics, and I have heard only good reports of him. We have expected that he would continue in his research work and I understand from him in his recent letter that he has done so and will publish several papers in the near future. I have always felt sure that he had the ability to continue successfully with research work.

Yours very sincerely,

G. A. Bliss

GAB-W

MIAMI UNIVERSITY
OXFORD, OHIO

R. M. HUGHES
PRESIDENT

January 7, 1924.

Sir Arthur W. Currie,
Principal and Vice-Chancellor,
McGill University,
Montreal, P. Q., Canada.

Dear Sir:

I understand that Mr. W. Lloyd G. Williams of the faculty at Cornell University is being considered for an appointment in mathematics at McGill.

Mr. Williams was assistant professor of mathematics at Miami University from 1913 to 1918, coming directly to us from Oxford, England, where he had held a Rhodes Scholarship.

Thanks

Mr. Williams is in every sense of the word a gentleman, and will be an entirely satisfactory and helpful member of your staff if you take him on. He has a charming wife and we regretted losing them very much indeed. Personally, I can recommend him without any hesitation at all and feel confident that I can say that he will be as attractive a man and as desirable a faculty member as any one you could secure.

Mr. Williams is a graduate of Haverford College, where he specialized in mathematics; later he studied mathematics at Oxford University, and while he was at Miami and later he continued his study at Chicago University in the summers. While he was here we regarded him as a thoroly competent mathematician. We gave him his first experience in teaching, and during the earlier years we did not think that he was as expert a teacher as we could wish. However, he improved very materially while he was here, and before he left in 1918 we regarded him as a very good teacher. He went from here to Pennsylvania College at an increase in salary, from there to William and Mary, and to Cornell in 1920 at a further increase. I think he has been giving very satisfactory service there. I feel confident that you will find it profitable to look into Mr. Williams' record very carefully in filling the appointment you have under consideration.

With my kindest regards, and recalling very pleasantly a brief visit I had with you last summer, I am

Sincerely yours,

R. M. Hughes

January 15th, 1924.

President R. M. Hughes,
Miami University,
Oxford, Ohio.

Dear President Hughes:-

I beg to acknowledge and to thank you for your letter of January 7th with reference to Mr. Lloyd G. Williams of Cornell University, who is applying for a position in the Department of Mathematics at McGill University.

You give me just the information I wished to obtain and I appreciate the interest you have taken.

Most cordially reciprocating your good wishes, I am,

Yours faithfully,

McGILL UNIVERSITY
MONTREAL.

FACULTY OF ARTS.
DEPARTMENT OF ECONOMICS AND
POLITICAL SCIENCE

Jans

Re Professor Williams of Cornell

in connection with an appointment
in Mathematics.

Dear Mr Principal

The enclosed is a letter sent
by Professor Sampson, head of the
dept of English at Cornell, to
Max Elser, head of the Metropolitan
news syndicate, a friend of mine.

V. L. Jans

Stephen Leacock

CORNELL UNIVERSITY

ITHACA, NEW YORK

DEPARTMENT OF ENGLISH

31 December 1923

Dear Max

I know Williams. Save for one conversation, I should say slightly; but that one talk I had with ^{him} in the dining room of the University Club here, sent me away saying to myself, The man is a kindred spirit! We didn't talk about anything but maps, but we had the same passion for them, and, although you may not know it, a man who cares for maps per se is a saved soul. I liked him through and through.

I have enquired of others about him, and I get nothing but superlatives in response. One of his mathematical colleagues told that Williams is a thorough scholar, a splendid teacher, a wholly dependable committeeman, whose loss would fill the department with consternation. Another man not in that department called him, "A fine man, a fine fellow all through."

The upshot is that ^everybody here likes him and admires him. There aren't any reservations. The college that gets him will be lucky, and I hope it won't get him.

Happy New Year to you, Max old fellow, and to your admirable family.

Affectionately

Martin

January 7th, 1924.

Dr. Livingston Farrand,
President, Cornell University,
Ithaca, New York.

Dear Dr. Farrand:-

I must thank you very much for your letter of the 3rd instant concerning Mr. W.L.G. Williams and for the trouble which you are taking to give me all the information asked for. I shall be very pleased to have any further advice which you can give me.

Most cordially reciprocating your good wishes, I am,

Yours faithfully,

Principal.

Re Gillson's output of original work mentioned here. He has I think published nothing at all all the years he has been here.

McGILL UNIVERSITY
MONTREAL

McGILL UNIVERSITY

MONTREAL.

FACULTY OF ARTS.
OFFICE OF THE DEAN.

April 2, 1924.

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*File
Department of
Mathematics 1920-26*

Sir Arthur Currie,
Principal, McGill University.

Dear Principal,

Department of Mathematics.

Following several casual interviews with you recently affecting this Department, I venture now to make the following suggestions for your assistance.

I do not think that we can afford to appoint a mathematician of great prestige and international reputation to this department at present. There are not enough advanced students in Mathematics to justify so large an expenditure.

As near as I can make out, the department is very much in need of being rebuilt from the Freshman year up. Mathematics is a perfectly logical subject and the courses in this department follow one another in rigid conventional order. There is no possibility of a student undertaking special advanced courses unless his fundamental courses in the subject have been thoroughly completed, and it is impossible to apply Mathematics to any other branch of science until it has first of all been thoroughly mastered in its pure form. It would obviously require four or five years at least to complete this task at McGill.

I feel pretty well convinced that Dr. D.A. Murray is the best man available to undertake this work. His methods

Sir Arthur Currie, 2.

of teaching Mathematics are soundly conservative. He has had a long experience teaching undergraduate branches of Mathematics in Johns Hopkins, Cornell, Dalhousie and McGill, and he has published a number of mathematical books which have been extensively used in the universities for the last twenty years. I am inclined to think that the sound teaching of undergraduate Mathematics is his particular metier. Of his achievements in advanced modern Mathematics I know nothing at all.

I also hesitate to recommend that Prof. Sullivan be advanced just at present to the premier Chair of Mathematics at McGill, the Redpath Chair of Pure Mathematics, and I have no doubt that the same decision is equally just ^{to} of Prof. Gillson's claims to this appointment.

I am fully aware of the very close relationship between the Department of Mathematics and the Department of Physics, but I cannot see that that is any reason why the Department of Mathematics should be charged with any obligation to teach Mathematical Physics. Where the application of Mathematics to any other science is necessary the obligation seems to me to logically fall upon the scientific department making the application and not upon the Department of Mathematics itself. In any case I am very clear that we could not possibly appoint a mathematical physicist to the Redpath Chair of Pure Mathematics. To do so would in some measure at least, it seems to me, involve a distinct breach of trust.

I understand that the two halves of this Department

Sir Arthur Currie, 3.

are to be consolidated into a single department, and I have no doubt that on general principles this is the economic thing to do. To arbitrarily divide the work of any University subject in two necessarily sacrifices some measure of economy. In any case it is clear that it is the duty of the teaching staff in the department to so arrange their work that they get the very best possible results out of their combined teaching effort, and if this principle is followed it does not matter in the slightest just how the different teaching officers may be labelled. In other words, so far as the teaching obligations of the whole department are concerned, it does not matter the least which ^{Professor} happens to be designated the Redpath Professor of Pure Mathematics. Keeping then these ideas in mind, the only recommendations which seem feasible to me are as follows:-

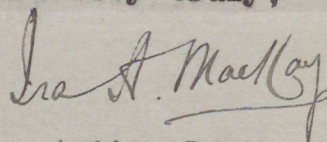
1. That Dr. Murray be appointed Chairman of the Department and Redpath Professor of Pure Mathematics.
2. That Dr. Sullivan be advanced to a full professorship, succeeding to the professorship vacated by Dr. Murray.
3. That the claims of Professor Gillson to be advanced to a full professorship be seriously considered in the early future should his devotion to the teaching of undergraduate Mathematics and his output of original work in mathematical science in the meantime justify such promotion.
4. That an additional assistant professor be appointed to undertake the work which Dr. Sullivan has been doing since he received his first appointment in McGill some years ago.

I sincerely hope, my dear Principal, that these

Sir Arthur Currie, 4.

suggestions may be at least of some little help to you in arranging the affairs of this department. I am at present engaged in getting out the Announcement for next year and it is, therefore, necessary that we come to a decision in matters such as this at the earliest convenient date.

Yours very truly,

A handwritten signature in cursive script that reads "Ira A. MacKay". The signature is written in dark ink and is positioned above the typed name.

Acting Dean

April 22nd, 1924.

Dr. Ira A. Mackay,
Dean, Faculty of Arts,
McGill University.

Dear Dean Mackay:-

Department of Mathematics.

With reference to the above department I have decided to recommend to the Board of Governors,-

- (1) That Professor D. A. Murray be confirmed in the Chairmanship of the Department;
- (2) That Dr. Sullivan be advanced to a full professorship.

I have informed Dr. Murray, Dr. Sullivan and Professor Gillson of these changes. The latter gave his warm approval to them. To him I gave the assurance that his claims for a full professorship would be sympathetically considered at the earliest possible date. You will note that I have not nominated anyone the Redpath Professor of Pure Mathematics.

I have asked Dr. Murray to advise as soon as he can whom he thinks we should secure as additional help in the Department.

Yours faithfully,

Principal.

SUCCESSORS TO ALFRED NELSON & SON.

TELEGRAMS: "ETCHINGS, EDINBURGH."
TELEPHONE: EDINR. 26557.

L. J. BROWN & CO.,
FINE ART DEALERS.

PROPRIETOR: L. JENNINGS BROWN.

37 HANOVER STREET,
EDINBURGH.

April 3rd. 1931 193.....

Sir Arthur Currie,
Principal, McGill University,
Montreal.

Dear Sir,

You will forgive us troubling you on a matter that hardly concerns you but we thought you might help us. In August 1928 a Professor A H Gillson who was evidently on a visit in this country bought from us an etching to the value of 5 guineas, he wrote for this and we sent it to him but there being delay in receiving payment for it we made enquiries and ascertained that he was a professor in the McGill University, he ordered the print on paper headed with the name of your University. We have written repeatedly for payment and though the letters were never returned we never heard from him.

