

Eve

MCGILL UNIVERSITY
MONTREAL

Copy

GRADUATE FACULTY

May 10, 1932.

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

Dear Sir Arthur:

You may be interested to read pages 189 and 190 of the enclosed, which I should be obliged if you would return to me.

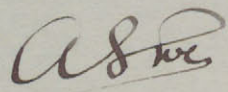
I enclose also "World Chaos" by William McDougall. Please return this to the Book Club direct, as soon as you have finished with it.

I received a letter from my nephew, J.S. Eagleson, which reads as follows:

"We are still trying to push too heavy a load up too steep a hill. Income tax 5% in the 2 after fourteen years of peace, and about a third of the national income collared for taxes and rates. I still think we shall have, in the end, to come to some decently camouflaged form of debt-repudiation; it won't really be repudiation, because we are now paying back the best part of two chickens for every one we borrowed.

I have just read Salter's book "Recovery". Very interesting and extraordinarily well-informed, but somehow unsatisfying, and missing the point".

Yours very sincerely,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Enc. 2.

copy July 1931
May 12th, 1932.

Professor A. S. Eve,
Dean of the Faculty of Graduate Studies.

My dear Professor Eve,

I am returning the enclosed pamphlet.

I have read the paragraphs you marked with interest. Some of the best economists told us these things several years ago. People then were not willing to listen, but now that the cupboard is bare they are concluding that perhaps our policies are not working for us so well as we expected. The economics practised generally have been of a very childish nature; only the other day I read that in return for the high duties placed on B.C. coal entering the U.S. they are advocating the practical prohibition of the entry of American products.

As for Germany, I sometimes wonder what sort of a world it would be to-day if we had gone on into the country and destroyed it after the fashion of war in other centuries. At least, there would not have been this grasping after reparations which can never possibly be paid, and yet which still glitter, to some people. I am afraid, Eve, we have been, and are, all too selfish and self-seeking; there will have to be a change of heart before we come to the free circulation of goods which the writer of your article advocates. And, as he says, time is short.

Ever yours faithfully,

*Johnson Vice Chairman
& next Chairman*

September
Fifth
1930.

Professor F.M.G. Johnson,
Chairman, Department of Chemistry.

PERSONAL

Dear Professor Johnson:

I have discussed the matter of the Chairmanship of the Graduate School with Deans Martin, Ira MacKay, and H.M. Mackay, and everyone of them is more than agreeable to your accepting the Chairmanship, but I have telephoned to Dr. Eve and asked him if he would act for a year with you as Vice-Chairman; he has promised to ring me up at nine o'clock tonight and let me know his decision. So the matter stands as follows,- if Eve accepts he will be Chairman for a year and you will be Vice-Chairman; if Eve does not accept, you will be Chairman. You will readily understand why I have put the matter to Dr. Eve in this light.

Ever yours faithfully,

PRINCIPAL



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

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

September
Ninth
1930.

I have much pleasure in notifying you that the
Principal has appointed Professor A. S. Eve as Dean of the
Faculty of Graduate Studies.

If you have any applications or communications
in connection with this Faculty, would you be kind enough
to forward them to Dean Eve at the Macdonald Physics Laboratory.

Very sincerely yours,

E. F. Martin

Acting Principal

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Re Graduate Faculty.

1. All work completed to date.

2. Miss Charlton (Secretary) has sufficient work to keep her busy all summer.

Making out cards for all graduate students as required by registrar. So as to have duplicate reports in the Registrar's office.

3. Graduate announcement printed & sent out.

4. Re successor. Dr. Johnson is in my opinion the best man serving on the Arts or Science Committees of the Faculty. He knows the work, has a flair for executive details, possesses good judgement, & very even temperament. Further he desires to keep up & improve the status of graduate work, & having in the dept. of Chemistry a large, if not the largest body of graduate students, he is in greater touch with the student body than any other professor.

J.C.H.

McGILL UNIVERSITY

FACULTY OF GRADUATE STUDIES
AND RESEARCH

ABSTRACTS
of
THESES
for
HIGHER DEGREES



OCTOBER, 1932 AND MAY, 1933

McGILL UNIVERSITY

THE FACULTY OF GRADUATE STUDIES

STATEMENTS

IN

PHILOSOPHY



1954

MASTER OF ARTS

M. A.

ECONOMICS

KENNETH G. K. BAKER

PARTY GOVERNMENT IN FRANCE—WITH AN HISTORICAL OUTLINE OF THE THIRD REPUBLIC.

The aim of the author has been to describe the working of the French Parliamentary System and to show the influence of party organization upon French conceptions of Government. An outline of the parliamentary history of the Third Republic serves as background and illustration of political organization both outside and inside Parliament. In the former case, the extent of electoral organization is shown and the influence upon it of factors such as the geographical division of political opinion and the habits of the electorate. The working of the group system inside Parliament is then depicted. An attempt is made to explain the French Parliamentary System, contrasting it with its British counterpart and assigning the reason for differences to the environment in which it has developed, rather than to mechanical devices which are peculiar to the French Parliament. It is in this light that the system is finally evaluated.

M. A.

HISTORY

MURRAY GORDON BALLANTYNE

LAUD AND THE CHURCH OF ENGLAND.

The aim of this thesis has been triple: first, to study the 'high-church' theology of the Church of England under Charles I, and its relations with Puritanism and Catholicism; secondly, to see to what extent this theology was put into practical effect; and, finally, to estimate the influence, in all this, of Archbishop Laud. Inasmuch as it was in and through the latter that this theology achieved materialization, our study has been largely limited to the years between 1625 and 1640. Many apparently startling omissions have been made, such as any discussion of the relations of the English Church with that of Scotland, or Laud's attempt to achieve conformity at the Hague and elsewhere. But we have strictly limited the whole to a discussion of the three primary points; namely, the ideas behind the 'high-church' point of view, the extent to which they were realized, and the influence therein of Archbishop Laud.

M. A.

HISTORY

NORA BATESON

JOHN NEILSON OF LOWER CANADA 1818-1828.

This thesis is part of a more extended study of the life of John Neilson which I hope to complete later for the degree of Ph.D.

It is restricted to the period 1818-1828 and deals with Neilson's activities in the Assembly of Lower Canada and his representations in England in 1822, on the matter of the Union Bill, and in 1828 before the Canada Committee. Its scope has been further limited to those issues arising out of the constitution, organization and functioning of the government. This involves the question of administration and the struggle between Assembly and Executive for its control, as well as relations with the mother country and with Upper Canada. The closely related fields of law, land settlement and education have not been included.

The object has been to bring out Neilson's views on these questions in the belief that they contribute to an understanding of the period.

M. A.

SOCIOLOGY

JOHN W. BERRY

THE PEOPLING OF CANADA. A STATISTICAL ANALYSIS OF POPULATION EXPANSION IN CANADA.

Available population data, statistical method and population theory as applicable to the Canadian study are analysed. Population growth has been conditioned by factors inherent in the nature of the Canadian Frontier and has proceeded in close interaction with Britain and the U.S.A. Expansion is analysed in three successive stages; the initial settlement; the British succession; and the Canadian succession. Changes in transportation, production, trade and government condition expansion. The population expansion of the five regions of Canada, the Maritimes, Quebec, Ontario, the Prairies and British

Columbia, is studied statistically. A close analysis of the effect of immigration since 1871 attempts to show that immigration since then has served to displace native population and earlier immigration rather than add to population. Effective immigration is distinguished from transient immigration. The arguments for and against Canadian immigration are studied in concluding.

M. A.

EDUCATION

MARY ELIZABETH BINMORE

THE DEVELOPMENT OF APPRECIATION THROUGH
CREATIVE SELF-EXPRESSION.

This thesis is based on the assumption that the development of the appreciative individual is a necessary aim of education. The first part attempts, therefore, to define and illustrate appreciation in social terms, to enumerate the educational resources through which the development must come, and incidentally, to substantiate the original assumption. At the same time it advances creative self-expression as the method for bringing about the appreciative attitude. The second part of the thesis is concerned with the specific development of appreciation in certain of the more important branches of the curriculum, through creative self-expression.

M. A.

ECONOMICS

ERNEST ELWYN BOWKER

UNEMPLOYMENT AMONG DOCK LABOURERS IN MONTREAL.

Unemployment at the docks is a problem of casual employment in one of Montreal's greatest and most characteristic industries. Shipping is highly intermittent in nature and a reserve of men must constantly be maintained to fulfill the peak demands of the industry. Chronic underemployment for a great proportion of the workers is the inevitable result of this system. During periods of depression this underemployment is aggravated by the influx of unlimited numbers of men from other trades. Casual employment has numerous deleterious effects on the physical and mental well-being of the worker and his family. No attempts have ever been made to decasualize dock labour in Montreal, although conditions appear to be favourable for the introduction of such a scheme.

The problem of casual labour is complicated by a seasonal condition which makes it necessary for dock workers to seek employment in other industrial fields during the winter months.

M. A.

ENGLISH

ALICE D. CALDER

NEW ENGLAND IN AMERICAN LITERATURE SINCE 1900.

This is a survey of the work of New England writers since 1900. Only the most outstanding figures are dealt with. The introductory chapter shows the present standing, in critical estimation, of the New England writers of past ages. The body of the thesis contains an examination of the work of contemporary authors in detail, tracing characteristics and noting general trends. The following writers are dealt with: Edwin Arlington Robinson, Robert Frost, Amy Lowell, Edna St. Vincent Millay, Henry Adams, Gamaliel Bradford, George Edward Woodberry, Robert Herrick, Robert Grant and Mary Wilkins Freeman. The standing of the writers considered has dictated the space accorded them. The concluding chapter is an attempt at judging their work and contribution as a school.

M. A.

GERMAN

SELMA C. E. CARL

GRILLPARZERS TRAGOEDIEN.

The thesis "Grillparzers Tragoedien" deals with the conception of tragedy as revealed in the plays of the Austrian dramatist, Franz Grillparzer, and attempts to show that Grillparzer plays a definite part in the development of tragedy. In addition his plays show a growth in the personality of the author himself, for his work becomes more interesting and richer in detail, as he grows older. His first play of importance is "The Ancestress", which deals with a popular theme of that period. Then follow three tragedies, taken from Greek literature—Sappho, The Golden Fleece, and Hero and Leander. From the serene greatness of these subjects, Grillparzer turns to the more turbulent history of his own country and uses the stories of King Ottokar's fortunes, Banbanus, and Rudolf II as the foundation of his three national tragedies. His last dramas, in which tragedy plays an important rôle, combine youthful freshness

with the experience that comes with age. These two dramas are "The Jewess of Toledo" and "Libussa", both of which show the influence of Grillparzer's study of the works of Lope de Vega and Calderon. In the history of tragedy Grillparzer forms an important link, filling in the gap between the older writer Schiller and the more modern Hebbel.

M. A.

FRENCH

LULA A. CARPENTER

LE JUIF DANS LE ROMAN FRANÇAIS D'APRÈS-GUERRE.

Unfavorable attitude toward Jewish characters evidenced in French novels before the World War: Balzac to Anatole France. More tolerant attitude of French novelists of the post-war period as seen in two groups: those who portray the Jew outside of France: the Tharauds, Benoit, Rhais, Fassina, Cohen, Malaurie, and Arnoux, and those authors who use France, and especially Paris, as setting for Jewish types: Proust, Fleg, Morand, Lacretelle, Bloch, Lecache, Sarah Lévy, Jacob Lévy, Giraudoux; MacOrlan, Navon, Duhamel, Billy and Twersky, Jéhouda, Augier, Némirovsky, Durand, Friedman; Jacob; and Arennes. Division of authors into three groups: friendly, hostile, and impartial. Reasons for increased tolerance evidenced by majority of authors of this group aside from possible racial bias: rôle of the Jew in World War, other forces tending to break down social and religious barriers in modern life, France as a pioneer in religious tolerance, and consequent relatively favorable situation of Jew in France to-day.

M. A.

ECONOMICS

GEORGE SWAN CHALLIES

THE UNITED STATES OF EUROPE.

The thesis opens with an historical summary and criticism of projects for a United States of Europe from the Fourteenth Century until the outbreak of the Great War. The post-war plans of Count Coudenhove Kalergi and Aristide Briand are examined and the development and apparent decay of the European Union Commission of the League of Nations is summarised. Special emphasis is placed upon the seriousness of economic conditions in Central and Eastern Europe in 1932. The causes of this state of affairs are analysed and a series of remedies proposed.

The very disorganization of many European countries has caused a tendency toward the formation of regional economic unions along the Danube and elsewhere which offer possibilities of eventual development into something approaching an economic United States of Europe.

M. A.

HISTORY

EDWARD BRUCE COPLAND

TRACES OF THE INFLUENCE OF THE RUSSO-JAPANESE WAR
UPON THE CHINESE REVOLUTIONARY MOVEMENT, 1904-11.

The thesis begins with an account of the ten years leading up to the period under review. After briefly recounting the events of the Russo-Japanese War of 1904-5, several direct effects of the Japanese victory on China are mentioned, for example, the sending of a Commission to Europe to study Western forms of government, the great migration of Chinese students to Japanese schools, especially technical institutions, and the increase of Japanese advisers in China. The war is considered as an event which brought hope to every Asiatic people, and in China the Japanese victory stimulated every reform movement and progressive enterprise, such as the construction of railways and the founding of modern newspapers. A Chapter is devoted to tracing the development of the constitutional reform and the revolutionary movements, showing how the latter under Sun Yat-sen appealed to youth. The Russo-Japanese War is considered to have profoundly influenced the leaders of the Chinese Revolutionary movement during the period under review.

M. A.

SOCIOLOGY

GLENN HORACE CRAIG

THE MEANS AND MODES OF LIVING ON THE PIONEER FRINGE
OF LAND SETTLEMENT,
WITH SPECIAL REFERENCE TO THE PEACE RIVER AREA.

The pioneer fringe of land settlement develops in a natural cycle from the stage of dependent outpost settlement with self-sufficient economy to that of regional autonomy with a stable agriculture and an

increasingly urbanized standard of living. In that cycle all the factors relative to the migration of a people to an undeveloped country pass through the stages simultaneously and often almost imperceptibly. Changes occur in the control over nature through the construction of transportation and communicational services and the establishment of stable farming enterprises. At the same time the population elements change from the great predominance of middle-aged single males to the stable family pattern. Mixed national and occupational groups meet and new common modes of behaviour evolve. Group effort, extremely limited at first, gradually increases, and a complex pattern of social organization is established around the geographic base and the population elements of the community. During this time the modes of living pass from the early stage of fringe living, in which the present is discounted for future affluence, to the final phase of urban standards in which there is sufficient income and a complexity of social and economic services. The latter arrive with the growth of centralization and regional autonomy. These are the stages through which a settlement passes that does not remain in a continued state of unsettlement. Analysis of these processes forms a part of the basis upon which can be developed a "science of settlement" out of which future land settlement policies should evolve.

M. A.

PHILOSOPHY

CECIL CURRIE

TIME, CONTINUITY AND CONTINGENCY.

A study of the significance of Time in modern philosophy. The introductory pages indicate the place of time in the earlier modern views, in the rationalists and those under the influence of Plato and the Greeks; and this leads to the raising of the question by David Hume. The scepticism of Hume was in effect an appreciation of the fact that time cannot be counted upon to repeat the experience of the past, that the future may not be continuous with the past, and that induction is in reality only probable. The work of Kant was to guarantee a casual order and a determinism for the realm of natural phenomena and thus to establish the possibility of knowledge, even granted the temporal character of experience. Kant provided for freedom in the moral order not in the world of phenomena. But this was not a sufficient appreciation of the temporal. Later writers, and indeed, contemporaries, have insisted on the contingent character of experience to a greater extent than Hume or Kant would have done. They have raised the three-fold problem of time, continuity and contingency.

M. A.

ECONOMICS

STEPHEN GREENLEES

THE CANADIAN EXPORT TRADE AND THE DEPRESSION.

This thesis is a study of the decline in the Canadian export trade since 1929, and the effects of that decline on volume and value of production, employment and wages, and prices, in the Canadian export industries. Canada is found to be predominantly a trading nation, exporting a third of her annual production. A favourable balance of \$100,000,000 yearly in commodity trade is seen to be necessary to her economic welfare. Canada's exports of various commodities are investigated, as well as her exports to various countries, and her total export trade is discovered to have declined 58% in value from 1929 to 1932. In those industries which produce largely for export, volume and value of production, employment and wages, and the price of their products in Canada, are examined and found to have declined more severely than in the non-exporting industries.

M. A.

FRENCH

CLIFTON LANDON HALL

WASHINGTON IRVING ET LA FRANCE.

A study of Irving's relations with France, of the sources of his writings on French subjects and of the influence of his sojourn in France on the rest of his life.

This thesis is based largely on privately printed diaries and note-books. In the first part the development of Irving's style and the sources of his opinions on the nation are traced by a detailed study of the journal of his tours in France in 1804-5. His attitude towards the French, as expressed in his early works, is explained.

In the second half of the thesis, the sources of nearly all of Irving's more serious writings on France are traced, and reasons given for their extremely limited quantity. His acquaintance with eminent Frenchmen of his day as revealed by his private note-books is dealt with. The inception, progress and final abandonment of his plans for an extended work interpreting the character of the French for American and English readers, are also studied in detail for the first time.

M. A.

ENGLISH

ROBERT METCALF HARTWELL

ARTHUR HUGH CLOUGH,
AN IMPRESSION OF A VICTORIAN.

This brief biography of a puzzling Victorian poet presents the thesis that Clough, possessing the temper of mind he did, and a singularly favorable opportunity for noting the inconsistencies and paradoxes of life, was logically designed to be religiously an agnostic, and creatively, a moral critic, or satirist of life.

The study unfolds his convulsive struggles to achieve his true fulfillment, and the efforts of Matthew Arnold to aid him. Against these are traced successively the influences of his mother, of Dr. Arnold, of Emerson, and of Clough's wife, with the implication that all unintentionally contributed to his failure — forced him into the very Victorian compromise, in both the religious and the creative spheres, he fought so bitterly to escape.

The final tragic irony is suggested that the content he ultimately did attain, and mistook for success, was actually the crowning failure.

M. A.

ECONOMICS

H. K. M. HEUSER

A HISTORY OF TRADE RELATIONS BETWEEN
CANADA AND FRANCE.

The object of the enquiry is to trace the history of Franco-Canadian trade relations from the early days of the French regime to the present time. Before the cession of New France to England, an event which dislocated the trade between France and Canada for almost a century, Franco-Canadian commercial relations were determined by the fluctuations in the fur trade and the latter's unfavourable influence on the agricultural development of the colony. Canada's efforts from 1860 on to revive trade relations with France resulted in the conclusion of two Commercial Agreements (1893 and 1907). The needs of the Great War made Canadian wheat known in France, changing the bulk of Canada's exports to France from manufactures to agricultural products, a fact which introduced an element of instability into Franco-Canadian trade. From 1922 to 1932 trade between the two countries was carried on under the provisions of a Commercial Convention which was abrogated by Canada in 1932. The fact that during almost the entire course of their history, Canada's trade with France has only amounted to roughly 2 percent of the former's total external trade finds its chief cause in the inability of France to absorb large quantities of Canada's essential export products on account of self-sufficiency in the same commodities.

M. A.

ENGLISH

OLIVE MARY HILL

THE ENGLISH NOVEL OF RURAL LIFE SINCE 1900.

This thesis studies the English novel of rural life since 1900, as a distinct type of fiction. The opening chapter deals with the literature of rural life up to 1900, stressing particularly the origin of the rural novel and its development in the work of George Eliot, Thomas Hardy, and others. It then proceeds to discuss, and to illustrate from the novels in the bibliography, the various uses of the rural setting, the more common types of plot in rural fiction, and the characters most frequently depicted. A brief analysis is also given of the attitude of certain novelists towards rural life and its problems. A short discussion of the importance and of the values of rural fiction concludes the thesis. Throughout, an effort is made to illustrate the technique of the rural novel, and to demonstrate the ways in which it differs from other types of fiction.

M. A.

FRENCH

MABEL ESTELLE JUDGE

LES AUTEURS FRANÇAIS DANS L'ENSEIGNEMENT
AUX ETATS-UNIS.

Cette thèse est une étude statistique des auteurs français et des textes lus et étudiés dans l'enseignement français aux Etats-Unis, dans les écoles secondaires ainsi que dans les collèges et les universités. La préface est suivie d'une liste alphabétique d'auteurs, et d'un classement de textes par genre. Il y a aussi une liste supplémentaire d'anthologies, de collections et de recueils dont on se sert en grand nombre.

Dans les conclusions, il s'agit des tendances générales dans l'enseignement, et de la justification du choix d'auteurs et de textes. Il y a quelques observations sur les auteurs et les textes le mieux connus et les plus populaires, avec un classement d'auteurs et d'oeuvres par genre de texte, par époques, et par bénéfices de langue et de littérature. Les conclusions générales sont tirées, non seulement d'après les éditeurs, mais aussi d'après les cours de français dans quelques grandes écoles publiques, et dans quelques-uns des plus grands collèges et universités.

M. A.

ENGLISH

RUTH YSABEL KRONMAN

WILLIAM BLAKE AND HIS FORERUNNERS IN MYSTICISM.

This thesis is an examination of the philosophy of William Blake in the light of his debts to previous mystics. A brief discussion of Mysticism is followed by an investigation into the special qualities of Blake's mystical beliefs, and proofs that they were grounded in the works of Jacob Boehme and Emanuel Swedenborg. Their philosophies, and Blake's, are analyzed in three subsequent chapters. This analysis culminates in a comparison of the three philosophies, a comparison which attempts to establish not only Blake's debts to his forerunners, but his originality as well. The thesis closes with a brief chapter suggesting parallel between Blake's ideas and many of the trends in contemporary philosophy, science, and art.

M. A.

ORIENTAL LANGUAGES

NATHAN A. LEVITSKY

CUSTOMS, TERMS AND SYMBOLS CONNECTED WITH
TRADE AND COMMERCE IN ANCIENT HEBREW
AND RELATED DIALECTS.

This study considers the more obvious evidence found in records written in ancient Hebrew and related dialects, regarding terms and customs of trade and commerce. It gives a brief summary of the magnitude of Phoenician commerce; it mentions the types of currencies and the standard of weights used in those days; it develops, from Hebrew texts, a table of equivalents for the Biblical measures.

After considering the factors in the system of exchange, this thesis discusses the two Biblical institutions which regulate and restrict servitude and the sale of land,—these are the Sabbatic Year and the Jubilee.

The various customs and symbols connected with the acquisition of the three types of property,—land, chattels and slaves, are explained. The category of slaves is divided into Hebrew and foreign. Different regulations apply to each; the term of the former varies with custom, the latter serves in perpetuity.

The evidence considered in this thesis covers a period of about fifteen hundred years before the present era.

M. A.

ECONOMICS

DAVID WILLIAM LUSHER

PROTECTION: AND THE CANADIAN COTTON YARN AND
CLOTH AND WOOLEN CLOTH INDUSTRIES.

An attempt is made to suggest an approach for examining the claims—for tariff safety—held by protected industries. To this end, the Canadian Cotton Yarn and Cloth and Woolen Cloth Industries are surveyed.

In treating the cotton yarn and cloth industry, definite conclusions are established. The examination of the growth of the industry and the characteristics of the industry, seems to indicate an efficient protective system. The comparison of the industry with that of Great Britain—against which country the protection is aimed—shows further, that the 'wage differences' or 'labor costs', tend to be equalized by the failure to show any initiative and independence from foreign tutelage, implies that it has not vindicated itself for the tariff protection received.

The uncertainty of many features of the woolen cloth industry, prevents the establishment of any definite conclusions. At any rate, factors are introduced which modify the 'wage difference' argument held by Canadian manufacturers. The examination of several advantages held by Great Britain—natural and artificial—makes it appear that that country is more suited to the production of woolen cloths, than is Canada.

LEONARD CHARLES MARSH

THE PROBLEM OF SEASONAL UNEMPLOYMENT;
A QUANTITATIVE ANALYSIS.

This study comprises primarily a quantitative statistical analysis of the range, types, and incidence of seasonality in the field of wage-earning employment in Canada. The material assembled relates to the country as a whole, and to comparative areas within the Dominion of which Montreal is treated as the chief. Analysis and discussion of the causes of seasonal variation in employment and of the types of seasonal unemployment is added, but with particular reference to Canadian conditions and to the factual evidence which is available.

Its main objectives are to bring together the chief available Canadian statistics of employment and unemployment in a form adapted to the measurement of the seasonal problem, to set out the main considerations to be noted in the interpretation of these materials, to assess the strata of the "labour market" at which the seasonal problem is greatest and at which further investigation and remedial planning are most called for, and to provide a background and a framework for such further and more specialised studies.

The measurements and analysis relate to "representative" conditions in the post-war period. Indices of seasonal variation in employment and unemployment are computed on this basis for the main economic divisions of employment (i.e., manufactures, construction, transport, trade, etc.) with the exception of agriculture, which is discussed on the basis of other material, and some sixty industries and industrial sub-groups for Canada, and a similar number of groups for other areas. Charts of seasonal employment variation are added for the main industries and areas.

The survey indicates the almost universal influence of seasonality in some degree, but in different forms, throughout industry, and the significance of its contribution to the aggregate problem of unemployment in Canada; its unequal incidence upon industries and concentration upon a limited number; and the predominant extent to which it is a problem of unskilled labour. The remedial lines of solution are indicated in general terms.

HARRIET ROSE MONTGOMERY

DOMESTIC TRAGEDY FROM 1731 TO 1800.

This thesis studies the progress of the Domestic Tragedy from 1731 to 1800.

Although the appearance of *The London Merchant* (1731) heralded Lillo as a pioneer in this field there had been earlier efforts in the Elizabethan plays of which *Arden of Feversham* (1592) was the earliest and *A Yorkshire Tragedy* (1608) was the latest. Dekker who wrote *The Honest Whore* and Heywood, the author of *A Woman Killed with Kindness*, were the outstanding dramatists. Shakespeare was not responsive to the movement. His tragedies are conflicts in aristocratic minds or tempests of romantic passion.

Otway in *The Orphan* (1680); Banks, in the middle of the Restoration period; Rowe and others in the eighteenth century, in their "she-tragedies", carried on the tradition. It reached its zenith in *The London Merchant* (1731) and *The Fatal Curiosity* (1736). Edward Moore's *The Gamester* (1753) had the distinction of being the best domestic tragedy and the last successful one for a generation. For lack of dramatic genius, later attempts degenerated into melodrama.