We would be very glad to know if this gentleman is still at your University, this is hardly the treatment one expects from a gentleman.

Hoping we are not intruding on your courtesy and your valuable time,

We are, Sir,

Yours faithfully,

L J Brown & Co.

L J Brown

April 16, 1931.

L. J. Brown & Company,
37 Hanover Street,
Edinburgh, Scotland.

Dear Sirs,

Your letter addressed to Sir Arthur Currie has arrived in his absence from Canada. Professor A.H. Gillson is a member of our Department of Mathematics. It is the suggestion of the writer that you address your next communication to him at his home address, The Maxwellton Apartments, Sherbrooke Street West, Montreal. He has been advised of the contents of your letter.

Yours faithfully,

Secretary of the Principal.

February 16, 1926.

Hirschwaldsche Buchhandlung,
Berlin N.W.7,
Unter den Linden 63.

Dear Sir:-

With reference to your letter of January 16th, I beg to inform you that the University does not engage itself in the collecting of private debts. Your correspondence has however been forwarded to Professor Gillson who will no doubt remit to you.

Yours faithfully,

Wilfrid Bovey.

1925. Oct. 22nd.

Dear Colonel Bovey

1.

Yesterday you asked me in conversation to write a few remarks about Astronomy in the University.

1. Undergraduate Courses. There is no doubt of the great educational value of a direct & continuous course ^{in Astronomy} to undergraduates, and Astronomy has the great advantage that although its accurate results are actually arrived at only after arduous calculations, these same results are explainable in ordinary language, & the method (instrumental) ~~to~~ are easily understood by the ordinary 1st year mind. It would be possible even in the 1st year to construct a course (elementary & descriptive) which would be of comparable difficulty with 1st year Chemistry, Physics or Biology, which would be in many ways ~~and~~ more educative & cultural than these standard things. The larger Universities in the States have recognized and are recognizing this, and Elementary Astronomy has got its place amongst the other sciences in the College.

The present 2nd Year course is an attempt to show that valuable results can be obtained by means of the elements of Spherical Trigonometry. The course on Navigation suggested at the meeting the other afternoon could easily be handled by our students of the 2nd Year.

In the 3rd & 4th years, a study of some of the branches of Astronomy (including Astrophysics) would ~~be~~ ^{provide} beautiful examples both of the mathematical processes and the physical conceptions which our good students in Mathematics & Physics meet during their time; and in this way the study of Astronomy would read on both the subjects of Mathematics & Physics for the good of both.

2. Graduate Courses.

For a well trained student in Mathematics & Physics there

are unimpaired when at hand - in Applied Physics and Statistical
Attention

The actual instrumental equipment which ~~the~~ would be
required is really comparatively small, especially since Ottawa has
offered us their full size instrumental equipment for the use of
students. We do not need a great observation ^{room} in fact it is
preferable when it would ever be justifiable to build ~~the~~ a big
observatory in Montreal. Anyhow with Ottawa so near, the added
equipment to the Physics Building, first class work could be
carried on by our research students. At Ottawa things would not
only learn their job but also actually help in some research
being carried out there - in fact would be of valued aid to the
Astronomers there. Of course the equipment at Ottawa is very
good, the Observatory there is a place of enthusiasm & research.
Any co-operation between the Dominion Observatory and the University
would I am sure be a source of benefit to us - it would make
our best students run to a wider circle of scientific men.
I would I believe be good advertising. An excellent book about
Physics Schools would become even wider than than at present, &
our Students would go out into the world with the double
advantage of world representation from both the University and the
Dominion Observatories an advantage which would be useful in
Canada.

There is no need to specify at this stage what equipment would
be required for work in the University. I can only say that
I am grateful for the opportunity of putting down an indication
of some of the ideas in my mind.

Yours sincerely,
A. W. S. Fisher.

July 4th 1929.

TO WHOM IT MAY CONCERN:

I have much pleasure in writing this letter of recommendation on behalf of Mr. Herbert Tate, who has been an Assistant Professor in the Department of Mathematics of McGill University for the past eight years.

As a teacher he is stimulating and interesting, with a manner which is at once clear and concise. He is deservedly popular with his classes and colleagues. He is a man of first rate ability with an original mind and sound judgment. He is also an excellent and accurate examiner. He gives all his time and attention to his work and I should be sorry indeed to see him go.

His academic record speaks for itself. I can only testify to his worth as a teacher, a colleague and a citizen.

Yours faithfully,

Principal.

N. Tabe



Jan. 31, 1921.

Dear Sir,

I beg to forward you a formal, printed application for the Post of Assistant Professor of Mathematics at McGill University. I send half a dozen copies as I do not know how many sheets there may be. If you think favourably of my application and wish to appoint me, would you kindly (with your communication) afford me some fuller information on the following points?

The salary attached to the post is said to be about \$3,000 p.a. and I take it that the figure mentioned is the minimum. May I venture to suggest that a salary of \$3,500 either initially or one increasing to this after a year's service, if satisfactory, may appear reasonable? The latter sum, as I calculate it, is about £260 p.a. more than my present salary i.e. allowing for the difference in the cost of living in Canada. I think one might fairly ask for this addition on going abroad. I shall also lose considerably on exchanging English Pounds into Canadian. I do not wish to insist on the

precise figure quoted nor to request unreasonable terms. I should like to act moderately and reasonably on this point and, I know, from what Dr Purser says, that I may expect similar consideration from you. Perhaps you would let me have your views on the matter - at your convenience? At any rate I would try to meet you.

I assume also that if I go to Montreal I should be allowed a first-class passage out, as usual.

I shall be glad to know also when I may expect to hear - before Easter I hope - that the matter is decided. If it would at all convenience you, and if you offer me the vacancy, I shall immediately cable my decision.

I very much regret troubling you with matters of this kind but it is more satisfactory to give early information on these points rather than to defer them until the last.

Yours faithfully,

Herbert Tate

Robert W. Sugars, Esq.,
McGill University
Montreal

I would call particular attention to Mr Russell's Testimonial.

Application and Testimonials

FROM .

MR. HERBERT TATE, ^{M.A.,} ~~BA.~~, B.Sc.,

Scholar, Senior Moderator, and Double Gold Medallist in Mathematics
and Experimental Science, Brooke Prizeman, T.C.D.

Senior Mathematical Master, Portora Royal School, Enniskillen.

ACADEMIC QUALIFICATIONS :—

1913. Entered T.C.D., with First Class Junior Exhibition; Board Exhibition and Prize in Science.

1915 Mathematical Scholar. Honourman in Science and Modern Literature.

1917. Graduated (B.A.), with double Senior Moderatorship and Gold Medals in Mathematics and in Experimental Science (Physics and Chemistry).

Brooke Prizeman.

Offered Fitzgerald Research Scholarship in Physics;

Also: 1920. *M.A., Dublin University*

1915. B.Sc., N.U.I., with First-Class Honours in Mathematical Science.

Post-Graduate Scholar in Mathematics

I enclose testimonials from the following:—

Rev. E. G. Seale, M.A., Head Master, Portora Royal School, Enniskillen.

W. E. Thrift, M.A., F.T.C.D., Erasmus Smith's Professor of Physics,
University of Dublin.

G. R. Webb, Esq., M.A., Fellow and Tutor of T.C.D.

W. Bergin, Esq., M.A., Professor of Physics, University College, Cork.

(Personal) REFERENCES :—

R. Russell, Esq., M.A., Fellow and Senior Tutor, T.C.D.

G. V. Kinch, Esq., M.A., Head Master, Prior School, Lifford.

The Rev. G. Emerson, Monkstown Rectory, Co. Cork.

PORTORA ROYAL SCHOOL,
ENNISKILLEN,
IRELAND,

22nd JANUARY, 1921.

GENTLEMEN,

I have heard from Dr. Purser, of Trinity College, Dublin, that you require an Assistant Professor of Mathematics in the Faculty of Commerce, McGill University, Montreal. I have pleasure in applying.

I am an ex-Scholar (Mathematical) and Graduate (M.A.) of Dublin University with double first-class honours and gold medals both in Mathematics (Pure and Applied) and Experimental Science, being Brooke Prizeman in Mathematics and Fitzgerald Research Scholar in Physics at Degree. I am nearly 27 years of age and have had over 5 years' experience both in University work and schools in the following positions:—

- (1) Assistant to the Professor of Physics, University College, Cork, 1915.
- (2) Senior Mathematical Master, Kilkenny College, 1916.
- (3) Senior Mathematical Master, Portora Royal School, Enniskillen, 1917.

I am also a B.Sc., with first-class Honours in Mathematical Science, of the National University of Ireland. Practical applications of Mathematics to Physics and Statistics have always interested me and had my attention.

If I am appointed you may be assured that no energy will be spared by me in the discharge of my duties.

Yours faithfully,

H. TATE.

TRINITY COLLEGE, DUBLIN,

REGISTRAR'S OFFICE.

I am glad to have an opportunity of recommending MR. HERBERT TATE, M.A., for an Assistant Professorship in the McGill University. I have seen a statement of the subjects required, and I have no hesitation in stating that I regard MR. TATE as eminently fitted for such a post.

In addition to a training in Queen's College, Cork, MR. TATE attended four years Honour Courses at Trinity College in Mathematics (Pure and Applied), and in Experimental Physics and Chemistry, and he graduated with First-class Honours in both sets of subjects—obtaining two gold medals. I was one of his Examiners in Mathematics on this and on other occasions, and can therefore write from personal knowledge.

Since graduating MR. TATE has devoted himself to teaching and he will no doubt send testimonials on this side of his qualifications.

Should MR. TATE be appointed and his services be required for more advanced subjects than those in the programme that I have seen, he will be just as well qualified to undertake the duties of lecturer in them. His work as far as I have seen it is neat, and his reasoning and style precise and logical, and I should expect him to be an accurate and careful teacher.