The "Problem Plays" of dramatists like Pinero, Shaw and Masfield, influenced by Ibsen, show a revival of the domestic tragedy.

A. DONALDA PUTNAM

FOLKLORE AND BALLADRY IN SHAKESPEARE.

This thesis examines Shakespeare's use of folklore and balladry, its object and its effect. After a brief survey of theories of art as applied to Shakespeare, it is concluded that the keynote of his plays is the Goethe-an theory of reverence. In order to impress it, he must capture the sympathy of the average man. The second chapter attempts to prove that the most effective devices for attaining this end are those of folklore and balladry. Illustrations follow, to show the effect of Shakespeare's use of them. The third chapter deals with the importance of folklore and balladry in all literature. The spirit of our time is an effort towards interclass and international understanding. For certain specified reasons the most efficient weapon for establishing such an understanding is that of literature. Examples show that the universal literature is that which represents, with a minimum of localization, human truths. Realism is essential to literature, and the best permanent realism is folklore.

LLOYD GEORGE REYNOLDS

THE OCCUPATIONAL ADJUSTMENT OF THE
BRITISH IMMIGRANT IN MONTREAL.

The study is based on the following materials: (a) The annual reports of the Department of Immigration and Colonization since 1904. (b) Occupational data contained in the Census reports since 1901. (c) Analysis of the men registered at the major employment bureaus in Montreal. (d) Schedules collected from a sample group of 250 British immigrants in Montreal, half of whom were unemployed at the time of interview. (e) Interviews with foremen, employment managers, plant superintendents, and trade union business agents throughout the city.

The most significant conclusions from the study are, (a) Only about 15 per cent of the men interviewed could be regarded as occupationally maladjusted. (b) In the maladjusted group, farm labourers and unskilled labourers bulk much larger than skilled mechanics or clerks. (c) Post-War immigrants have undoubtedly been more subject to unemployment and maladjustment than were immigrants of the pre-War period. (d) British immigrants appear to have been affected by unemployment to almost exactly the same extent as native Canadians during the past three years.

G. MEREDITH ROUNTREE

THE EMPLOYMENT AND UNEMPLOYMENT PROBLEMS OF
THE RAILWAY INDUSTRY OF CANADA, WITH
PARTICULAR REFERENCE TO THE CITY OF MONTREAL.

On the basis of statistical analyses of company, government, and union records covering the 10-year period from 1923 to 1932, the magnitude, occupational distribution, and causes of unemployment amongst the more significant classes of railway workers in Montreal and vicinity are set forth and analyzed to reveal both the seasonal and cyclical trends. A brief indication of the effect of technical change in the last thirty years is given.

Recognizing seasonal fluctuations as most susceptible of regulations from within the industry, the accomplishment in the regularization of employment in the maintenance departments of the Canadian National Railways are cited, and suggestions are made for further stabilization in this record as well as in transportation proper. Outstanding obstacles to such advance are shown to be the inevitable intricacy of the division of labour—only partly controllable—and the complex, vigorous, and powerful union organization—theoretically malleable, but traditionally rigid.

HELEN SILVER

THE SIGNIFICANCE OF MILTON'S POLITICAL THEORIES.

The purpose of this thesis is to show the vitality of Milton's political theories. A brief historical survey of conditions leading to the Puritan Revolution is included in order to create a background of Milton's life and of his part in the Revolution. Discussions of Milton's philosophy, including his theories on education, censorship, and individual and civil liberty, lead to the final chapter which traces the significance of these theories through the development of English political thought with special references to the Revolution of 1688, the American Revolution, and the colonial struggle for self-government.

JOHN KELLERMAN SNYDER

FRANKLIN AND CANADA.

The following pages deal with Benjamin Franklin's interest and part in the question of Canada as that question enters into the continental history of North America and the relations of North America with the British and French governments between the years 1745-1790.

He played his part in both falls of Louisburg; Braddock's expedition; the taking of Quebec; England's choice of Canada over Guadeloupe; crushing Pontiac's Conspiracy; organizing the Canadian post-office; introducing the first Canadian printing presses; developing Nova Scotia; the American invasion of Canada; the Moravian missions in Labrador; improving Canada's New Brunswick boundary; and but for his colleagues Jay and Adams, he would have added Canada to the United States in 1783.

In line with the proverbial variety of his interests the last forty-five years of his life represent an unbroken sequence of efforts to make the allegiance of Canada and America one.

M. A.

ECONOMICS

FRED. V. STONE

UNEMPLOYMENT AND UNEMPLOYMENT RELIEF
IN WESTERN CANADA.

Unemployment in Western Canada in the post-war period has been characterized by both seasonal and cyclical fluctuations. The volume of employment in the normal year at the beginning of April in the Prairie Provinces is 25 per cent less than in August, the month of maximum employment. Cyclical unemployment has been evident in the years 1920 to 1923 and 1929 to 1933. Unemployment relief in which the municipal, provincial, and dominion governments participated has been necessary during both periods of cyclical unemployment. It has been found impossible to provide sufficient employment through public works to render direct relief unnecessary. The administration of direct relief has been, for the most part, in the hands of the municipal authorities thereby giving rise to a great deal of variation and lack of uniformity in policy. The placing of primary responsibility for unemployment relief upon the municipalities is a feature of public policy that has many disadvantages in practice. The recent organization of provincial commissions in Western Canada to take charge of single homeless men marks a step in the direction of much-needed centralized control.

M. A.

CHINESE STUDIES

GORDON R. TAYLOR

THE CHINESE SCHOOLS IN CANADA.

During the closing years of the Ch'ing Dynasty (1644-1912) there was apparent throughout China a spreading dissatisfaction with the purely literary nature of the school curriculum and a growing discontent with the exclusive study of the classical texts was evidenced. In the first decade of the Republic popular readers in literary style replaced the classical texts and several scientific studies found their place in the curriculum. During the second decade Mass Education and, despite its inherent limitations, the use of *Pai-hua Wên* (colloquial style) have engaged the attention of the Board of Education in its attempt to solve the problem of China's illiteracy.

The early Chinese immigrants into Canada had secured their education in the Schools of the Ch'ing Dynasty. But doubtless the majority of those China-born and now resident in Canada attended school in the first decade of the Republic. The influx of teen-age boys during the period 1920-1922 and the natural increase in the number of native-born Chinese, whether Eurasian, or of purely Chinese parentage, have necessitated the establishment of Chinese Schools in the larger Chinese communities. Administered originally by the various Chinese Benevolent Societies these schools particularly in Eastern Canada have latterly fallen under the control of religious and political organizations.

Failure to maintain proper standards of qualification for teachers and to co-operate with the Municipal school boards, except in a few isolated cases, has produced results detrimental to the best interests of Chinese education. Adaptation of the curriculum to the needs of Chinese in Canada has been fairly successful but greater co-ordination of effort is to be desired and co-operation with the municipal school boards to be encouraged.

M. A.

PSYCHOLOGY

EDWARD C. WEBSTER

AN EXPERIMENTAL APPROACH TO VOCATIONAL GUIDANCE.

A presentation has been made of the results of a study to consider a number of problems associated with a programme of vocational guidance in Montreal. Particular emphasis was given to the selective factors influencing the choice of curriculum by boys entering high school; to differences in ability and achievement of boys in various high school courses; to the prognostic value of standardized tests and school marks in predicting high school success; and to differences between Grade 8 and unemployed boys in Montreal. Results indicated that boys superior in intelligence and achievement tend to enter the high school course leading to B.A. matriculation in preference to the B.Sc. matriculation curriculum. No differences were found between this latter group and boys entering Commercial School. To predict Grade 8 success, a combination of Grade 7 marks and standardized test results was found desirable. Large differences were found between high school boys and unemployed juveniles.

EVA RUDER YOUNGE

SOCIAL ORGANIZATION ON THE PIONEER FRINGE,
WITH SPECIAL REFERENCE TO THE PEACE RIVER AREA.

The data for this study were made available by the Canadian Pioneer Problems Committee, a research body which is directing a five-year social and economic survey of the Canadian Prairie Provinces. Sources of information included federal and provincial departments, public officials, institutional functionaries, local leaders in the Peace River Area, and finally 332 Peace River farm families. Three units of investigation were used, namely village communities as a whole with their various social and economic facilities, major social institutions, and rural families. Rural social organization in the Peace River Area was found to be related to the successive stages of transportational, agricultural and general economic development within the region. Social facilities are concentrated in the trade centres and they dwindle rapidly in number and complexity as one moves from the centre to the circumference of settlement. The establishment of social institutions on the frontier follows a cyclical trend whose stages parallel those of the general settlement process. The population is young, mobile and heterogeneous as regards ethnic and religious elements. The rural people have meagre social participation, especially of the organized type. Number and variety of social contacts are related to family income, distances from services, and stage of settlement. A comprehensive plan of settlement is needed if waste of human and material resources is to be avoided in settling new areas.

MASTER OF SCIENCE

M. Sc.

CHEMISTRY

ROBERT DOUGLAS BENNETT

THE RATE OF HYDROGENATION OF CERTAIN OILS.

The thesis contains an account of the investigation of the following:

- (a) The rate of hydrogenation of corn and soya bean oils.
- (b) The influence of catalyst concentration on the rate of hydrogenation.
- (c) A comparison of the rates of hydrogenation of these two oils.
- (d) The mechanism of the hydrogenation.
- (e) The nature of the hydrogenation reaction; that is, the order of the reaction.

The thesis proper contains a review of the properties of oils, a brief historical account of the main workers and their accomplishments, a brief summary of experimental procedure, a tabulation of results with graphical representation, a discussion of results, and the conclusions drawn.

Full details of apparatus, procedure, etc., have been given in the appendices, for convenience.

M. Sc.

BIOCHEMISTRY

LAWRENCE WINSTON BILLINGSLEY

CAROTENE AND VITAMIN A.

An attempt has been made to prove by biological assay that carotene can be converted into vitamin A by treatment with liver extract *in vitro*. The experiment was based on the reported statements:—Firstly, that there is a quantitative relationship between the amount of vitamin A fed and the growth it allows; secondly, that the conversion of carotene to vitamin A *in vivo* is only about 10% efficient. The first statement has been partly corroborated, with carotene as source of the vitamin. The second has recently been found erroneous by Moore, and by Carr and Jewell, who state that the conversion *in vivo* of orally-administered carotene is 50-60% efficient, and possibly higher in doses approaching the minimal.

The desired proof of conversion *in vitro* has therefore not been obtained, as the method used is not sufficiently sensitive to demonstrate differences in growth with substances so closely related in physiological activity. If any conversion occurred, it was not enough to compensate for losses in manipulation.

M. Sc.

GEOLOGY

ALFRED RODDICK BYERS

THE NATURE AND ORIGIN OF THE GLACIAL AND POST-GLACIAL DEPOSITS LYING BETWEEN THE CITY OF MONTREAL AND THE CANADIAN SHIELD.

A careful examination was made of the Pleistocene and recent deposits, and of the surface forms, in an area 10 miles wide extending from the island of Montreal to the Laurentian front. The deposits above bedrock include, from the bottom up, till, fluvioglacial deposits, extensive areas of marine sands and clays, and recent river and lake deposits. The surface is smooth and almost horizontal except where bedrock or till protrude through the flat-lying Champlain marine deposits. Many of the flat areas are parts of the sea floor, as it was in the closing stages of the Champlain marine invasion. A few are due to erosion by waves and rivers. Irregular surfaces resulted from glacial deposition, river erosion, and river deposition. Terraces and beaches are conspicuous features of the topography. They are satisfactorily explained as products of wave action before, and river erosion after, the withdrawal of the Champlain sea.

M. Sc.

ZOOLOGY

ANNIE ELIZABETH CLARK

NEBALIELLA CABOTI N. S.P. WITH OBSERVATIONS ON OTHER NEBALIACEA.

Two new species of Nebaliacea are described, *Nebaliella caboti* from Cabot Strait, and *Epinebalia pugettensis* from Puget Sound. The former was the first *Nebaliella* taken from the North Atlantic; and certain characteristics of the latter warranted the formation of a new genus.

The Effect of Temperature and Salinity on the Spermatozoa, Ova, and Development
to the First Swimming Stage of *Ostrea virginica*.

The results of experiments show that such variations in temperature and salinity as are found in nature do not exceed the vital limits of spermatozoa or ova of *Ostrea virginica*. Low temperatures delay the development to the first swimming stages.

Variations in Numbers of Oyster Larvae in Correlation with Temperature and Salinity.

From the study of plankton collections in correlation with temperature and salinity, it was found that the temperature has a marked effect on the number of oyster larvae, while salinity has little or no effect.

M. Sc.

GEOLOGY

FRANK THEOPHILE DENIS

AN INVESTIGATION OF THE MINERAL COMPOSITION
OF THE ORES OF NORANDA MINES LIMITED.

In treating the ore at the Noranda mill, a copper concentration is effected by floating chalcopyrite and depressing the pyrite and pyrrhotite. Gold is associated with both pyrite and pyrrhotite, but mainly with the former. An effort is then made to separate the pyrite and the pyrrhotite for cyaniding purposes, since the treating of the pyrrhotite is unprofitable, due to the enormous cyanide consumption involved. The ratio of pyrite to pyrrhotite in a mill product can only be roughly estimated due to the lack of knowledge of the composition of the pyrrhotite.