ROBERT RUSSELL, M.A., Senior Fellow
and Professor of Pure Mathematics,
Trinity College, Dublin.

28th January, 1921.

PORTORA ROYAL SCHOOL,
ENNISKILLEN.

My friend and colleague, MR HERBERT TATE, tells me that he is a candidate for the post of Assistant Professor of Mathematics at McGill University.

I have known MR. TATE for many years as a brilliant student and a most capable and successful teacher. He taught for a year at Kilkenny College and came with me at my request to become Senior Mathematical Master here. Keen, energetic, methodical extremely lucid in exposition and an excellent disciplinarian he has proved himself a most successful teacher.

Of pleasant address, he is popular both with the boys and his colleagues, and his moral character is without reproach.

He is a gentleman of all-round culture and high general ability.

For the past year he has done much Secretarial work for me and helped greatly with the School accounts.

If MR. TATE be appointed to the post he seeks, I shall find it very hard to fill his place, yet I cannot do otherwise than recommend him without reserve.

(SIGNED)

E. G. SEALE (CLK.), M.A., HEAD MASTER,
(Formerly House Master at Highgate School, London,
and late Head Master of Cork Grammar School
and Kilkenny College).

January 24th, 1921.

Physics Department,
University College, Cork.
13th May, 1919.

Mr. Herbert Tate was a pupil of mine during the Session 1915-1916.
His knowledge of Physics is wide and accurate.

For some time he acted as my demonstrator, and as a teacher of
Physics he was most efficient.

I may add that he was in every way an excellent type of student.

WM. BERGIN, M.A.,
Professor of Physics,
University College, Cork.

27 Trinity College,
Dublin.

May 10th, 1919.

I have pleasure in testifying to the ability of Mr. Herbert Tate as a Mathematician.

I was his tutor in Trinity College, Dublin, and I also knew him well in my capacity as an examiner in the Honour School of Mathematics. He obtained a Foundation Scholarship a year before the nominal time, and several other undergraduate honours.

In 1917 he took a very good double First Class Honour Degree in Mathematics (Pure and Applied), and in experimental Science, (Physics and Chemistry).

He has since been engaged in teaching in one of the best schools in Ireland.

I think him well qualified for any Civil Service post requiring special abilities of this kind; also for a teaching post in a University College.

GEORGE R. WEBB, M.A.,
Fellow and Tutor, T.C.D.

Physical Laboratory,
Trinity College, Dublin,
21st March, 1918,

I have much pleasure in stating that Mr. Herbert Tate had a very successful undergraduate course in Experimental Science in Trinity College, Dublin. He obtained Honours in the subject on various occasions, and last October he obtained a Senior Moderatorship (First Class Honours), with Gold Medal at the Honours Degree Examination in that subject. On the results of his work and examination Mr. Tate was also offered the Fitzgerald Research Scholarship, but decided not to accept it, as likely to interfere too much with his teaching work.

During the last year of his course, Mr. Tate worked in the Physical Laboratory here under my supervision. I found him a hard-working, keen, and intelligent student, and anticipate for him a successful career in the teaching profession, which, I understand, he has decided to adopt.

WM. E. THRIFT, F.T.C.D.,
Professor of Experimental Physics,
University of Dublin.

Mr. Beattie's Oxford Honor

Good in Mathematics

At this moment in the tribulations of the University of Manitoba immense gratification may be drawn from the brilliant success achieved by Mr. J. Robert Beattie as a Rhodes Scholar at Oxford.

The promise shown by Mr. Beattie in pure mathematics at the University here, which must have guided his selection as a Rhodes Scholar, seemed a fortunate digression from the previous rather limited field of selection. The selection has been magnificently justified in an Oxford school which can claim a Cambridge man who is perhaps the world's champion mathematician.

The selection of Mr. Beattie brings credit on the University of Manitoba and provides a tribute to the faculty. Mr. Beattie has not alone secured a first-class in his school, difficult as that is to secure; but he is the first Rhodes Scholar from the North American continent to secure a first-class in mathematics. This fact alone reflects abundant praise of the academic excellence of our own University. Its standards are high when its honors students can proceed, as Mr. Beattie has proceeded, to take the highest honors at Oxford. Other Universities—the great and rich Universities—on this continent have had their better chance, but they have been unable to do just what Manitoba happens to have achieved in Mr. Beattie's distinction.

Though the distinction is not extraordinary among honor achievements at Oxford, it is rare enough to be prized. A first in mathematics is very stiff; a first in any school is always difficult. In twenty-five years (1905-30) of Rhodes Scholars, only 15 per cent of those who went into residence at Oxford obtained first-classes in final honor schools. The proportion is much larger than it may seem, for its largeness increases as the difficulty of securing the first-class is appreciated. The proportion becomes more accentuated too when it is known that only 27 per cent of the "hand-picked" English college scholars and exhibitors, and only 5 per cent of the rank and file of Oxford's undergraduates, obtained first-classes in the same period.

Every consideration of Mr. Beattie's success suggests the excellence of the standard that must be maintained in the honors courses given students by the faculty of the University of Manitoba.

Put on
mathematics file
20 July 1933

Cameron Schoolhouse,
St. Andrews.
9th. July, 1931.

Principal Sir Arthur Currie,
McGill University,
Montreal.

Dear Sir Arthur,
I have to thank you for letting
me know of your recommendation concerning me
to the Board of Governors and wish to assure you
of my earnest endeavour to merit this appreciation
of my services.

Yours truly,
David Howat.

June 29, 1932.

David Howatt, Esq.,
Cameron School House,
St. Andrews,
Scotland.

My dear Mr. Howatt,

I have much pleasure in telling you that I am to-day recommending to the Board of Governors that your salary for next year be \$2500, beginning September first next, and that you be raised to the rank of Assistant Professor.

With all kind wishes for a pleasant vacation,

I am,

Ever yours faithfully,

Principal

McGILL UNIVERSITY

MONTREAL

FACULTY OF ARTS
DEPARTMENT OF MATHEMATICS

1930
1901
23.

October 18th: 1929

Sir Arthur Currie, G.C.M.G., K.C.B., U.D.
Principal of McGill University: -

Dear Sir Arthur:-

As I shall be sixty-eight years of age next May, I hereby resign my professorship of mathematics in McGill University, the resignation to take effect at the end of my present year of service, namely, on September first 1930.

I came to McGill in September 1907 from Dalhousie, my alma mater, where I served as professor of mathematics from 1901 to 1907. My university teaching service from 1890 to 1901 was in the departments of mathematics in New York University and in Cornell University.

In forwarding my resignation I wish to testify to the great pleasure and happiness I have experienced in my work and in my associations at McGill. I also wish to express my heartfelt thanks for the kind consideration and good support uniformly accorded me by the authorities of McGill, by the deans of the faculties of Arts and Applied Science, and by the late Principal Peterson and yourself.

May I add that it is an especial pleasure to me, and I also regard it as an honour, to serve at McGill under you.

I remain,

with heartiest good wishes for McGill and for yourself personally,

Yours sincerely,

D. A. Murray.

P. J. O.

To Mr Glasco

Passed by on please. I have
written personally to Prof Murray

W. J. P. S. S.

21/10/29



CHAS. M. MCKERGOW, M.Sc., PROFESSOR
ARTHUR R. ROBERTS, M.Sc., ASSOCIATE PROFESSOR

DEPARTMENT OF MECHANICAL ENGINEERING
MCGILL UNIVERSITY
MONTREAL

May 16th. 1930

Sir Arthur Currie.
McGill University.
Montreal.

Dear Sir:-

The arrangements for a dinner to Dr. D.A. Murray have been completed.

The dinner will take place at the University Club, Mansfield St. on Friday the twenty-third May at seven in the evening.

Your share of the expense, including the dinner and a small token of remembrance, amounts to five dollars.

Would you please forward this amount to me, Room 66 Engineering Building.

Sincerely yours.

Chas. M. McKergow.

As answer - Creek

Knapp Manor.
Prescott, Ontario. Oct. 12th, 1933.

Dear Sir Arthur;

McGill is in need of money and so am I, which inspires this letter, and if you will give it the consideration it needs and then co-operate with me to the extent suggested, it WILL result in placing our University in a very independent financial position.

The subject is so contrary to all accepted notions that you must be prepared to ignore conventionalism and think and act on your own initiative regarding the following proposal.

Some 12 years ago I discovered a simple natural law by which I could see that electrical ENERGY could be multiplied indefinitely, but I did not know how to do it, and started out to find a way.

Because it contradicts everything taught in the schools of science regarding what they have been taught to call "POWER," I was unable to get any assistance from the highly trained technicians, so I went to my old friend the late Sir William Mackenzie, explained my discovery to him, he saw it at once and, that "we" as he put it, must work it out. So he gave me the necessary money out of his own pocket and allowed me to use his name as being behind it and he and his friends kept me going till they all died, and I had to get along as best I could, without money or friends.

At last I have solved my problem and the method is so extremely simple that it amazes me that someone had not done it before, until I think of the attitude of the doctors of Physics whom I have talked to and realize that they "must be shown" and that that type of mind always has been and always will be incapable of acquiring knowledge by the process of inductive reasoning. Bell, Marconi and the Wrights found it just as I have. They had to demonstrate, and so must I.

After I had cleared the way, I applied to the patent office for protection and now have it from the experts of the British Patent Office up to whom I put the issue squarely, THAT ALL POWER FORMULAE ARE FALLACIES, and these men after 15 months of consideration of my claims backed by my unassailable arguments, say that I am right, mark my specification, "Complete Accepted" and have issued my patent which protects me for MY DISCOVERY and for ANY MECHANICAL METHOD BY WHICH IT CAN BE APPLIED FOR THE MULTIPLICATION OF ELECTRICAL ENERGY.

I have now an electrical engineer who has learned his lessons with me, and he is building me a power unit to my design and to keep him going I need \$1,000.