This paper outlines the methods used in arriving at the formula of the pyrrhotite and the composition of the ore by chemical analysis; and further suggests a mathematical formula which will give the respective quantities of pyrite and pyrrhotite in any product by a simple determination of the iron and sulphur.

M. Sc.

PHYSICS

WILLIAM KENNETH DUNN

THE INFLUENCE OF TEMPERATURE GRADIENTS ON
THERMOELECTRIC EFFECTS IN METALS.

As the first step in an attempt to systematize many so-called "spurious" effects which have been observed in the study of thermoelectric phenomena, and perhaps to verify some predictions of the new Fermi Statistics, various temperature gradients have been applied to cylindrical rods of aluminium, lead, iron and copper. These were 42 cm. long by 0.9 cm. diameter. The ends were maintained in a circulating cold water bath and the heat applied electrically with alternating current.

After corrections for various stray effects have been applied, it appears that there is an e.m.f. associated with a temperature gradient, which changes sign and magnitude with the direction and magnitude of the gradient. For the aluminium and copper specimens examined, the effect is of the order of -1.66 and $+2.70 \times 10^{-8} \times (^{\circ}\text{C per cm.})^2$ volts respectively. Results for lead and iron were erratic but showed similar tendencies.

M. Sc.

CHEMISTRY

EUGENE MITCHELL ELKIN

THE KINETICS OF HETEROGENEOUS GASEOUS REACTIONS.
CATALYTIC DECOMPOSITION OF METHANOL OVER
SOLID AND LIQUID ZINC.

The effect of variation in temperature on the rate of decomposition of gaseous methanol over solid and liquid zinc has been investigated between 360° and 440°C . With constant surface the catalytic activity of zinc is directly dependent on the temperature, there being no discontinuity in the relationship on liquefaction of the metal. Thus the presence of "active patches" on the catalyst is refuted. This is explained by the method of preparation of the catalyst, the procedure consisting of purification of zinc by distillation in vacuo followed by melting the condensate into a single "button".

Continuous use of the catalyst at constant temperature resulted in increase in activity. This is explained by modification of the surface of the contact agent with probable formation of active patches.

It is concluded that the presence of "active patches" is not necessary for this particular reaction to proceed under the conditions described and this is discussed in the light of existing theories of the nature of catalytic surfaces.

GERALD T. EVANS

THE GLYCOGEN CONTENT OF THE RAT HEART.

The glycogen content of the rat heart has been found not to be lowered by fasting, exercise, the administration of epinephrine, or by marked changes in the $\text{NaHCO}_3/\text{H}_2\text{CO}_3$ ratio of the blood; it can be raised by the administration of glucose and insulin.

Anoxaemia readily lowers cardiac glycogen. On release from anoxaemia the glycogen promptly returns to the normal level. Cardiac failure was found to be the cause of death in anoxaemia; hearts taken at the time of failure contained much less glycogen than the unfailing hearts of animals subjected to the same conditions.

The current glycogen method was found satisfactory for $\frac{1}{2}$ to $1\frac{1}{2}$ gram samples of muscle.

The literature on the chemistry of the heart has been reviewed.

WILLIAM FERGUSON

SOME STUDIES ON THE PHYSIOLOGY OF
COLD RESISTANCE IN PLANTS.

Hardened plants show higher osmotic pressure in their cells and much greater bleeding when cut than unhardened plants. Young plants, particularly annuals, cannot be hardened without light.

During hardening there is evidence of a conversion of insoluble to soluble colloids. Results indicate that the insoluble material becomes more acidophil on hardening and that the soluble becomes more basophil. There are also indications of an increase in the buffer action of the colloids as hardening proceeds. More ammonium sulphate was required to saturate a solution made from hardened plant tissue than one from unhardened, which seems irreconcilable with the theory that there is an increase in the amount of hydrophilic colloids during hardening.

GORDON HAMILTON FINDLAY

STUDIES ON MAPLE SAP AND SYRUP.

A review of the various factors influencing the composition and flavour of maple syrup is given. It is shown that the development of the characteristic flavour involves a change in the composition of unknown material present in the sap, but is not an oxidation process. Evidence is obtained of the presence of a glucoside in the sap and wood of the maple and this may be the source of the flavouring material. The results of an analysis of a chloroform extract of maple syrup indicate that the flavour depends to a large extent on a phenolic resin and a possible source of this is suggested. An unidentified substance (M. P. 120°C .) was isolated.

GEORGE HARVEY HAMILTON

STUDIES ON HALO-BLIGHT OF OATS CAUSED BY
BACTERIUM CORONAFACIENS ELLIOTT.

Halo-blight caused by *B. coronafaciens* was found to play an important part in the blighting of oats, which occurs on some Quebec soils during certain years.

The appearance of the disease in the field and greenhouse, variations in symptomatology, effects of meteorological conditions on its development, economic importance, prevalence and geographical distribution, nature of damage, and methods of overwintering and dissemination of the organism, have been discussed.

The pathogen is considered to gain entrance to the internal plant tissues by means of hydathodes, as well as by stomata and wounds. Moreover, it was found to cause a severe killing off of the plants when seed-borne.

Control of halo-blight in the field was obtained by the application of a fertilizer containing nitrogen, phosphorous and potassium. Potassium and phosphorous decreased, and calcium and possibly nitrogen increased the amount of disease. Control was effected by the application of sulphur dust to the plants. The best results were obtained when the plants received the combined dusting treatment and recommended fertilizer application. Fertilizers were shown to produce certain physiological and anatomical changes in the host, which possibly accounted for the alteration in disease resistance.

A Macdonald College selection of oats, designated as 2015 M.C. was found to be most resistant to halo-blight. Certain other varieties proved very susceptible to this disease. Tests to determine whether there were any physiological factors connected with differences in varietal susceptibility gave negative results.

Symptom expression of another type of blighting which occurred later in the life of the plants, as well as inoculation and isolation experiments demonstrated the occurrence of what is believed to be grey speck — a physiological disease resulting from manganese deficiency of the soil. Indications were obtained that control of this disease was accomplished by steam sterilization, or the application of manganese sulphate to susceptible soils.

A review of pertinent literature in connection with the work outlined in this paper is given, and a bibliography is included.

M. Sc.

GEOLGY

JULIUS JACK HARRIS

THE BLACK RIVER GROUP IN THE VICINITY OF MONTREAL

The Black River group constitutes the lower formations of the Ordovician period and occurs between the Chazy and the Trenton limestones. In general it includes the Pamela, Lowville, Leray, Watertown and Amsterdam limestones but in the vicinity of Montreal it is represented only by the Pamela, Lowville and Leray members.

Although the Black River group has received thorough study in the lower Ottawa valley and in New York state, there has, up to the present, been no detailed stratigraphic analysis of these beds as they occur in the immediate vicinity of Montreal. The boundaries of the formations here constituting the group have never been definitely fixed nor have the strata comprising these formations been adequately described or analysed. The work in hand is an attempt to bridge this gap in the geological knowledge of the district in the vicinity of Montreal. A field survey of the main exposures of this group was made during the months of October and November 1932 and the data so gathered, along with such information as could be derived from former works, constitute the basis of the thesis here presented.

M. Sc.

CHEMISTRY

JAMES F. HORWOOD

STUDIES IN ORGANIC OXIDATION.

The oxidation of allyl alcohol and acetone by sodium hypoiodite has been studied. It has been found that allyl alcohol is not attacked by sodium hypoiodite under the most favorable conditions. Acetone is oxidised by sodium hypoiodite. The orders acetone-alkali-iodine, acetone-iodine-alkali and alkali-iodine-acetone give optimum, smaller and still smaller percentage oxidation respectively, other conditions being the same. The sodium hydroxide must be present in amounts considerably greater than the stoichiometric proportion. The extent to which the reaction goes is directly proportional to the concentration of sodium hydroxide. With a given amount of sodium hydroxide the reaction goes so far and no farther. The reaction is trimolecular. It is suggested that the first step is an intramolecular change, such as enolisation, induced by NaOH. The concentration of sodium hypoiodite is apparently without significance.

M. Sc.

GEOLGY

BERNARD JOSEPH KEATING

THE PRE-CARBONIFEROUS ROCKS OF THE WENTWORTH SECTION OF THE COBEQUID HILLS, N. S.

The pre-Carboniferous rocks of the Cobequids comprise a series of sedimentary, metamorphic, and igneous types. They have suffered deformation during the various Palaeozoic orogenic periods.

Lower Carboniferous sediments on the north and south sides of the range dip away steeply.

The several groups of the pre-Carboniferous Series with their assigned horizons are:

Pre-Carboniferous Intrusives

Devonian }

Silurian } . . . sedimentary and metamorphic rocks

Pre-Silurian . . . argillites and quartz porphyries

Both acid and basic intrusives are present. The sequence of the "plutonic phase" follows the normal one of decreasing basicity. The types represented, in order of intrusion are:

Granite

Gabbro, diabase, augite diorite.

The sequence of the "phase of minor intrusions" is uncertain. Diabase dikes cut the granite. Other minor intrusions are quartz porphyries.

No volcanic or true diorites, as described by earlier observers occur.

Amphibolisation and albitisation in the gabbros are considered to be contact metamorphic effects.

M. Sc.

EXPERIMENTAL MEDICINE

JOHN KERSHMAN

THE EVOLUTION OF CELL TYPES IN THE
CENTRAL NERVOUS SYSTEM—MICROGLIA.

Although the existence of microglia as a definite entity is well established and its genesis has been studied in laboratory animals (rabbit, cat, mouse, rat, etc.) there is no account in the literature of the cytogenesis of microglia in the human central nervous system.

The literature on microglia has been reviewed and analyzed under certain headings and for the sake of completeness and differentiation the other cells in the central nervous system have been included.

Microglia have been demonstrated in a series of human embryos and foetuses ranging in prenatal age from eight weeks to seven months. In addition, certain nests of microglioblasts have been demonstrated and these occur in relation to mesodermal tissue and for the most part in connection with areas where the ectodermal cells of the developing central nervous system do not go on to form neuronal and neuroglia cells. It has been shown that microglia are mesodermal in origin and the hypothesis has been advanced suggesting an ontogenetic meso-ectodermal interchange in the developing central nervous system.

M. Sc.

CHEMISTRY

GERALD L. LAROCQUE

THE DETERMINATION OF THE SOLUBILITY OF LIME IN
WATER AND OF THE SORPTION OF LIME ON CELLULOSE.

The object was to determine the solubility of calcium hydroxide in water from 0° to 30° C. The reason for this investigation was the large discrepancies obtained by earlier workers and the need of accurate solubility data in order to investigate other lime-water systems.

A physico-chemical method was devised where the solubilities are determined in a completely glass-enclosed system free from interfering atmospheric gases and by an electrical conductivity method which is unaffected by small colloidal particles, the main source of error in previous investigations. The results are claimed to be more accurate than any others previously listed.

In an appendix to the thesis, some preliminary experiments on the sorption of lime on cellulose illustrate the practical value of the solubility investigation.

M. Sc.

BOTANY

JACOB LEVITT

THE PHYSIOLOGY OF COLD RESISTANCE IN PLANTS.

Cabbages were hardened by a five-day exposure to 5° C. Rate of thawing did not affect the amount of frost injury.

The juice of hardened plants had a freezing point .1 to .2° C. lower than the unhardened.

No difference could be detected in the dye absorption of the juice of hardened and non hardened plants.

Hardening tended to cause a slight increase in pH, about .1 to .2.

Exposure to ammonia or acetic acid vapours had no effect on freezing injury.

The buffering power and isoelectric point were unchanged by the hardening. Juice of hardened plants tended to more nearly complete precipitation on either side of the isoelectric point.

Cold resistance varied directly with the quantity of calcium and inversely with the amount of nitrogen available. Phosphorus and magnesium deficiency tended to decrease hardness, but potassium deficiency had no effect. Calcium deficiency increased succulence.

M. Sc.

CHEMISTRY

HERBERT WILLIAM MACKINNEY
A STUDY OF THE STRUCTURE OF LIGNIN.

A method is described for isolating the portion of lignin left in the residue after exhaustive extraction of spruce wood with dilute absolute methyl-alcoholic hydrochloric acid. The residue is completely methylated and is then hydrolysed with methyl-alcoholic hydrochloric acid of the same concentration. The "Insoluble Lignin" remains as an amorphous powder, free from carbohydrates, and insoluble in solvents.

By means of sodium alcoholate this "Insoluble Lignin" has been decomposed into two products;— a solid, insoluble in water, alcohol and ether, soluble in dioxane and chloroform, representing the major portion; and a small yield of a water-soluble acidic substance yielding an ester of the formula $C_{14}H_{24}O_4$.

M. Sc.

CHEMISTRY

CLARENCE TYLER MASON

Part One:

THE SPECIFIC VISCOSITY OF ACETALDEHYDE AND
OF ACETALDEHYDE-PARALDEHYDE MIXTURES.

The specific viscosity of pure acetaldehyde and paraldehyde have been found, and a curve is given from which the viscosity of any acetaldehyde-paraldehyde mixture can be found.