Electricity can be produced my way at a cost of \$1 or less a K.W.-YEAR and this will create the greatest revolution in industry that has ever been seen besides rendering all fuels obsolete for HEATING, light and power. When you can heat your home by closing a switch, you will never bother with coal, oil or gas, will you? Besides, electricity produced my way is also much cheaper than any fuels.

I have been told by experts that if such a thing as I propose could be done, I can readily get \$5 a KW-YEAR royalty, and because I am now in my 80th year and must make hay while the Sun shines, I will take this \$5. This leads to the point of what I propose for McGill without shocking you, and that is \$10,000,000 at least and within the next 12 months, if you can and will help out now.

Now there are lots of men at Montreal whom you know and who if shown a reasonable ^{chance} of getting back \$110,000 for an investment with me of \$10,000 now, will advance me this money. I will give my personal undertaking to this affect to such a man, and to you to give the University out of one third of my royalties, as and when received by me, such sums as will aggregate the sum of \$10,000,000 and you should have it within 12 months, I think

To show my faith, your man need only give me his check for \$1,000 now and \$9,000 as soon as the machine is demonstrating. If you can find such a man, and there are plenty, perhaps he will run up here to see me where I can show him everything. What do you say?

Yours very Sincerely,

F. A. Knapp

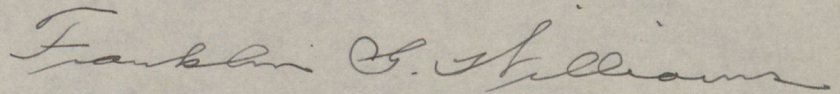
4618 Chester Ave.
Philadelphia, Pa.
June 1, 1933

Pres. McGill University
Montreal, Canada

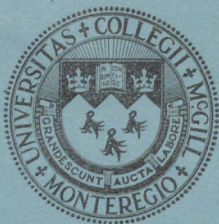
Dear Sir:

Do you anticipate that there will be a vacancy in the teaching force of the Department of Mathematics this Fall? If such be the case, I wish to make application for the position. In brief, I have my Doctor's Degree in Mathematics from Cornell University; and I have taught for nineteen years. For seven years, I taught at the Pennsylvania State College; and for two years, I taught at Cornell University. In the event of a vacancy, I shall be pleased to submit my credentials and to appear for a personal interview, if such be requested.

Yours respectfully



Franklin G. Williams



MCGILL UNIVERSITY

DEPARTMENT OF MATHEMATICS.

June 2nd, 1933.

Sir Arthur Currie, G.C.M.G., K.C.B., LL.D.,
Principal,
McGill University.

My dear Sir Arthur:-

In accordance with the instructions received from your Secretary on May 29th, I submit herewith a brief report on the paper of Rev. J. A. Durocher, Ptre, Hemmingford, P.Q. on "Notes and Problems on Mathematics."

Any merit which the above paper possesses accrues solely to the writer thereof himself. In other words, no one can go to the trouble of working out even such simple mathematical problems as it contains, without deriving therefrom some little benefit. From a mathematical standpoint, however, there is nothing new whatsoever in the paper, and many of the problems can be attacked in a much simpler and more direct manner. Here and there throughout the paper have been added a few notes intended to point out simpler and more direct lines of approach, and while these are not given in great detail, yet they will serve to indicate more direct and modern methods.

The whole subject of surds may be treated by means of indices, resulting in much briefer formulae and more direct solution.

The treatment of abstraction of cube roots and fifth roots, as given in the paper, is incomplete, and I have indicated the weaknesses in the method and have shown the correct method of obtaining the successive figures by means of trial divisors. The two or three examples given are merely verifications, and fail to demonstrate the correct method.

If you care to do so, I shall be glad if you will suggest to the author of the paper that he may come to see me about it at any time, when I shall be glad to go over the whole in detail and explain fully the comments outlined above.

Yours faithfully,

Neil Bruce MacLean

Inter-department Correspondence



PRINCIPAL AND VICE-CHANCELLOR;
SIR ARTHUR W. CURRIE, G.C.M.G., K.C.B.

FROM

THE PRINCIPAL AND VICE-CHANCELLOR,
MCGILL UNIVERSITY,
MONTREAL.

June 2nd, 1933.

Rev. J. A. Durocher, Ptre,
Hemmingford, P. Q.

Dear Sir,

Let me acknowledge receipt of your paper "Notes and Problems on Mathematics", which I submitted to Professor N.B. MacLean of our Department of Mathematics, and return herewith.

Professor MacLean is kind enough to say that if you are in town and care to see him about it, he will be glad to go over it in detail with you and explain fully the comments he has made therein.

Yours faithfully,

Principal

October 18,

1 9 3 3

J.S.G. Shotwell, Esq.,
Messrs. Shotwell and Hopper,
700 Ottawa Electric Bldg.,
O t t a w a .

*Mathematics
file*

Dear Jim,

I have shown your letter of the 14th
October to Professor Sullivan and he says he would
be unable to say whether there would be anything in
your grandfather's library which we could use until
he sees the lists. When you send these along I shall
gladly take the matter up again.

With all good wishes,

Ever yours faithfully,

Principal.

P.S. AS to your last paragraph, I expect to be here
most of the time. At present I am laid up with
a touch of sore throat; October 26th to 29th I
may be in Kingston. Armistice Day weekend I
shall spend in Toronto.

*Perkins
Physics*

SHOTWELL & HOPPER
CONSULTING CHEMICAL & MECHANICAL
ENGINEERS

J. S. G. SHOTWELL, M. Sc., Ph. D.
REGISTERED PROFESSIONAL ENGINEER ONTARIO
E. W. HOPPER JR., Ch. E.

OFFICES
700 OTTAWA ELECTRIC BLDG.
OTTAWA, CAN.
119TH ST. AND BROADWAY
NEW YORK, N. Y.

October 14th, 1933.

Gen. Sir Arthur Currie, G.C.M.G., K.C.B., LL.D.
McGill University,
MONTREAL, P. Q.

Dear Sir Arthur:

My mother has asked me, along with Mr. P.D. Wilson, to look after the disposing of my grandfather's (Dr. Glashan) library for her. It is a very complete mathematical library and I expect to have the lists finished at the beginning of next week. However, I think Drs. Charles T. Sullivan and L.V. King have a clear idea of the library.

I was wondering if the University would be interested in purchasing the library and, if so, I shall send you a copy of the lists when they are completed.

I had hoped to get down to Montreal a couple of weeks ago but was unable to do so. However, I expect to get down there some time in the next couple of weeks and I should like to see you when I go down. Would you please let me know when you would not be available so that I can make my arrangements accordingly.

Yours very sincerely,

J. S. Shotwell

JSGS/MMF

To Mr. Sullivan

*What have you and Dr. King
to advise?*

W. Currie

10/14/33

FRANCISCAN FATHERS

133 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA

May 31, 1932.

President,
McGill University,
Montreal, Canada .

Dear Mr. President :

I herewith assume the privilege of submitting to you two copies of a little booklet of mine, in which I have essayed to solve the interesting age-old problem of "Trisecting the Angle." I make bold to beg you to take a look at the booklet and hand a copy to the Department of Mathematics at your University for an opinion.

Any expression of opinion you or your faculty may be kind enough to give upon the matter will be warmly appreciated by

Yours very sincerely,

Julius J. Glibbe

To Professor Sullivan,

Encs.

Is there anything in this? What reply should I make?

AWC.

June 6, 1932

f-41x

June 7th, 1932.

Rev. Father Julius J. Gliebe,
Franciscan Fathers,
133 Golden Gate Avenue,
San Francisco, California.

Dear Reverend Father,

Let me acknowledge with thanks your
booklet "Trisecting the Angle". I have sent a copy
to our Department of Mathematics, as you request.
For myself, I fear that as I am not a mathematician
I cannot express an opinion.

Ever yours faithfully,

Principal.



MCGILL UNIVERSITY

Daniel Alexander Murray was born in Scotsburn, Pictou County, Nova Scotia, on May 23, 1862, the son of Angus Murray and Jane (Mackay) Murray, both of that county. He received his early education at the Truro Academy and at Dalhousie University where he was awarded his B.A. degree, graduating with honors in Mathematics. He then took a course of study at Johns Hopkins University, where he gained his Doctor's degree.

From 1890 to 1894 he taught on the mathematical staff of New York University, later going to Cornell, where he lectured from 1894 to 1901. Dr. Murray was then named Professor of Mathematics at Dalhousie University and remained there until 1907, when he joined the staff of McGill. From that year until 1924 he was Professor of Applied Mathematics in the Faculty of Applied Science (now the Faculty of Engineering). On the death of Professor James Harkness of the Mathematics Department of the Faculty of Arts (now the Faculty of Arts and Science, the Mathematics Departments of the two faculties were merged and Dr. Murray became the first head of the joined departments, with the title of Chairman of the Department of Mathematics. On reaching the retiring age in 1930, Dr. Murray was made an emeritus professor. At McGill he won the high regard of all his colleagues, raising the Department of Mathematics to a very high standard of excellence.

Dr. Murray was a member of the American Association for the Advancement of Science; the American Mathematical Society; The Mathematical Association of America; the Society for the Promotion of Engineering Education; the Nova Scotian Institute of Science; the Nova Scotia Historical Society; the Archaeological

Institute of America (Montreal Branch); the Royal Colonial Institute (London), and was the author of numerous mathematical publications, his name being widely known in this connection. An earnest and kindly scholar, the late Dr. Murray succeeded to a remarkable degree in inspiring those with whom he was associated with his own generous purpose.

He married Alice Muriel Malloch, daughter of Dr. W. B. Malloch, of Perth, Ont., and Moose Factory, Husbon Bay.

He was an ardent church worker, being representative elder of the Presbyterian Church of St. Andrew and St. Paul, Montreal, secretary and member of the Board of Management of the Presbyterian College, and frequently a commissioner to the General Assembly of the Presbyterian Church in Canada. A 32nd degree Mason, Dr. Murray was past master of University Lodge, No. 84, A.F. and A.M., G.R.Q., a member of Royal Albert Chapter, R.A.M. of the Scottish Rite, and of the Royal Order of Scotland.

January 24th, 1927.

Ferd. Van Bruyssel, Esc.,
"The Mackenzie",
Ottawa, Ont.

Dear Sir:-

Let me acknowledge receipt of your letter of the 21st of January with reference to the candidate for a Professorship of Physics and Mathematics.

Personally I know of no vacancy in any Canadian university. Our staff at McGill is complete in these departments and I am not looking for any change in the near future.

With all good wishes, I am,

Yours faithfully,

" The Mackenzie ", Ottawa
January 21st 1927.

Sir Arthur W. Currie, K.C.B., L.L.D., G.C.M.G.,
Principal & Vice Chancellor Mc Gill University,
Montreal.

Dear Sir Arthur,

A correspondent in Ghent writes to recommend a candidate to any professorship of physics & mathematics which may become open in the near future in a Canadian University.

This candidate is described as follows:-

D.J. Aneckstein - former military attaché to the white Russian Mission - Forced to leave Russia after the revolution - has obtained with greatest distinction the degree of doctor in physical & mathematic sciences at the University of Ghent. Please see memo. herewith, remitted by Mr. Demoulin, (Professeur d'Analyses & Mathématiques Supérieures) of the Ghent University) who states that Mr. Aneckstein is highly gifted, & speaks fluently English, French & German.

Although I have no personal interest in the said candidate, with whom I am not acquainted, I do wish to oblige my correspondent by making suitable inquiries in compliance with his desire.

As a first step, I am taking the liberty of consulting you, & of seizing upon this opportunity of referring to the not to be forgotten service you kindly did me in connection with a Dominion mission to Europe in 1921.

with expressions of highest regard, I remain,

Faithfully yours,

Ferd. van Quynen

Aneckstein D.J.- Russian, 32 years old, married, former military attaché to the Russian White Mission, doctor in physical & mathematical Sciences, with specialty of superior mathematical analysis.

Thesis: Etude d'un système particulier de quantités complexes à 2 unités.

References: 1 - Professor A. Demoulin - member of the Royal Academy; 2 - Professor A. Merlin, of Ghent University; 3 - Professor W. Nernst, former rector of Berlin University, laureate of the Nobel prize.

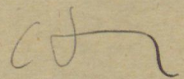
February 28th 1929.

Roy B. Estey, Esq.,
117 Redfield Place,
Syracuse, N. Y.

Dear Sir:-

In the absence of Sir Arthur
Currie I am in receipt of your letter and
am referring it to Professor D. A. Murray, who
is Head of the Department of Mathematics,
asking him to reply.

Very truly yours,


Acting Principal.

May 3rd, 1927.

Miss Anna W. Grant,
St. Hilda's School for Girls,
Calgary, Alta.

Dear Miss Grant:-

I am to-day in receipt of your letter of April 22nd, with your application for a position on the staff of the Department of Mathematics of McGill University.

I have spoken to Dr. Murray, the head of the Department, and he tells me that the staff is complete for next year. However, I am forwarding your letter to him in order that he may have it on file for reference should any vacancy arise.

Yours faithfully,

Principal.

Gillson

(Copy Cable)

Harkness,
Can. Paulerspury, England.

Confirm Gillson's appointment. Authorize
offer 3500 fill Davies post.

Glassco.



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See Arthur's Success

Ritz Carlton

TELEPHONED
4 p. m. by *JCB*

September
Seventh
1920

Dr. D. A. Murray,
P. O. Box 537,
Truro, N.S.

Dear Dr. Murray:-

The following cablegram has
been received from Professor Harkness:

"Appointed Gillson Cambridge University
"as empowered. Highest qualifications
"Please cable confirmation. Good Oxonian
"applying post vacated by Davies death.
"My cable address Can Paulerspury
"England."

It seems that he is having better
luck than he anticipated at the time he wrote
to us. The necessary confirmation has been cabled
to Harkness and let us hope this ends our
difficulties in the Department of Mathematics.
There are plenty in the other departments to
engage all our attention.

Yours faithfully,

Principal.

7
May 16th, 1922.

Professor A.H.S. Gillson,
Coteau Landing, Que.

Dear Professor Gillson:-

I thank you for your letter
of May 13th.

The suggestions therein outlined
will receive my most earnest consideration, though
what we can do will be determined solely by financial
considerations.

With all good wishes for a pleasant
vacation, I am,

Yours faithfully,

Principal.

McGILL UNIVERSITY
MONTREAL.

Coteau Landing,
P.Q.

1922. July. 13th

FACULTY OF ARTS
DEPARTMENT OF MATHEMATICS

Dear Sir Arthur Curie,

Perhaps you will remember that at lunch the other day the subject of Astronomy was mentioned as being an eminently suitable subject for study by the members of the L.E.A. as organised by Mr. A. Mansbridge.

As you know, Astronomy is practically unacquired in the University, except for a short non-mathematical course which I am giving to 2nd year students, and if you will allow me I should like to write down briefly what I feel about the study of Astronomy at McGill.

There are at least three sides from which the study can be made:

(1) The mathematical side. This would involve the use of all the mathematics which we give to our Honours students in 4 years & rather more. It would be an admirable subject for Graduate study for M.A. or Ph.D. degrees. A large field of investigation is here requires development, and I am hoping to commence next year (i.e. in 1923) a course which will be both introductory and suggestive as to research, to graduates who require some mathematical work which leads to subjects of first-rate importance to research upon - eg. Lunar Theory; Planetary Theory; Theory of Tides; Figure of Earth; Figures of Equilibrium of Rotating Fluids etc.

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FACULTY OF ARTS

DEPARTMENT OF MATHEMATICS

As things are our library is very imperfect in ~~many~~ in Astronomical Literature, but that could be remedied.

(2). The Purely Observational Side :- This would involve the construction of a large dome to house a good ^{large} telescope, a suitable staff etc and although h^c Gill possesses the site for such an observatory on the mountain, given I believe ^{for h^c Gill} by Sir William Macdonald, I do not think that it is advisable to tackle the subject from this side under present conditions, unless you see some benefactor arises who will complete the work started by Sir W. Macdonald on so magnificent a scale.

(3). The Computational Side :- This is the idea of Kapteyn of Groningen in Holland who has what he calls an Astronomical Laboratory. There is no telescope on the place, but instead very good microscopic measuring apparatus. His assistants are men of good mathematical training & space. Large masses of material are accumulated at the large observatories of the world and often remain unused, undiscussed, owing to the lack of ~~the~~ properly trained staff. This material is sent to Kapteyn and during the last 20 years or so (at least) results of fundamental importance have streamed from his laboratory, the publications of his laboratory are world famous.

- It seems to me that h^c Gill could commence the serious study of Astronomy (with ones eye all the time fixed on the question of research as being the ultimate end of such study)

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in something like the following way.

Procure from one of the large observatories of America a good small telescope (say about 6" aperture) - and there are plenty of such telescopes no longer in use which can be obtained very cheaply - have a dome built on top of the Physics building to house it. This telescope would be used for teaching purposes and the training could be made more complete by devising courses in optics and computation (work with calculating machines etc). In addition the Astronomical student would take a course involving one or more of the ^{mathematical} subjects mentioned in Section 1. above.

In this way, at really very little cost, the subject of Astronomy would be introduced into the University, and if the training were carried out as suggested above men would be turned out with an all round grasp of Astronomical principles (the observatories require such men), and at the same time the subject would be in such a state that expansion could take place ^{intermittently} in ~~any~~ any of the three above mentioned directions, if the demand ~~should~~ arise.

I hope that you will forgive me, Sir Arthur, for writing this somewhat lengthy screed upon the subject of Astronomical teaching and research at McGill, for although my training at first was that of a mathematician, the time spent at Cambridge as Isaac Newton research student under the guidance

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inspiration of such men as the late Sir Percy H. Dawkins & Sir Robert Ball has given my mathematics an Astronomical bent (and these are no problems in mathematics ^{more} ~~by~~ interesting and illuminating than those which arise from Astronomical problems), and I hope to see, perhaps in the very near future, a department of Astronomy in the University - or perhaps Astronomy will be merged into Mathematics, and we shall have a department of Mathematics and Astronomy.

Yours sincerely,

A.H.S. Pittson.

Associate Professor of Mathematics.

^{non-departmental}

As the present is a personal letter, although upon an Academic subject, I did not think it necessary to send it through my friend Dr. Huxness, the head of the department.

7
Mathematics

July
Twenty-fifth
1922.

Dr. James Harkness,
23 Lorne Avenue,
Montreal.

My dear Harkness:

I have your letter of the 22nd instant, with which was enclosed one to you from Professor Gillson.

I am glad to be able to inform you that at the last meeting of the Finance Committee it was decided to recommend to the Board of Governors that Mr. Gillson's salary should be raised to \$4,000.

I hope you will have a pleasant holiday.

Yours faithfully,

Principal.

Enc.

23 Louise Avenue,
Montreal

July 22, 1922

Sir Arthur Currie, K.C.M.G.; K.C.B.

Dear Mr. Principal,

I enclose a letter from Associate Professor A. H. S. Gillson, in which he asks that his salary should be raised to \$4000. While I realize that many demands are being made on the University at the present time, I would urge that this increase of salary should be granted for the following reasons.

Professor Gillson is preeminently the kind of man that Mr. Gill requires. He is a man of marked ability and is recognized as such. The Authorities at the Naval College at Greenwich were determined not to let him go if they could possibly help it; Professor Eddington of Cambridge recently asked that he might be allowed to put ^{Gillson's} ~~his~~ name in for the vacant post of Astronomer Royal of Ireland; Professor DeLury told me recently that he had tried to get in touch with ~~him~~ ^{him} just about the time of ~~the~~ the Mr. Gill appointment to see whether he could not be secured

for Toronto and regretted that he had failed to do so owing to some mismanagement of the mail at the Liverpool S.S. Office.