Part Two:

A STUDY OF THE OXIDATION OF ALLYL ALCOHOL BY
PERMANGANATE IN AN ACID MEDIUM.

A method of preparation of acrolein-free allyl alcohol has been given, and it has been shown that the oxidation of allyl alcohol by acid permanganate gives only formic acid.

M. Sc.

AGRONOMY

F. S. NOWOSAD

THE EFFECT OF SOME COMMERCIAL FERTILIZERS ON
THE YIELD AND BOTANICAL COMPOSITION OF
PERMANENT PASTURES.

Pasture experiments have been conducted in the Eastern Townships at Cowansville, Quebec. The yields of pastures were determined by placing wire cages in plots under different fertilizer treatments. The herbage was clipped four times during each season. The botanical composition was determined by the quadrat method.

In the first experiment started in 1931 and studied in 1931 and 1932, lime produced significant increases in yield. In a duplicate experiment started in 1932 and studied in 1932 only, lime produced significant decreases in yield. Superphosphate was found to be the most effective element in increasing the yield of herbage, while potash produced smaller increases. Complete mineral treatments and nitrogen gave the highest yields.

Botanical composition was altered considerably by the addition of fertilizers to pastures. Superphosphate increased the percentage of clovers, and decreased the weeds and bare ground. Potash was less effective. Nitrogen, when added to complete fertilizers, reduced the percentage of clovers, but showed no significant effect in increasing the percentage of grasses.

M. Sc.

AGRONOMY

JOSEPH ROSARIO PELLETIER

METHODS OF SUB-SAMPLING CIGAR LEAF TOBACCO IN
RELATION TO ACCURACY.

With a view to the development of a more accurate procedure in estimating the yield and quality in experimental work with tobacco, different methods of securing the samples and different sized samples have been tested out. The data collected from samples and also the remnants from these samples have been analyzed statistically.

Under the conditions of the study no statistical significance has been involved in the grading process with samples varying from 10 to 90 percent. In determining the yield from samples of the best developed plants of the plot, results have given an erroneous estimate; while using samples of the plants from the inner rows or from plants taken at random over different fertility plots, 10 percent has been found satisfactory. In estimating quality with samples taken from best developed plants or taken from the average plants of the inner rows or from the plants taken at random under low and high fertility conditions, results have shown that any sized samples used were satisfactorily representative.

The influence of seasons has not shown any particular significance; on the other hand the personal factor has shown some.

M. Sc.

ANATOMY

RICHARD M. H. POWER

THE UNSTRIATED MUSCLE FIBRE OF THE FEMALE PELVIS.

An imperfect smooth muscle diaphragm is present and embedded in fibrous tissue lying between the pelvic peritoneum and the superior surface of the levator ani muscle. The bands which constitute this diaphragm may be divided into anterior, lateral and posterior groups converging on the cervix uteri. The attachments of these to the visceral and pelvic walls are discussed as well as their functional significance, in terms of the individual bands and the musculature as a whole. Operative procedures for the correction of sacro-pubic herniae are criticised and their success or failure interpreted in the light of the dual nature of the parametrium and the pelvic subperitoneal tissue.

M. Sc.

CHEMISTRY

JOSEPH CYRIL PULLMAN

THE SYNTHESIS OF LONG CHAIN POLYETHYLENE ETHER
GLYCOLS AND THE NATURE OF POLYMERIZATION.

This investigation was carried out with a view to obtaining further information on the nature of polymerization by preparing, synthetically, a series of polyethylene ether glycols for comparison with similar products obtained by the direct polymerization of ethylene oxide. The polyethylene ether glycols were prepared by a condensation reaction between one mole of a dichloro derivative and two moles of a monosodium derivative of lower polyethylene ether glycols. The nona, octadeca and heptacosa ethylene ether glycols and also the dichloro derivatives of the first two compounds were prepared. It was found that the synthesis of solid polyethylene ether glycols can be carried out more readily than that of the liquid polyethylene ether glycols.

M. Sc.

ZOOLOGY

L. R. RICHARDSON

THE SKELETON, AND ITS DEVELOPMENT IN
CATOSTOMUS COMMERSONII, (L.).

The development of the skeleton in *Catostomus commersonii* is described from a study of a series of growth stages prepared by the Dawson modification of the Schultze method for transparent preparations.

The technique has been thoroughly worked out, and is outlined as definitely as possible.

Observations on the cartilaginous precursors of the skeleton, and a description of significant features of the adult skeleton are included.

Reconstructions of the chondrocranium in two stages are described. A comparison of the latter with the formation of the centers of ossification of the skull shows a close similarity between the development of the two; a feature also shown in the development of the branchial skeleton.

The vertebral complex, and its development, are figured and described. In *Catostomus* the complex is relatively simple, and is typical in its formation from the elements of the anterior vertebrae.

A serial development of bone is described in the fins.

A detailed description is given of the relations of the articular feet of the rays to the radial elements of the fins.

M. Sc.

CHEMISTRY

JAMES ALEXANDER SCARROW

AN IMPROVED SEMI-MICRO KJELDAHL METHOD FOR
ESTIMATION OF ORGANIC NITROGEN.

Carbonyl compounds are usually identified in this laboratory by means of their 2, 4-dinitrophenylhydrazones. In most cases these latter do not yield the calculated amount of NH_3 when analyzed for

N by the classic Kjeldahl method. A modified method, based on a preliminary reduction with hydriodic acid and phosphorus, has been developed and tested out successfully on ten 2, 4-dinitrophenylhydrazones which failed to give a correct value otherwise.

Preliminary exploration has also been done in applying the method to other compounds. Three guanidines, an azobenzene, a nitrosamine, and a few representatives of other types, previously reported in the literature as giving poor results by the Kjeldahl method, have been analyzed successfully. Three semicarbazones and certain 6-membered rings containing nitrogen gave low results with both procedures.

M. Sc.

GEOLOGY

NORMAN RUDOLF SCHINDLER

GEOLOGY OF THE WAITE-ACKERMAN-MONTGOMERY PROPERTY,
DUPRAT AND DUFRESNOY TOWNSHIPS, QUEBEC.

The Waite-Ackerman-Montgomery group of claims is situated eleven miles north west of Noranda, Quebec.

The geology of the area consists of a complex assemblage of dyke rocks intruded into Keewatin lavas. The youngest intrusive is probably of Keweenaw age. The sequence as worked out from contact relationships is given in the following table. The fourfold division is a genetic one, based on similarity in age and lithological characters. Detailed petrographic descriptions of each rock type are given, together with a discussion on differentiation and rock alterations.

An outline of the structure of the area is included, and its importance in the localization of the ore bodies is stressed.

The ore is a massive sulphide replacement in andesite. The metallization is probably genetically related to the Dufault Lake granodiorite, considered to be post-Temiskaming and pre-Cobalt in age.

Intrusives	Diabase 6 (Gabbro).	Series 4.
	Diabase 5. Granite (Soda granite). Feldspar porphyry. Diorite and quartz diorite.	
	Diabase 4. Diabase 3. Quartz porphyry. Diabase 2a. Diabase 2. Diabase 1a.	Series 2.
	Diabase 1.	
Volcanics	Andesite. Rhyolite.	Series 1.

M Sc.

AGRICULTURAL CHEMISTRY

GEOFFREY THORP SHAW

THE EFFECT OF CHEMICAL TREATMENTS ON THE
COLLOIDAL PROPERTIES OF PODSOL SOILS.

Upland Appalachian podsol soils of Quebec have been studied through chemical treatments to determine factors governing conditions arising from the accumulation of semi-decomposed sour organic matter. Deductions have been drawn from base exchange relationships which link up the low soil fertility with the base exchange system, the properties of which are a result of this organic accumulation. Iron and aluminum were found to be in a readily available state but could not be released as exchangeable cations. Investigations in the laboratory were carried out to modify the organic matter through chemical treatments and to overcome the conditions it had produced in the soil. Alkali treatments as sodium carbonate appeared to give the most effective response.

LEO LYON SPECTOR

THE ELASTIC FIBRES OF THE HEART MUSCLE
IN VARIOUS AGE PERIODS AND IN DISEASE.

The distribution of the elastic tissue in the three layers of a normal adult heart is described, indicating variations in quality and quantity. The main function of the elastic tissue is to prevent overdistension. This conclusion is arrived at from histological observations and supported by physical laws. Unfortunately, no attention has ever been paid to the elastic elements of valves in considering their function. These are so distributed as to leave little room to doubt that they help in maintaining the valves in a semi-closed position. This causes an even flow of blood and renders haemodynamic effects more efficient. Elastic tissue increases with age and it is possible to judge the age period to which a normal heart belongs. The variety of views concerning the histogenesis of elastic fibres is only exceeded by the number of investigators. By presenting a histo-dynamic mechanism, it is felt that the observed age period and disease changes will receive a "causal explanation".

ISADORE MAX TARLOV

THE STRUCTURAL AND FUNCTIONAL RELATIONSHIPS
OF THE CEREBROSPINAL NERVE ROOTS.

This investigation consists of a survey of the literature dealing with the various aspects of cerebrospinal nerve root histology together with observations on this subject. The olfactory nerve has been shown to resemble the other true cerebrospinal nerves in containing a central, glial and a peripheral, non-glial portion. The hypothesis of Rio-Hortega concerning the role of oligodendrocytes in the elaboration of myelin is favored by the encounter of myelin along the central segment of the olfactory nerve alone, in the region of distribution of oligodendrocytes.

The study of the site and nature of the junction between central and peripheral portions on the various cerebrospinal nerve roots led to the formation of microscopic criteria for the differentiation of sensory from motor roots. As a result, a certain degree of functional root localization has been established in the nervous intermedius of Wrisberg, the glossopharyngeal nerve and the vagus spinal-accessory complex.

JAMES HOWDEN WHYTE

THE RELATION OF STOMATAL OPENING
TO TEMPERATURE AND OTHER FACTORS.

This work began as a further study of the effect of temperature on stomatal movement as commenced by Scarth and Brown.

As temperature effects cannot be studied alone, the other environmental factors were taken into account, especially turgidity of leaf and factors governing night opening of stomata and the most important result of the investigation concerns the latter.

The following results were obtained:—Stomata open in the dark when there is a lack of oxygen in the leaf. This applies to wilted leaves as well as turgid ones. The rate of opening increases with temperature and this seems to be due largely to the indirect effect of temperature on respiration. Shortage of oxygen creates a more alkaline reaction in the guard cells and it is suggested that, as in photic opening, it is the pH change which induces the hydrolysis of starch in the guard cells.

NORMAN L. WILSON

THE PETROLOGY OF MOUNT JOHNSON, QUEBEC.

The igneous rocks forming Mount Johnson are of four principal types, and it is very probable that they are the remnant of a neck or plug, although it is doubted if the neck ever had an eruptive phase.

The close relationships of all the rocks show them to be differentiates of a single magma, but the evidence afforded by the mountain is not sufficient to prove whether the rock types were injected in a single period, or whether they were replaced by multiple intrusion. The trend of differentiation is shown in a differentiation diagram.

One of the four rocks, an essexite with a rather high content of ferromagnesian minerals and a porphyritic structure, which has never before been fully described, has been given the name *monnoirite*. Several new chemical analyses have been made of the rocks of Mount Johnson.

MASTER OF ENGINEERING

M. ENG.

ELECTRICAL

ROBERT AVERY CHIPMAN

ELECTRON OSCILLATIONS IN THERMIONIC VACUUM TUBES.

The generation of ultra-short electro-magnetic waves by oscillators whose operation depends primarily on an orderly motion of the electrons in the tube is discussed from a theoretical and an experimental point of view. A historical summary and detailed critical discussion is given of all the more important papers pertaining to the problem.

The experimental work is based on the determination of the oscillation characteristics of a vacuum tube by the method of working diagrams and space-models. Examples are given of misleading conclusions drawn from isolated two-dimensional characteristics, and the way in which this can be avoided by the determination of the complete characteristic of a tube is explained. It is recommended that mechanical theories of electron oscillations should be based only on information obtained from such a characteristic.

Miscellaneous experimental investigations of velocity of emission, wavelength control by external circuit, etc., are included.

M. ENG.

CIVIL

DELANO ERNEST EVANS

AN INVESTIGATION OF THE EFFECTS PRODUCED BY ELECTRIC ARC WELDING ON A STEEL COMPRESSION MEMBER

WITH

AN ANALYSIS OF THE DISTRIBUTION OF WELDING STRESSES IN STEEL PLATES.

Tests were performed on a welded and similar unwelded column to determine the effects of residual stresses, produced by welding, upon the load carrying capacity of a compression member. A measurement was made of the amount of shortening caused by the welding together with an estimate of the maximum initial stress in compression.

In the latter investigation, an analysis was made of the magnitudes and distribution of stresses produced by welding on steel plates. Four rectangular plates of the same length and thickness but of various widths, were welded along two opposite edges. The residual stresses were determined by cutting the plates into strips parallel to the welds and measuring the amounts by which the strips changed in length upon separation from the plates. The paper includes many charts and diagrams illustrating graphically the results from the investigation.

M. ENG.

ELECTRICAL

HENRIK WILHELM JADERHOLM

NOTES ON THE DESIGN OF BAND-PASS FILTERS.

A brief résumé of the theory of band-pass filters is given with particular attention to the contributions of Mallett, Pierce and Petrzilka.