During the short time that Professor Gillson has been here he has made his influence felt in a variety of ways. For instance he was elected last session to the Presidency of the Physical Society; the year before last he handled with great success large first year classes in 1st year Arts and Commerce and he has been highly effective and stimulating with advanced students. Also he is preeminently the type of research man that we need here.

I am convinced that it would be wise for the University to give him what is, I think, the normal salary for an Associate Professorship. As a married man, with a child, he finds it difficult to live on \$3500 a year.

Professors Ew, King and the others who know his work would, I feel sure, concur in my advice.

I am leaving to-day for a holiday down the river, otherwise I should have called and talked

The matter on with you personally.

In my opinion Gillson is of the same kind
of calibre as King.

With kind regards

Yours sincerely

J. Harkness.

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SERIES A. INSTRUMENTS AND BUILDINGS

- No.
- A 1 Diagram of Snow horizontal telescope building
 - *2 The Snow telescope building from the southeast
 - *3 The Snow coelostat and second mirror from the southeast
 - *4 The Snow coelostat and second mirror from inside the rolling shelter
 - *5 Interior of the Snow telescope showing concave mirror
 - *6 The five-foot spectroheliograph showing the slit end
 - *7 The five-foot spectroheliograph showing the optical train
 - 9 Diagram of the sixty-foot tower telescope
 - *10 The sixty-foot tower telescope from the northeast
 - *16 Interior of the physical laboratory in Pasadena
 - 17 Diagram of the one-hundred-fifty-foot tower telescope
 - 18 Diagram of the upper end of the one-hundred-fifty-foot tower telescope and dome
 - *20 The sixty-foot dome from the east
 - *21 The sixty-foot dome from the sixty-foot tower
 - *22 The sixty-inch reflecting telescope from the west
 - *25 The sixty-inch reflecting telescope showing plate-holder attachment
 - *26 The sixty-inch mirror on grinding machine tipped forward for testing
 - *27 The sixty-inch reflecting telescope with Cassegrain spectrograph
 - *28 Dome of the one-hundred-inch Hooker reflector from south showing shutter open
 - *29 The one-hundred-fifty-foot tower telescope from sixty-foot tower telescope
 - *30 The one-hundred-fifty-foot tower telescope from the northeast
 - *31 Top of the seventy-five-foot spectrograph
 - *32 The one-hundred-foot dome from one-hundred-fifty-foot tower
 - *33 Model of top of Mt. Wilson showing buildings of the observatory
 - *34 View from the balcony of the Hooker telescope dome showing sixty-inch telescope dome, the sixty-foot tower telescope and the one-hundred-fifty-foot tower telescope

THE FOLLOWING SUBJECTS ARE ALL PERTAINING TO THE
ONE-HUNDRED-INCH HOOKER TELESCOPE

- *A 35 The site for the telescope. Concrete footings for the building being put in. Photographed from one-hundred-fifty-foot tower telescope
- *36 The pier for the telescope under construction. Photographed from the one-hundred-fifty-foot tower telescope
- *37 The pier for the telescope under construction. Forms for the floor and supporting brackets in place
- *38 Putting in the reinforcing rods for the concrete floor of the pier
- *39 The pier and a few columns for the building as seen from the southwest
- *40 Same as A 39, except as seen from the northeast. Also showing the one-hundred-fifty-foot tower telescope in the distance
- *41 Surfacing the rails for the dome by means of a motor-driven grinder, pushed along by a motor-driven truck, and guided by a steel boom pivoted in the center
- *42 Erection of the building. Inner sheathing on lower part in place. Lower part of dome framework up
- *43 Detail view of rails, trucks, and framework of balcony of dome
- *44 Top section of main girder of the dome ready for hoisting
- *45 Top section of main girder being hoisted into place
- *46 Framework of the dome completed, and inner sheathing begun
- *47 Putting on the inner sheathing and the brackets and ribs for the outer sheathing
- *48 Near view of the building and dome completed, except the outer balcony, showing the shutter wide open
- *49 The dome completed, showing the fin used to balance the wind pressure on the shutter
- *50 Drawing of a section of the building and dome, the pier, and the telescope as seen from the west
- *51 North pedestal of the telescope, also showing the ten-ton crane used in the erection
- *52 West member of the fork for the telescope being swung into place
- *53 Lower section of the telescope tube placed in the fork
- *54 Second section of the tube in place, and third section ready to be hoisted.
- *55 Driving clock of the telescope, set up in the shop for testing
- *56 Drawing showing the driving clock, worm wheel, south spherical bearing, mercury trough and steel float, also quick motion drive in right ascension

- *A57 Cutting the teeth in the worm wheel
- *58 The driving clock, worm and part of the worm wheel
- *59 The mirror on the grinding machine ready for concaving the surface
- *60 The mirror on the grinding machine, with concave surface polished and ready for parabolizing, showing the full sized polishing tool, and band for supporting the mirror when turn-table was tipped forward for testing
- *61 The mirror silvered and tipped forward on turn-table for testing
- *62 The bottom of the cell with lever system and plates for supporting the mirror, also showing piping for temperature control
- *63 Lowering the mirror on to the support system
- *64 Lowering the ring of the cell over the mirror
- *65 The mirror in its cell in the silvering room under the main floor of the pier, showing the silvering band and spout in position
- *66 The mirror in its cell being raised above the pier floor after having been resilvered
- *67 The mirror in its cell back in the lower end of the tube ready to be bolted tight
- *68 Fork of the elevator descending after the cell has been bolted to the telescope
- *69 Switchboard for the dome drive, showing faces of the motor-driven rheostats and automatic switches
- *70 Drawing, showing assembly of the declination bearings, tube, mirror in its cell, and coils of pipes for temperature control
- *71 Drawing, showing assembly of the Coudé and Cassegrain convex mirror mountings and cages
- *72 Drawing, showing assembly of the Newtonian flat mirror mounting and cage
- *73 The interior of the dome, showing the telescope, Cassegrain observing platform, etc., as seen from the west
- *74 The Cassegrain spectrograph attached to the telescope and the Cassegrain platform
- *75 Twenty-foot interferometer beam on the tube showing mirrors 12 feet apart
- *76 Diagram of light path when using interferometer

SERIES B. SOLAR PHENOMENA

- B 1 Comparison photographs of the sun, taken with the calcium H_2 and hydrogen $H\delta$ lines, July 22, 1906
- *2 Comparison photographs of the sun, taken with the calcium H_2 line and direct image, July 30, 1906
- 3 Comparison photographs of part of the sun, taken with the hydrogen $H\delta$ and the iron line λ 4045.9, November 13, 1907
- 4 Part of the sun photographed with the hydrogen $H\alpha$ line, April 30, 1908
- 5 Part of the sun photographed with the calcium H_2 line, April 30, 1908
- 6 Part of the sun, direct photograph, April 30, 1908
- *7 The sun photographed with the $H\alpha$ line, October 7, 1908
- 8 Series of four photographs taken with the hydrogen $H\alpha$ line showing the motions of a very dark hydrogen flocculus near a spot, June 2 and 3, 1908
- *9 Part of the sun photographed with the hydrogen $H\alpha$ line, showing right- and left-handed unipolar vortices, September 9, 1908
- *10 Part of the sun photographed with the hydrogen $H\alpha$ line, showing a multipolar group of spots with fine stream lines, September 2, 1908
- 11 The same as No. 9, except photographed October 7, 1908
- *12 Series of twelve photographs of an eruptive prominence projected on the sun's disk, made with the $H\alpha$ line, September 10, 1908
- 13 Series of four photographs of a spot group taken with the $H\alpha$ line, showing motions of the flocculi, August 29, 1908
- 14 Series of four photographs of two spots, north and south of the equator, taken with the $H\alpha$ line, October 4, 1908
- *15 Prominence 80,000 miles high, photographed with the $H\alpha$ line, August 21, 1909
- *16 Chromosphere and prominences photographed with the $H\alpha$ line, August 20, 1909
- 17 Photograph of spot group taken with the $H\alpha$ line, showing bipolar type of solar vortices, September 10, 1909
- 18 Chromosphere and prominences photographed with the hydrogen $H\alpha$ line, August 25, 1909
- 20 Series of four photographs of a prominence taken with the hydrogen $H\alpha$ line, October 10, 1910
- *21 Chromosphere and prominences photographed with the hydrogen $H\alpha$ line, September 20, 1909

- *B 22 Chromosphere and prominences photographed with the hydrogen H α line, September 21, 1909
- *23 Chromosphere and prominences photographed with the hydrogen H α line, September 22, 1909
- *24 Large sun-spot group, June 17, 1907
- *25 Series of four photographs of the southwest quarter of the sun, taken with the hydrogen H α line on August 3, 5, 7 and 9, 1915
- *26 Part of the sun, photographed with the hydrogen H α line, September 9, 1915. Two exposures showing large prominence (dark) on the disk
- *27 Combined photograph of the sun and prominences of May 22, 1916, taken with the K line of calcium
- 28 Two views of prominence of May 22, 1916, photographed with the hydrogen H α line. One showing prominence at limb, the other showing it projected on disk, and running off over and beyond limb
- 29 Five exposures on a portion of the sun taken with the H α line, showing the appearance at different levels, May 29, 1916. Slit moved from center of line 0.33 A towards red between exposures
- *30 Remarkable twenty-four-hour development of sun-spot group, August 18 and 19, 1916
- *31 Northwest quarter of the sun photographed with the hydrogen H α line showing a large spot group with beautiful stream lines, January 5, 1917
- *32 The great sun-spot group of February 8, 1917
- *33 Large quiescent prominence, 110,000 miles high. Four views photographed with the H α line, June 10, 1917
- *34 Large active prominence, 140,000 miles high, photographed with the K line of calcium, July 9, 1917
- *35 The great sun-spot group of August 8, 1917
- *36 Comparison photographs of the sun, taken with the hydrogen H α line, and direct image, August 12, 1917
- †*36a The same showing direct image only
- †*36b The same showing H α image only
- 37-41 Series of exposures on five consecutive mornings, showing the western part of the sun, illustrating the way in which the (dark) prominences on the disk are carried over the limb by rotation. Photographed with the H α line: June 27, 1917 (37); June 28, 1917 (38); June 29, 1917 (39); June 30, 1917 (40), and July 1, 1917 (41)
- *42 Solar corona photographed at Green River, Wyo., June 8, 1918, exposure 65 sec. through clouds

SERIES C. SOLAR SPECTRA

- C 5 Comparison of titanium oxide fluting in sun-spot and electric furnace λ 7100
- 6 Iron triplet λ 6302.7 in spectrum of spot near sun's limb, with nicol and compound half-wave plate, showing plane polarization across lines of force
- 7 Iron triplet λ 6302.7 in spectrum of spot near center of the sun, with nicol and compound quarter-wave plate, showing circular polarization along lines of force
- 8 Iron triplet λ 6173 in spectrum of sun-spot, March 9, 1916, showing right- and left-handed circular polarization by transmission of red and violet components of the line on same strip of quarter-wave mica, thus demonstrating the presence of two overlapping fields of opposite sign. Slit placed as shown on photograph of spot
- 9 Iron triplet λ 6173 in spectra of sun-spots, *a* and *b*, plane polarized light of spot near sun's limb, taken with nicol and (*a*=single, *b*=compound) half-wave plate; *c* and *d*, circularly polarized light of spot near center of sun, taken with nicol, and (*c*=single, *d*=compound) quarter-wave plate; *c* shows reversal of sign of charge of adjacent spots
- 10 Iron triplet λ 6302.7, showing different strengths of field in two sun-spots
- 11 Iron triplet λ 6173 in spectrum of sun-spot near limb, showing plane polarization compared with laboratory spectra of iron lines. Taken with nicol and half-wave plate
- 12 Iron triplet λ 6173 in spectrum of S. preceding spot of the great group of August 8, 1917, showing reversal of circularly polarized light. Taken with nicol and (*a*=single, *b*=compound) quarter-wave plate
- 13 Spectrum of sun-spot showing the lines $\lambda\lambda$ 6145.2 and 6145.5 weakened in the spot spectrum. Taken with nicol and compound quarter-wave plate
- 14 Spectrum of the "flash" (lower chromosphere) showing magnesium lines, green carbon fluting, etc.
- 15 Spectra of opposite points on the sun's limb, latitude 0° to 90° , showing displacements of lines due to solar rotation

*SUN SPOT SPECTRUM MAP

5 strips on each photograph. Scale on 8x10 prints is 3.7 mm per Angstrom

C 16	Region $\lambda\lambda$	3900—4150
17	"	4150—4400
18	"	4400—4650

C 19	"	4650—4900
20	"	4900—5150
21	"	5150—5400
22	"	5400—5650
23	"	5650—5900
24	"	5900—6150
25	"	6150—6400
26	"	6350—6600

SERIES D. STELLAR SPECTRA

- D 2 Spectrum of the Wolf-Rayet star B.D. +30°3639 having an atmosphere of hydrogen, showing the hydrogen series from $H\beta$ to $H\zeta$, made with the focal plane spectrograph
- 3 Spectrum of α *Tauri* $\lambda 4320$ to $\lambda 4430$ iron comparison spectrum, made with the Cassegrain spectrograph
- *4 Types of stellar spectra. Nine types from B to N
- 5 Absolute magnitude effect. 61 *Cygni* and β *Ursae Minoris*
- 6 Absorption in space
- 7 Spectra of stars of high and low radial velocity; Lal. 1966, -325 km. and a second star, velocity -10 km.
- 8 Spectrum of a spectroscopic binary, showing shifts of lines toward V and R on two exposures
- 9 Spectrum of the star cluster Messier 13, *Hercules*
- 10 Spectrum of the central part of the nebula in *Andromeda*
- 11 Spectrum of the spiral nebula N. G. C. 4594
- 12 Spectrum of the nebula in *Orion*
- 13 Spectra of Wolf-Rayet stars B.D. $-21^{\circ}4864$ and $+35^{\circ}4013$. These are extreme types of these stars
- 14 Spectrum of the star Boss 5650, showing peculiar character of $H\beta$ and $H\gamma$
- 15 Spectrum of the Cepheid variable star TU *Cassiopeiae* at maximum, October 7, 1917, and at minimum, September 30, 1917
- 16 Spectrum of the Cepheid variable star RT *Aurigae* at maximum and minimum
- 17 Spectra of N or Fourth type stars, 19 *Piscium*, and B.D. $+25^{\circ}205$, $+57^{\circ}702$ and $+38^{\circ}1539$. Blue region
- 18 Spectra of *Omicron Ceti (Mira)*, October 5 and November 23, 1917, and January, 1918
- 19 Spectrum of *Omicron Ceti (Mira)*, large scale, November 1, 1917

- D 20 Spectrum of γ Cygni, showing enhanced lines
Spectrum of λ Aurigae, showing normal lines
- *21 Seven stars having unusual spectra B.D.+23°123; θ Ceti; R Aquarii;
B.D.+11°4673; T Tauri; Nova Aquilae; Nova Ophiuchi
- *22 Spectrum of Omicron Ceti, taken 9, 53, 87, 130, 144, 174 and 188 days
after maximum
- *23 Typical spectra of giant stars of types F to M
- *24 Typical spectra of dwarf stars of types F to M

SERIES E. LABORATORY SPECTRA

- E 1 Photographs of spectrum of titanium: *a*, *b* and *c*, given by carbon resistance furnace, temperature approximately 2000°, and 2400° and 2600° C., respectively; *d*, given by the arc (lines in furnace not given by arc for the most part due to impurities)
- 2 Photographs of spectrum of iron and vanadium: *a*, without magnetic field; *b*, with magnetic field, light vibrations perpendicular to lines of force; *c*, with magnetic field, light vibrations parallel to lines of force
- 3 Three sets of triplets in the spark spectrum of iron
- 4 Zeeman effect for chromium (31,700 gauss) λ 4613 to λ 4626
- *5 Stark effect for chromium and hydrogen line H γ . Three groups. Regions $\lambda\lambda$ 4098-4111-4129, $\lambda\lambda$ 5006-5028-5056, $\lambda\lambda$ 5275-5297-5329

SERIES F. SELECTED STAR FIELDS

Slides under this heading will be made to order from such negatives of the Kapteyn Selected Areas as are available

SERIES G. NEBULAE AND STAR CLUSTERS

PHOTOGRAPHS TAKEN WITH THE 60-INCH REFLECTOR

- *G 1 M 42 N.G.C. 1976 Orion, Great Nebula (central portion), exposure 45 min., September 16, 1909
- *2 31 224 Andromeda, Great Nebula (central portion), exposure 2 hrs., October 13, 1909
- *3 20 6514 Sagittarius, Trifid Nebula, exposure 2 hrs. 26 min., June 4 and 5, 1910
- †*4 51 5194 Canes Venatici, Spiral Nebula, exposure 10 hrs. 45 min., April 7 and 8, 1910
- *5 33 598 Triangulum, Spiral Nebula, exposure 8 hrs. 30 min., August 5, 6, 7, 1910

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|----------|-----|-------------|--|
| *G6 | | N.G.C. 6960 | <i>Cygnus</i> , Slender Network Nebula (north part), exposure 6 hrs. 30 min., July 4 and 5, 1910 |
| *7 | | 6992 | <i>Cygnus</i> , Larger Network Nebula, exposure 10 hrs. 15 min., July 2, 3, 4, 1910 |
| *8 | | 1432 | <i>Pleiades</i> , Diffuse Nebula around <i>Merope</i> , exposure 5 hrs., October 9, 1909 |
| *9 M 101 | | 5457 | <i>Ursa Major</i> , Spiral Nebula, exposure 7 hrs. 30 min., March 10 and 11, 1910 |
| *10 | 81 | 3031 | <i>Ursa Major</i> , Spiral Nebula, exposure 4 hrs. 15 min., February 5, 1910 |
| *11 | | 4565 | <i>Coma Berenices</i> , Spiral Nebula on edge, H V 24, exposure 5 hrs., March 6 and 7, 1910 |
| *12 | 1 | 1952 | <i>Taurus</i> , Crab Nebula, exposure 3 hrs., October 13, 1909 |
| *13 | 97 | 3587 | <i>Ursa Major</i> , Owl Nebula, exposure 4 hrs., February 9, 1910 |
| †*14 | 13 | 6205 | <i>Hercules</i> , Star Cluster, exposure 11 hrs., June 6, 7, 8, 1910 |
| *15 | 63 | 5055 | <i>Canes Venatici</i> , Spiral Nebula, exposure 5 hrs., March 9, 1910 |
| *16 | 64 | 4826 | <i>Coma Berenices</i> , Spiral Nebula, exposure 7 hrs. 56 min., May 5, 6, 7, 8, 1910 |
| *17 | 3 | 5272 | <i>Canes Venatici</i> , Star Cluster, exposure 4 hrs., April 9, 1910 |
| *18 | 57 | 6720 | <i>Lyra</i> , Ring Nebula, exposure 45 min., July 1, 1910 |
| *19 | 27 | 6853 | <i>Vulpecula</i> , Dumb-bell Nebula, exposure 5 hrs., July 6 and 7, 1910 |
| *20 | 82 | 3034 | <i>Ursa Major</i> , Irregular Nebula, exposure 4½ hrs., February 6, 1910 |
| *21 | | 2841 | <i>Ursa Major</i> , Spiral Nebula, exposure 2 hrs., February 19, 1912 |
| *22 | | 5383 | <i>Canes Venatici</i> , Spiral Nebula, exposure 6 hrs., May 5 and 6, 1913 |
| *23 | | 4449 | <i>Canes Venatici</i> , Irregular Nebula, exposure 5 hrs., April 7, 1913 |
| *24 | 102 | 5866 | <i>Boötes</i> , Split Spindle Nebula, exposure 2¾ hrs., June 14, 1912 |
| *25 | | 3115 | <i>Sextans</i> , Spindle Nebula, exposure 1⅔ hrs., December 25, 1911 |
| *26 | | 5746 | <i>Virgo</i> , Spiral Nebula on edge, exposure 6 hrs., March 20, 21, 22, 1914 |