Using the network (quadripole) theory as expounded by Strecker and Feldkeller, equivalent circuits are derived for typical coupling arrangements permitting an analysis of each case in terms of additive coupling coefficients. For the cases of series and parallel circuits, equations for the voltage amplification are found.

The maximization of these equations produces the desired relationship between the "peak separation", coupling coefficient and the ratio of circuit resistance to coil reactance.

To prove the theoretical conclusions a number of experimental peak separation measurements are compared to corresponding calculated values. Additional evidence is found from visual and photographic observations with a circuit analyzer, consisting of a cathode ray oscillograph and suitable sweep circuits.

M. ENG.

MINING

MICHAEL JEROME O'SHAUGHNESSY

A STUDY OF THE FACTORS AFFECTING GRINDING EFFICIENCY IN BALL MILLS.

The subject matter deals principally with the elimination or control of mechanical losses associated with a fine grinding plant. The investigation of certain phases of the operation has led to the development of new equipment. This includes a sampling device which continuously or intermittently samples quantitatively as well as qualitatively crushed rock pulps, and an automatic grease feeder for large bearings.

The dead load loss due to the weight of a ball mill grinding media charge has been investigated as well as qualitative tests of the amount of power used to rotate a mill charged only with grinding media, wet and dry.

A few preliminary grinding tests are included mainly for the purpose of showing the weak points in the grinding circuit but also illustrating the effects of speed variation over a short range. The thesis outlines the foundation work for an investigation which will continue in the future.

M. ENG.

CIVIL

CLEMENT JOHN PIMENOFF

THEORY AND APPLICATION OF PHOTO-ELASTICITY.

A new optical method has been recently developed, by which it is possible to analyse transparent models for stresses.

The main principles on which it rests are:

1. The stresses in two dimensions are independent of elastic constants of the material.
2. Transparent materials become doubly refracting when strained.
3. At any point in a plane plate there are two mutually perpendicular stresses, called the principal stresses, acting on planes of no shear.

Thus, at any point there are three unknowns: magnitude of one of the principal stresses, magnitude of the other and the direction of one of them.

The direction is obtained by analysing the specimen between two cross nicols.

Difference of the stresses is obtained from measurements of relative retardations of component rays, emerging from the stressed plate.

Sum of the stresses is obtained by mechanical measurements of lateral deformation. In another method the stresses are obtained independently of each other by interferometer measurements.

M. ENG.

MECHANICAL

ROBERT ARTHUR RANKIN

POWER SUPPLY IN INDUSTRY.

Particularly in the manufacturing industries, choice of power supply merits considerable economic and engineering attention. On this continent, public service supply has been for many years the chosen method of power service and it can be added that a large percentage of this supply has water power for its source, although of course large steam central stations also carry their share of the industrial load.

However, no matter from what source marketable power may come, many cases do exist where the private power plant is by far the most economical proposition, and the more industrialized a country becomes, the more is this point realized.

In a properly balanced community, industry will recognise the value of co-operation with regard to the supply and use of available power and heat services. Public service supply from a water power or a steam power source and the private industrial plants are all together very necessary to produce the economic whole which will conserve our national resources.

M. ENG.

ELECTRICAL

CLARENCE HARRIS SHAPIRO

RELAY PROTECTION OF HIGH VOLTAGE ELECTRICAL POWER SYSTEMS.

The thesis is divided into three parts of approximately equal length.

Part I deals with the fundamentals of the Method of Symmetrical Components. Several theorems are developed and the behaviour of the various currents in networks analyzed. It contains also a series of short-circuit calculations on the 220 K.V. System of the Hydro Electric Power Commission.

Part II describes the eight most important synchronous machine reactances. Direct and quadrature values of the synchronous, transient and subtransient quantities are given close consideration. All of these reactances were measured: the methods and results are given. Oscillograms are included.

Part III first presents the fundamental principles of relay protection. Various schemes are developed for the protection of station equipment and all types of transmission systems. Latest developments and tendencies are noted. A typical problem with a solution is given in an appendix.

THOMAS DOUGLAS STANLEY

ANALYSIS OF THREE-PHASE NETWORKS
BY THE METHOD OF SYMMETRICAL COMPONENTS.

The method of symmetrical components is explained and applied to the calculation of fault currents in a simple case. The impedances offered to the different phase sequence currents in synchronous machines, transformers and transmission lines, are discussed. The general method for the simplification of networks is presented and the whole of the above is applied to the calculation of fault conditions as they would exist on an actual system. The 220 Kv. system of the Hydro Electric Power Commission is used and voltages and currents at Chats are calculated for different types of faults at Masson. Some other aspects of symmetrical components are mentioned in conclusion.

The methods and results of a series of tests on the reactances of a synchronous machine are given in Appendix A. Appendix B is a description of the Modern Automatic Low-Voltage A. C. Network.

R. J. WESTWOOD

AN INVESTIGATION INTO THE REACTIONS THAT OCCUR
DURING THE CYANIDATION OF GOLD ORES.

The action of pure pyrite and of pyrrhotite, the most common iron minerals found in gold ores, on lime solutions and on cyanide solutions, have been studied under various conditions.

In the absence of air, pyrite has only a slight chemical action on lime solution, while in the presence of air it forms calcium sulphite and thiosulphate. It has only a comparatively small cyanide consumption.

Pyrrhotite forms calcium polysulphide and thiosulphate with lime solutions in the absence of air, while an aerated pulp contains mainly calcium thiosulphate. It has a large cyanide consumption, thiocyanate being the main product of the reaction.

An appendix deals with the methods of analysis used.

MASTER OF COMMERCE

M. Com.

ECONOMICS

J. GORDON NELLES

THE ECONOMIC AND COMMERCIAL ASPECTS OF AVIATION IN CANADA.

Practically all phases of the development of civil aviation in Canada have either an economic or a commercial significance. This thesis, therefore, surveys the part which aviation has occupied in the national economy of Canada. Its record of service and its future possibilities are indicated from the point of view of both government and private flying operations. Its organization and development under Dominion control is described. The extent to which aircraft have been used to assist the development of natural resources is considered and a survey of the growth of the air transport services for the carriage of mail, freight and passengers concludes the work.

M. Com.

ECONOMICS

P. C. WEISSENBURGER

WINE IN CANADA. A STUDY OF THE ECONOMIC, FISCAL AND LEGISLATIVE ASPECTS OF THE PRODUCTION AND SALE OF WINE IN CANADA.

This thesis is a study of the imports of wine into Canada and mainly of the Canadian wine industry and its possibilities of development.

From a climatic viewpoint the Niagara Peninsula is suited for the raising of more refined wine-grapes than the ones raised there now.

Both the imports and the production of native wines have been greatly influenced by the Canadian Liquor Laws, which, in opposition to the United States Laws, brought about the Liquor Control System.

Not only Liquor Laws, but booms and depressions, and the changes in tariffs are the causes of the noticeable variations of imports.

The Canadian wine industry started around 1870; till 1919 it grew but slowly. Due to various reasons we witness an astonishing boom in the production of native wines.

But the industry is not yet what it could be. Unskilled legislation has done a great deal of harm. Changes in the existing laws are suggested and new laws are proposed, the effect of which would be a decided improvement of the industry from a qualitative point of view.

DOCTOR OF PHILOSOPHY

PH. D.

CHEMISTRY

JOHN STANLEY ALLEN

THE ELECTRIC MOMENT IN RELATION TO THE STRUCTURE OF ORGANIC COMPOUNDS.

A complete review of the theory and application of electric moment measurements is given. Fundamental mathematical theory of dipoles and molecular association are discussed. Methods of measurement of the electric moment, apparatus, dielectric cells and the construction and operation of a heterodyne beat apparatus for measurement of dielectric constants are given. Densities and dielectric constants of benzene solutions of glycol monochloroacetate, the ring isomer of glycol monodichloroacetate, propylene oxide, trimethylene oxide and tetrahydropyran are measured. The electric moments are 3.94, 3.35, 1.83, 2.01 and 1.87×10^{-23} e.s.u. respectively. These measurements are used to detect ring-chain isomerism, and to determine the "normal" oxygen valence angle, $90 \pm 5^\circ$, the first experimental confirmation, by electric moment measurements, of the same value suggested by Pauling. This value explains the relative stability of furanose and pyranose rings in carbohydrates and polysaccharides, and other discrepancies in literature. New values of the (H—O) and (CH₂—O) moments and a minimum oxygen valence angle are given.

THE NATURE OF POLYMERIZATION AND ITS RELATION TO THE DIELECTRIC CONSTANT.

A method is given for the slow and controlled polymerization of vinyl acetate without catalysts by the use of visible light and heat. The reaction is catalysed by benzoyl peroxide, and mercury, and inhibited by copper and copper acetate. The density and dielectric constant increased with time of exposure and degree of polymerization. One-half of one percent polymerization or less can be detected by dielectric constant measurements. The results support the "normal valence" theory of polymerization.

PH. D.

BOTANY

JOHN MAXWELL ARMSTRONG

CYTO-GENETIC STUDIES IN *MATTHIOLA* AND *TRITICUM*.

A detailed comparison of the snowflake race of *Matthiola incana*, distinguished by long first metaphase chromosomes, with normal short chromosome races was made to obtain evidence on the origin and mechanism of meiosis. The higher incidence of irregularities in the long chromosome type accounts for its relatively frequent production of extrachromosome mutations. The chiasma theory of metaphase pairing was confirmed by comparison of two extra chromosome forms, Crenate and Crenatoid. The factor I, which determines the long chromosome condition is shown to reduce the initial chiasma formation. These observations favour the retardation rather than the precocity theory of meiosis.

In *Triticum vulgare* aberrant forms known as speltoids, occasionally appear. In a speltoid strain of the A series several genetic anomalies were found to be correlated with distinctive cytological conditions. The chromosome aberration hypothesis appears to be the most tenable explanation for the origin and behaviour of speltoids, but its original formulation must be extended on account of the important part now shown to be played by translocations and sectional duplications or deficiencies.

PH. D.

CHEMISTRY

JACOB BARSHA

THE STRUCTURE OF SYNTHETIC POLYSACCHARIDES.

The investigation of the chemical constitution of the polysaccharide membranes produced by *Bacterium xylinum* from glucose, fructose and glycerol, was carried out in order to determine which substances could give rise to polysaccharide formation and to establish the identity or otherwise of the products from these substances (glucose, fructose and glycerol) with one another and with cotton cellulose.

The purified membranes were subjected to acetylation, hydrolysis, methylation and acetolysis reactions and the products compared with those obtained from cotton by similar treatment. The products were found to be identical in each case, thus establishing the similarity of the constitution of the polysaccharides synthesized by *Bacterium xylinum* from glucose, fructose and glycerol, and their identity with cotton cellulose. X-ray investigation of the purified bacterial celluloses by Dr. George L. Clark and Mr. W. A. Sisson, University of Illinois, yielded X-ray diagrams characteristic of cellulose.

STEWART GARDNER BAXTER

THE RÔLE OF THE SYMPATHETIC NERVOUS SYSTEM
IN THE SECRETORY PROCESSES OF THE DIGESTIVE GLANDS.

The rôle of the sympathetic nervous system with particular reference to the secretory processes of the gastric and pancreatic glands was investigated.

A review of the literature concerned showed inadequate and conflicting data.

Long continued rhythmic stimulation of the splanchnic nerves was found to produce an alkaline mucus secretion having characteristic properties. Epinephrin injected repeatedly gave similar results. Cocain sensitized these secretory fibres contained in the sympathetic. Atropin had no effect on the mucus secretion. Special experiments showed that this mucus secretion came chiefly from the pylorus and body of the stomach. Degenerative section of the splanchnic nerves caused a "paralytic secretion of mucus". The paralytic secretion was inhibited by ergotamin.

The mucus secretion obtained by weak vagus stimulation is not regarded as due to the presence of sympathetic fibres contained in the vagus.

Chronic experiments in cats with gastric fistulae and oesophagotomies revealed the fact that the sympathetic nervous system does not play an important rôle in the first or nervous phase of gastric secretion.

Experiments on the pancreatic gland in the rabbit showed that the sympathetic nervous system is not concerned in producing the effects of hypo- and hyperglycaemia on the pancreatic secretion. These effects are mediated through the parasympathetic nervous system.

Histo-physiological investigation of the pancreatic gland in the cat indicated that the sympathetic and parasympathetic nervous systems can discharge the granular content of the cells in the complete or almost complete absence of fluid secretion and can therefore be regarded as true "trophic nerves" of the pancreatic gland.

Histo-physiological investigation of the gastric glands, while as yet yielding no very definite conclusions, indicates the importance of continuing this type of investigation in order to determine the innervation of the different elements of the gastric mucosa.

RAYMOND BOYER

THE ACTION OF SULFURIC ACID ON CYCLOPROPANE KETONES.