- *G 27 N.G.C. 6555 *Hercules*, Spiral Nebula, exposure 6 hrs., May 28 and 29, 1916
- *28 4567-8 *Virgo*, Twin Spiral Nebula, exposure 6 hrs., March 22, May 19, 1914
- *29 278 *Cassiopeia*, Spiral Nebula, exposure 4 hrs., November 8, 1912
- *30 2403 *Camelopardus*, Spiral Nebula, exposure 3½ hrs., November 8, 1912
- *31 4594 *Virgo*, Spiral Nebula on edge, exposure 2¼ hrs., May 3, 1916
- *32 4736 *Canes Venatici*, Spiral Nebula, exposure 3½ hrs., February 20, 1912
- 33 7009 *Aquarius*, Planetary Nebula, exposure 3½ hrs., July 13, 1912
- 34 1501 *Camelopardus*, Planetary Nebula, exposure 2 hrs., January 7, 1913
- 35 7662 *Andromeda*, Planetary Nebula, exposure 1½ hrs., October 17, 1911
- *36 2392 *Gemini*, Planetary Nebula, exposure 2 hrs., December 19, 1915
- 37 2022 *Orion*, Planetary Nebula, exposure 1 hr., February 4, 1913
- 38 2371-2 *Gemini*, Planetary Nebula, exposure 3¾ hrs., March 6, 7, 1916
- 39 7008 *Cepheus*, Planetary Nebula, exposure 3 hrs., July 22, 1914
- 40 2681 *Ursa Major*, Planetary Nebula, exposure 3½ hrs., January 7, 1913
- *41 7217 *Pegasus*, Annular Nebula, exposure 5½ hrs., September 2, 1913
- *42 2976 *Ursa Major*, Elliptical Nebula, exposure 3 hrs., December 10, 1912
- *43 M 13 6205 *Hercules*, Star Cluster, four exposures, 6, 15, 37½ and 94 minutes, increasing one magnitude on each exposure
- 44 3242 *Hydra*, Planetary Nebula. Comparison of yellow and blue images
- 45 51 5194 *Canes Venatici*, Spiral Nebula, comparison of yellow and blue images
- 46 94 4736 *Canes Venatici*, comparison of yellow and blue images

G47	M 99	N.G.C. 4254	<i>Virgo</i> , Spiral Nebula, comparison of yellow and blue images
*48		6960	<i>Cygnus</i> , Network Nebula (south part), exposure 12 hrs., July 12, 13, 14, 1915
*49		1068	<i>Cetus</i> , Spiral Nebula, exposure 2 hrs. 22 min., December 22 and 25, 1911
*50		5857-8	<i>Boötes</i> , Double Spiral Nebula, H II 751-752, exposure 6 hrs., May 30, 31, June 1, 1916
*51		7317-20	<i>Pegasus</i> , Close Group of Spiral Nebulae, exposure 7 hrs. 45 min., August 26, 27, 1916
*52		7331	<i>Pegasus</i> , H I 53, Spiral Nebula, exposure 6 hrs. 15 min., August 28, 1916
*53		7814	<i>Pegasus</i> , H II 24, Spiral Nebula on edge, exposure 4 hrs., September 27, 1916
*54	74	628	<i>Pisces</i> , Spiral Nebula, exposure 5 hrs., October 26, 1916
†*55		891	<i>Andromeda</i> , H V 19, Spiral Nebula on edge, exposure 7 hrs. 15 min., November 23, 24, 1916
*56		7782	<i>Pisces</i> , Field of small Spiral Nebulae, exposure 4 hrs. 14 min., September 17, 1917
*57	22	6656	<i>Sagittarius</i> , Globular Cluster, exposure 3½ hrs., August 6, 1918
*58	8	6523	<i>Sagittarius</i> , Irregular Nebula, exposure 3 hrs., June 27, 1919
*59	17	6618	<i>Sagittarius</i> , (Omega), Irregular Nebula, exposure 3 hrs., July 29, 1919
*60	17	6618	<i>Sagittarius</i> , (Omega), Irregular Nebula, central or bright portion. Exposure 3 hrs., July 29, 1919
*61	101	5457	<i>Ursa Major</i> , Spiral Nebula same as G9 with arrows indicating internal motion in 1000 years
*62	81	3031	<i>Ursa Major</i> , Spiral Nebula, same as G10 with arrows indicating internal motion in 1300 years
*63	33	598	<i>Triangulum</i> , Spiral Nebula, same as G5 with arrows indicating internal motion in 1100 years
*64	51	5194	<i>Canes Venatici</i> , Spiral Nebula, same as G4 with arrows indicating internal motion in 1100 years
*65		2403	<i>Camelopardus</i> , Spiral Nebula, same as G30 with arrows indicating internal motion in 1300 years.

*G 66	N.G.C. 2175	<i>Orion</i> , Irregular Nebula, exposure 4 hrs. 10 min., January 7, 1921
*67	7635	<i>Cassiopeia</i> , Irregular Nebula, exposure 3 hrs., October 15, 1920
*68	281	<i>Cassiopeia</i> , Irregular Nebula with meteor trail, exposure 3 hrs., 30 min., August 11, 1921
*69		<i>Cygnus</i> , Irregular Nebula, I. C. II 5146, exposure 5 hrs.
*70	6611	<i>Scutum Sobieski</i> , Irregular Nebula, exposure 3 hrs. 25 min., August 25, 26, 1919

PHOTOGRAPHS TAKEN WITH THE 100-INCH HOOKER REFLECTOR

†*G 101	M 42	N.G.C. 1976	<i>Orion</i> , Great Nebula, exposure 3 hrs., November 19, 1920. The central portion has been reduced in intensity in order to bring out the detail of the brighter portions
†*102			<i>Orion</i> , I. C. 434, Nebula south of <i>Zeta Orionis</i> containing Dark Bay (Barnard 33), exposure 3 hrs., November 19, 1920
*103		2024	<i>Orion</i> , Nebula following <i>Zeta Orionis</i> , exposure 5 hrs. 35 min., December 8, 1920
*104		1977	<i>Orion</i> , Nebula north of the Great Nebula, exposure 5 hrs. 40 min., January 7, 1921
*105	87	4486	<i>Virgo</i> , Globular Nebula, exposure 2 hrs., February 26, 1920
*106		4647-9	<i>Virgo</i> , Spiral Nebula and Globular Nebula, exposure 1 hr. 15 min., January 26, 1920
*107		2261	<i>Monoceros</i> , Hubble's Variable Nebula, two exposures, September 18, 1920 and November 1, 1921
*108		6729	<i>Corona Australis</i> , Variable Nebula, four exposures, June 10, 1920, August 15, 1920, October 11, 1920, and August 8, 1921
†*109		6960	<i>Cygnus</i> , Filamentary Nebula, exposure 7 hrs., August 3, 1921
*110		6720	<i>Lyra</i> , Ring Nebula, exposure 1 hr., August 5, 1921
*111		6720	<i>Lyra</i> , Ring Nebula; comparison of images with 60-inch and 100-inch reflectors
*112	27	6853	<i>Vulpecula</i> , Dumb-bell Nebula, exposure 2 hrs. 40 min., July 6, 1921
*113	20	6514	<i>Sagittarius</i> , Trifid Nebula, exposure 2 hrs. 30 min., June 30, 1921

Cambridge.

1923. August 27th.

Dear Sir Arthur Curie,

While talking to-day with the Astronomer Royal at the Cape I heard that a set of one hundred slides illustrating all phases of modern Astronomy can be had from Mr. Wilson Observatory for between sixty seventy dollars, and I wondered if it would be possible for the University to buy the set as such a set issued from such a reliable source would be of the utmost value in the lectures upon Astronomy given by myself in the University, especially as our instrumental equipment is practically nil. I am writing immediately about them to you as I believe the various appropriations are allotted at this time of the year - the exact details of the set I will ascertain as soon as I return to Montreal.

This is the first time I have been to England since I joined the staff of the Mill two and a half years ago and in spite of the fact that I am back at my old University, I feel the whole time like a stranger in a strange or rather artificial land: my real home of thoughts, ideas seems to have become fixed in Canada or above all in the Mill and it is not too much to say that.

I look forward with considerable anticipation to returning to Canada: in fact I am no longer an Englishman but rather an English-Canadian. To me Canada has become to be synonymous with "home".

I hope you will forgive me these personal remarks but the discovery has been a thrilling one & the excitement has not yet worn off.

With kindest regards,

I am

Yours Sincerely,

A.H.S. Pillman

(Associate Professor & Lecturer)

CARNEGIE INSTITUTION OF WASHINGTON
WASHINGTON, D.C.

September 21, 1923

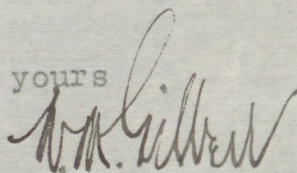
Dr. F. E. Lloyd
McGill University
Montreal, Canada

My dear Lloyd

It is a pleasure to hear from you and I think I understand the situation which you describe in your letter of September 19. Perhaps the inclosed printed list of lantern slides and photographs to be obtained from the Mount Wilson Observatory will prove satisfactory. I believe there is some dealer in Pasadena who does all of this work upon order received by the Observatory and transmitted to him. Under the circumstances I am not inclined to think that the prices charged for lantern slides *are* excessive.

My very best wishes to you, with the hope that our paths may cross again before long.

Sincerely yours



G:C