The action of sulfuric acid on benzoylcyclopropane, methyl 3-phenyl-2-benzoylcyclopropane-1, 1-dicarboxylate, methyl 1, 3-diphenyl-2-benzoylcyclopropane-1-carboxylate, 1-nitro-2-(p-chlorobenzoyl)-3-phenylcyclopropane, 1-phenyl-1-nitro-2-benzoylcyclopropane, 1, 2-dibenzoyl-3-phenylcyclopropane, ethyl cyclopropane-1, 1-cyanocarboxylate, 1, 3-diphenyl-2-benzoyl-1-cyanocyclopropane, and diphenylcyclopropyl carbinol was investigated and found to correspond to the action of hydrogen bromide. In some cases the cyclopropane ring was opened giving rise to open chain compounds which were identified; in other cases the ring was unattacked but groups in the side chains were hydrolysed, and finally some were unaffected by the reagent until the conditions were made so drastic that complete decomposition took place. As a result of this work a mechanism has been devised which satisfactorily explains all the examples of ring opening hitherto considered as exceptions.

F. R. BURTON

GEOLOGY OF THE DISTRICT ABOUT LAKE AYLMER,
EASTERN TOWNSHIPS; PROVINCE OF QUEBEC.

(A report on a detailed investigation of a typical part of this section of the Appalachian region.)

The area examined lies between latitudes 45°45' and 45°50', and longitudes 71°15' and 71°30', comprising approximately 145 square miles. The country is of moderate relief, is well suited to agriculture, and sustains a considerable farming community.

The rock formations are from about upper Cambrian to upper Devonian and include, among others, rocks of the copper-bearing volcanics of the Eastern Townships, rocks of the Serpentine series, and Devonian granites. Fossils in a limestone bed are sufficiently well preserved to identify the horizon as Helderberg.

No evidence was found of the orogenic period described in many parts of the Appalachian region at the close of the Ordovician (Taconic Revolution), but an early Ordovician movement is indicated. The Devonian sedimentary formations are intensely folded and deformed, and the oldest rocks of the area are overthrust upon them by a fault which is named the "Weedon thrust".

HOMER WILLIAM JOHN CRESSMAN

THE ADDITION REACTIONS OF VINYL PHENYL KETONE, III.
MALONIC ESTER.

A new apparatus has been devised and a procedure developed for the preparation of β -chloropropiophenone by the Friedel-Crafts reaction from benzoyl chloride and ethylene. Methyl malonate has been added to vinyl phenyl ketone thus forming methyl γ -benzoylethyl malonate (I), which on hydrolysis and decarboxylation gave the known γ -benzoylbutyric acid. The ester (I) was brominated and from the oily bromoester by removal of hydrogen bromide methyl 2-benzoylcyclopropane-1, 1-dicarboxylate was produced. The properties of this ester, the corresponding dibasic acid (II), and two stereoisomeric cyclopropane monobasic acids and a lactone produced on pyrolysis of (II) have been studied. The structure of the lactone was established by synthesis. In agreement with other ketonic cyclopropanes of similar type, the ring was only opened between the 1 and 2 ring carbon atoms. This is in contrast with ketonic cyclopropanes having a phenyl group in the 3 position.

PH. D.

EXPERIMENTAL MEDICINE

ELIZABETH RHODA GRANT

STUDIES IN GLYCOGEN METABOLISM.

The recovery changes following artificially-induced exercise have been studied in the intact white rat in the 24-hour fasted and post-absorptive conditions, with the aim of testing the hypothesis, founded on isolated frog muscle experiments, that, except for a small fraction, the lactic acid produced from glycogen is resynthesised to glycogen during oxidative recovery.

The results show that the muscle glycogen restoration is dependent on the availability of liver glycogen. Failing this the only restoration possible appears to be brought about by a slowly working mechanism such as maintains equilibrium close to the 24-hour fasted level.

The "oxidation quotient" determined directly in the intact rat during exercise has been found to have a value of 3 to 5, in agreement with values found during recovery in isolated muscles and in man.

Phlorhizin experiments, which failed in their original purpose, are reported for their interest in connection with the transformation of fat to carbohydrate.

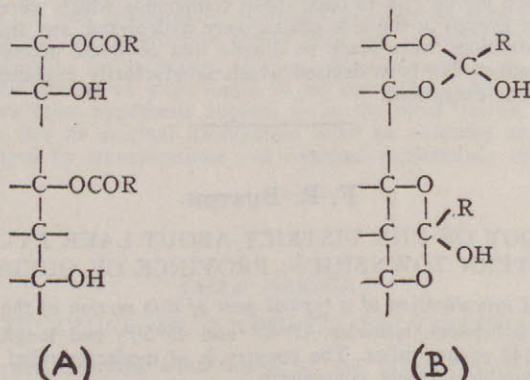
PH. D.

CHEMISTRY

MARGARET ELIZABETH GREIG

STUDIES IN HYDROGEN MIGRATION.

It was assumed that in the interaction of one mole of an acid and one mole of a 1:2 or 1:3 glycol the resulting mono ester should represent an equilibrium mixture of the open chain ester (A) and the dioxolane or dioxane ring (B)



the amount of (A) or (B) present depending on the polar character of the carbonyl group. The existence of the cyclic forms has been confirmed in the case of various esters of trichloroacetic acid. It was found that with trichloroacetic acid the main product formed with ethylene glycol, glycerol monomethyl ether, trimethylene glycol, β - β dimethyl propylene glycol, was the ring compound and not the open chain ester. These ring structures correspond to the intermediate products formulated by Emil Fischer to explain the mechanism of acyl migration. The cyclic structure was proved by preparing the methyl ethers of the dioxolane or dioxane derivatives and showing that their properties were very different from those of the isomeric open chain monomethyl ethers.

ARTHUR DOUGLAS GRIEVE

EQUILIBRIA EXISTING IN THREE COMPONENT SYSTEM
CALCIUM/OXIDE—SULPHUR DIOXIDE—WATER,
OVER THE TEMPERATURE RANGE 0° TO 25°.

Previous work done on the system calcium oxide water and on the system calcium oxide—sulphur dioxide—water is discussed.

An apparatus is described by means of which it is possible to bring together in a closed system a gas, a liquid and a solid in a very pure state and at concentrations which can be measured with great precision. With this apparatus it is possible to measure simultaneously the electrical conductivity and the vapour pressure of the solutions prepared. The cell, and stirrer have been designed to insure excellent agitation of the solid phase.

Conductivity and vapour pressure data are presented for saturated solutions of calcium hydroxide over the range 0° to 25° and from an analysis of the data it has been decided that the available data for the solubility of calcium hydroxide over this range are in error and values have been calculated which are believed to be more nearly correct.

Conductivity and vapour pressure data are presented for the system calcium oxide—sulphur dioxide—water over the range 0° to 25°, at calcium oxide concentrations of 1% and 2% and at sulphur dioxide concentrations up to more than five moles per mole of lime. The data obtained are discussed and compared with the corresponding data for the sulphur dioxide—water system.

EARLAND G. HALLONQUIST

SYNTHESIS, STRUCTURE AND PROPERTIES
OF CYCLIC AND BICYCLIC ACETALS.

Bromoethylidene glycerol has been prepared as a mixture of the isomeric five- and six-membered cyclic acetals. This mixture has been separated into the two isomeric forms, and the identity of each of these established. This work has furnished further information on: (a) ring partition; (b) ring migration; (c) the influence of polar radicles, or atoms, on the ease and nature of acetal condensations involving glycerol.

Two isomeric bicyclic acetal ethers, namely, 3, 5, 7-trioxabicyclo 2, 2, 2 octane and 3, 6, 8-trioxabicyclo 3, 2, 1 octane, have been synthesized by the action of aqueous potassium hydroxide on 1, 3-bromoethylidene glycerol 2-benzoate and 1, 2-bromoethylidene glycerol 3-benzoate respectively. These bicyclic compounds have been studied in relation to the stability, structure and properties of anhydro sugars and polysaccharides, and the normal oxygen valence angle in carbon-oxygen heterocyclic rings.

A new method for the synthesis of cyclic acetals from simple open-chain acetals is described.

WILLIAM FORSEY HAMPTON

THE HEAT CAPACITY OF GELATIN GELS.

The heat capacities of gelatin gels, prepared from ash-free gelatin, of concentrations ranging from 9% to 100% gelatin and over the range of temperature between -180° and 25°C., have been measured.

The investigation was undertaken in order to obtain some information concerning the relationship which exists between gelatin and water in gelatin gels.

Certain limitations in the method used by other workers for the calculation of unfrozen or "bound" water in gels from calorimetric data are discussed and a new equation for this purpose is derived. The amount of water remaining unfrozen in a gel is found to be dependent both on the concentration of the gel and the temperature.

The heat capacity of the Monel metal container used for the gels, was determined and an equation is derived for the specific heat of Monel metal between -183° and 25°C.

ROBERT NEWMAN HASLAM

THE STARK EFFECT IN THE ULTRA VIOLET REGION
OF THE MERCURY SPECTRUM.

An investigation has been made of the Stark Effect in the region 2200 — 3000Å of the mercury spectrum. By the use of a modified LoSurdo source fields of the order of 80 KV/cm. have been obtained. Plates have been taken with a Hilger E₂ spectrograph and a Hilger E₁ quartz spectrograph.

Thirty-four lines of the first spectrum of mercury have been examined; of these, many show Stark patterns of varying degrees of complexity. The patterns have been analysed and classified as "abnormal."

Several new combination lines have been observed, and term values corresponding to these lines have been calculated. In particular the *mf* levels are found to have a triplet structure.

The appearance of *d* lines which vanish when they pass under the zero field value of the corresponding *p—p* combination lines has been observed and discussed.

An approximate theory has been applied to calculate the displacement of lines of the group $2p - 2q$ in an electric field. Calculated values are found to agree with observations within the limits of experimental error.

PH. D.

BACTERIOLOGY

ERNEST HESS

EFFECTS OF SUB-OPTIMAL TEMPERATURES ON MARINE BACTERIA.

Pseudomonas fluorescens, *Flavobacterium decuduosum*, *Achromobacter x*, isolated from codfish slime, and *Bacillus vulgatus* from halibut intestine, studied at 37°, 20°, 5°, 0°, -3°, -6.5°, -10° and -16°C 5°C stimulated increase in cell-length (*B. vulgatus*) at cost of reproduction, for 13 days. Growth (aga slants) and pigment production observed at -6.5°C, in 100 days, motility persisting for over 37 days at -6.5°C. Sugar-fermentation, proteolytic activity and nitrate-reduction observed at -3°C. Growth curves show increasing length of lag and logarithmic periods with decreasing temperature, also increasing minimum generation times and temperature coefficients (Q_{10}) during logarithmic phase with decreasing temperature. Increasing total crops from 37° C to 5° C with increasing incubation time (Tammann principle), high total crops at 0°C and -3°C. Increased percentage reduction of cells with increasing length and decreasing freezing temperature, with repeated freezing, rapid freezing, young cultures, in unfavourable media (pH, salt concentration). Discussion of factors causing death by freezing and cold resistance.

PH. D.

CHEMISTRY

ROBERT KIRKWOOD HOLCOMB

THE APPLICATION OF DENSIMETRIC METHODS
TO QUANTITATIVE ANALYSIS.

Consideration of the density changes or alterations of volume during reactions between liquids showed that the measurement of such changes should be of analytical importance. Alterations of volume in liquids have previously been used in the study of reaction velocity, but have not hitherto been used for following the titration of solutions.

Two methods are investigated experimentally. In the first the change of buoyancy of a submerged sinker is measured. It has been shown to be of value in following the reactions during neutralisation.

A dilatometer with which it is possible to measure the volume changes accompanying titration reactions has been devised. Its behaviour has been observed with respect to such extraneous factors as dissolved and other gases, temperature fluctuations, pressure differences inside the apparatus and leakage. Examples are given of titration curves of hydrochloric, acetic, sulphuric, oxalic and phosphoric acids with sodium hydroxide. These are compared with potentiometric titration curves. The volume change on dilution of aqueous sucrose solution has been measured and the results compared with those calculated.

PH. D.

CHEMISTRY

FRANCES HOWLAND

THE MECHANISM OF ORGANIC REACTIONS IN THE GASEOUS STATE:
THE KINETICS OF THE OXIDATION OF GASEOUS ACETALDEHYDE.

The kinetics of the oxidation of gaseous acetaldehyde have been investigated from 60°C. to 120°C. by observing the rate of pressure decrease in a system at constant volume. A considerable induction period exists, during which the main products of the reaction are carbon dioxide, water, and formic acid. The main reaction in the subsequent stages involves the formation of peroxides and their oxidation products. The heat of activation of the reaction is 8,700 calories per gram molecule. The indications are that the reactions occurring during the induction period are heterogeneous. The subsequent reaction occurs by a chain mechanism. The chains are initiated at the walls of the reaction vessel, and are also largely broken at the walls.

JOHN KATZMAN

THE GROWTH OF SPACE CHARGE IN THE CROOKES DARK SPACE OF A GEISSLER DISCHARGE AT LOW PRESSURES.

It was found that the space charge in the Crookes dark space of a Geissler discharge requires 10^{-3} to build in air and helium and 10^{-4} seconds in hydrogen, at low pressures. From the results obtained in air, it was shown that the product of the pressure and the mobility of the positive ion remains constant down to a pressure of 0.13 mms. of mercury. Also that the positive ions, in the initial stages of the discharge at low pressures, are formed by radiation falling on the molecules of the gas.

RUSSELL LAWRENCE KUTZ

STUDIES ON THE PHYSIOLOGY OF THE ADRENAL CORTEX.

An extensive study of the survival period of adrenalectomized rats was undertaken on account of the many inconsistent reports occurring in the literature concerning this phase of adrenal physiology. The investigation was begun with the object of determining whether or not the mortality in untreated adrenalectomized rats is sufficiently high to justify the use of such animals for assaying adrenal cortical hormone, since, by using this small species, an assay could be carried out with a smaller amount of extract than is required when adrenalectomized cats and dogs are used.

It has been shown that with few exceptions, four weeks old adrenalectomized male rats succumb to the effects of adrenal insufficiency, the majority dying with the first ten days after operation. Thus these animals may successfully be used for assay experiments. In adult adrenalectomized rats the final mortality is also very high, though they live somewhat longer than those adrenalectomized when four weeks old.

A modification of existing methods has been successfully used to obtain potent preparations of the adrenal cortical hormone. The method differs mainly in that the original extraction is made with acetone instead of alcohol and that all lipid is removed at one operation by precipitation with acetic acid instead of by the usual organic solvent fractionation.

ERNEST EDWARD MASSEY

DELTA-KETONIC ESTERS.

Methyl α , β -diphenyl- γ -benzoylbutyrate (two isomers) reacts with bromine to form four stereoisomeric methyl α , β -diphenyl- γ -bromo- γ -benzoylbutyrates. On pyrolysis two of the bromoesters give mixtures of the corresponding methyl α , β -diphenyl- γ -benzoylbutyrate, α , β -diphenyl- γ -benzoylbutyric acid, methyl 1, 3-diphenyl-2-benzoylcyclopropane-1-carboxylate and a crotonolactone. This cyclopropane, of a hitherto unknown type, is formed when hydrogen bromide is eliminated from the γ -bromoesters. Ammonia converts the cyclopropane ester into 1, 3-diphenyl-1-carbamyl-2-benzoylcyclopropane; this is easily changed to an isomer which on dehydration gives 1, 3-diphenyl-1-cyano-2-benzoylcyclopropane. The ring in the cyclic ester is opened by zinc in acetic acid forming the low melting isomer of α , β -diphenyl- γ -benzoylbutyric acid. Hydrogen bromide opens the ring with difficulty in the same position (1:2) giving the high melting stereoisomeric acid. The cyclopropane ester is sensitive to alkalis, the reaction being complex. Only one solid, a secondary product, could be isolated from the large number of oils obtained.

LEONARD PATRICK MOORE

THE ACTION OF SULPHUROUS ACID ON CELLULOSE.

The effects of acid, alkaline, and oxidation reagents on cellulose has been discussed, and the need for detailed knowledge concerning the action of sulphurous acid, on samples of cellulose from different sources, pointed out.

The various methods available for following the degradation of cellulose have been studied, and a technique for investigating the acid degradation of cellulose has been worked out.

The action of solutions of sulphurous acid on cellulose (a commercial alpha pulp and a standard cotton cellulose prepared by a special alkaline treatment) has been investigated under varying conditions of concentration of acid, temperature and time of treatment. The extent of the degradation, caused by

the acid, has been followed by determining changes in the values of copper number, alpha cellulose content, and viscosity of solutions of the cellulosic material in cuprammonium hydroxide.

The degradation, caused by the acid used, seemed much greater than the known degradation taking place in a commercial sulphite digester and the probable effect of traces of air was pointed out.

PH. D.

CHEMISTRY

FERDINAND LUTZ MUNRO

THE RELATION BETWEEN PARTICLE SIZE AND
LIGHT ABSORPTION BY SUSPENDED ARTICLES.

Previous work relating to the absorption of light by suspensions of particles above the colloidal range is described and discussed. An apparatus and experimental method are described by means of which values for light transmission can be determined and at the same time, any constants of the apparatus can be eliminated, thereby giving results which are in a sense absolute.

Data have been obtained relating the light transmitted by suspensions to depth, concentration, and particle size for various types of inorganic materials and for different varieties of pulp. Particle sizes of inorganic materials range from 3.4×10^{-4} sq. cm. to 8.7×10^{-8} sq. cm. in projection area, with concentrations from 0.01% to 9.0% by weight. Particle sizes of pulp range from 1×10^{-4} sq. cm. to 6×10^{-4} sq. cm. in projection area, with concentrations from 0.005% to 2.5% by weight.

A theory has been developed relating the variation in particle size, concentration, and depth to light transmittance for all types of material investigated, and this theory has been applied quantitatively to the data obtained.

PH. D.

CHEMISTRY

AUBREY FARNHAM PRICE

AN INVESTIGATION OF THE REACTION BETWEEN UNSATURATED
HYDROCARBONS AND THE HALOGEN HYDRIDES.

The reaction between propylene and hydrogen chloride has been investigated. Its relation to the discontinuity in reaction velocity at the critical temperature has been pointed out.

A device has been developed for eliminating the presence of vapor phase in the examination of liquids at temperatures above their normal boiling points.

A method of analysis by conductivity measurement has been developed which serves as an independent check on the method of titration.

The homogeneity of the reaction in glass vessels has been rigorously established; the probable order of primary and secondary reactions have been indicated, and the temperature coefficients of each, evaluated.

The olefine-halogen hydride reactions have been investigated in toluene, ether and chloroform solutions. In chloroform the propylene hydrogen chloride reaction is found to be homogeneous and identical, in behaviour, with that taking place in the pure liquid mixture. This reaction is to be employed for investigations above the critical temperatures of the reactants.

PH. D.

GEOLOGY

PETER PRICE

THE GEOLOGY AND ORE DEPOSITS OF THE HORNE MINE.
NORANDA, QUEBEC.

The regional setting is described in a general way. Detailed descriptions are given of the local rocks, their structures, age relations and typical alteration processes. The ore deposits are described in detail with regard to their relationships to structure, type of rock replaced, alteration and age relations. The mineralogy is described in detail, and the paragenesis is worked out. The textures, associations and types of the gold and tellurides have been subjected to a thorough investigation, and the location, structure and causes of the gold and copper grades are discussed.

Eighty-five plates of polished and thin sections accompany the report, together with four geological plans and one isometric projection of the orebodies.

HERBERT ARTHUR REEVE

A COMPARISON OF THE KINETICS OF HOMOGENEOUS
AND HETEROGENEOUS GAS REACTIONS.

The kinetics of the thermal decomposition of gaseous dimethyl ether on the surface of platinum has been investigated. The decomposition is unimolecular, and the heat of activation is found to be 67,000 calories as compared with 58,500 for the homogeneous reaction.

The kinetics of a number of unimolecular decomposition reactions, which have been investigated both homogeneously and heterogeneously, have been compared. An examination of the molecular statistics of the filament reactions shows that they invariably take place in the gas layer surrounding the filament, and are not catalysed. In the case of ethyl ether and of acetone the gas layer is in thermal equilibrium with the filament, and the apparent heat of activation agrees with that of the homogeneous reaction.

With propionaldehyde and with methyl ether the apparent heat of activation is much *higher* than that of the homogeneous reaction. These reactions also take place in the layer of gas surrounding the filament. The high temperature coefficients of these reactions can be explained on the assumption that the accommodation coefficients for these gases are low, and hence thermal equilibrium with the filament is not attained by colliding gas molecules.

R. RICHARDSON

THE SORPTION OF SODIUM HYDROXIDE FROM LIQUID PHASES
BY VARIOUS CELLULOSES; AND RELATED RESEARCHES.

The sorption of aqueous sodium hydroxide by white spruce (*picea alba*) has been determined and a novel titration procedure developed. The sorption work was extended to various components, even to non-electrolytes, and to complex systems. A new method for the calculation of sorption results in systems of more than two liquid phase components has been devised and demonstrated. The natural rates of penetration into spruce of water and several electrolytes have been investigated, a theoretic formula for the time to one half diffusion developed, the shapes of chips most resistant to diffusion calculated, and fibre length studies instituted. An apparatus for the measurement of coefficients of expansion (swelling) of wood as a function of humidity or solutions has been set up and the axial humidity swelling of spruce denoted. A machine for the measurement of "absolute" paper opacity as a wave length function by a balanced dynamic photoelectric method has been constructed.

ARTHUR HAWLEY SNELL

THE STARK EFFECT IN THE MOLECULAR SPECTRUM OF HYDROGEN.

Stark Effect has been observed in the secondary spectrum of hydrogen between the wavelength limits 4861 Å and 6500 Å. Measurements have been obtained for the displacements of 136 lines at field strengths of over 90,000 volts per cm. These include 53 lines of the $H\alpha$ bands. A 28-foot grating was used in the analysis, the dispersion being 3.80 Å per mm. The effect manifests itself chiefly as simple, small displacements of the lines. Splitting into two components sometimes occurs, but more complicated patterns are rare. The effect is on the whole very irregular. However, it is found that the lines of the $H\alpha$ bands are nearly all displaced toward the red, and the lines of the ($3p^3\Delta - 2p^3\pi$) bands are nearly all displaced slightly toward the blue. Comparison with theory is at present impossible, due to lack of information about the normal $H\alpha$ spectrum.

EDGAR WILLIAM SPANAGEL
ANHYDROACETONEBENZIL.

The presence of a tertiary hydroxyl group in anhydroacetonebenzil has been shown by the production of a chloride with acetyl, thionyl, phosphoryl, and anhydrous aluminum chloride. Further the structure of an isomeric chloride prepared by Japp has been ascertained. An analogous series of reactions with β , β -imethylanhydroacetonebenzil was also carried out.

The bimolecular product that results from the dehydration of anhydroacetonebenzil is a tricyclic substance, having a carbonyl bridge in a six-membered ring. The structure was established as 2, 4, 7, 7a-tetrahydro-3, 3a, 5, 6-tetraphenyl 1-4, 7-methanoidene-1, 8-di-one, by a long series of degradation reactions terminating in o-diphenylbenzene. In the proof of the structure of this substance it was found that

a carbonyl bridge in a six membered ring was unstable and that the phenyl and hydrogen on the junction of the two rings shifted on pyrolysis.

The mode of polymerization of cyclopentadienones has been established.

PH. D.

CHEMISTRY

WILLIAM WESLEY STEWART

THE VISCOSITY OF GASES AND ITS RELATIONSHIP
TO THE GAS LAWS.

Measurements of high accuracy have been made on the viscosity and density of sulphur dioxide. The oscillation disk method has been used for the viscosity measurements and results have been obtained over the temperature range between -78.5° and 30°C . An equation representing the variation of viscosity with temperature of sulphur dioxide has been derived.

Density measurements have been made in a 50 litre bulb at 25° and 0°C . and at pressures of 1 atmosphere and less. The molecular weight—pressure isothermal at 25°C . for sulphur dioxide is found to be a curve. An estimation is made of the molecular weight of sulphur dioxide by extrapolation of this curve to zero pressure. A value is also submitted for the atomic weight of sulphur.

The data for the viscosity and density of sulphur dioxide were used to calculate the constants occurring in the equation of state developed by Cooper and Maass.

PH. D.

CHEMISTRY

JAMES STEWART TAPP

AN INVESTIGATION OF THE DENSITY OF A VAPOR IN EQUILIBRIUM
WITH A LIQUID NEAR THE CRITICAL TEMPERATURE.

An apparatus has been designed and constructed for measuring the density at any position within a sealed bomb containing a substance at, or above the critical temperature. The device has operated successfully and has supplied much interesting and heretofore undetermined data. A machine has been built for mechanically winding compact and sensitive quartz spirals used in the above mentioned apparatus. A method of preparing, purifying and storing methyl ether has been developed which permits of handling considerable quantities with the greatest ease.

The density determinations at the critical temperature have been confined to one substance, methyl ether. The results point to a definite continuance of a density difference between the medium above the point of disappearance of the meniscus and the medium below. Peculiar hysteresis effects have been noted, and great influence of temperature gradients throughout the length of the bomb have been studied. In general, the results obtained point to a discontinuity between the liquid and gaseous states of aggregation.

PH. D.

AGRICULTURAL BACTERIOLOGY

ROBERT REDVERS THOMPSON

A STUDY OF THE DISTRIBUTION OF BRUCELLA ABORTUS (BANG) IN
REACTING COWS AND ITS ISOLATION FROM SEX ORGANS AND FROM GLANDS.

A historical outline relating to infectious abortion in cattle (Bang's disease), the isolation of the etiological factor from milk and other body fluids, and the relationship of infectious abortion in cattle to undulant fever in the human has been given. A review of the literature relating to methods of cultivation and isolation of *Brucella abortus* has been made. A medium showing special growth promoting properties for *Brucella abortus* has been prepared by using a pressure-extract of liver as the growth stimulant.

The author has shown that *Brucella abortus* is constantly eliminated with the milk of cows reacting to the agglutination test, for infectious abortion, in dilutions of 1 to 200 or over, providing that incur-rent infections do not excite a visible pathological condition in the udder. Experiments carried out have shown that, when *Brucella abortus* is eliminated with the milk, the supra-mammary glands are infected and there is a predisposition to mastitis. The experimental findings reveal that *Brucella abortus* in naturally infected milk may be transmitted to butter, buttermilk, cheese, ice cream and whey, and is viable in these for periods long enough to justify the assumption that the use of such products constitutes a mode of transmission from the cow to the human or to the domestic animals.

Brucella abortus has been isolated from "Special" milk being sold in the City of Montreal.

It has been shown by experiments that eggs from hens fed on or inoculated with milk infected with *Brucella abortus*, do not harbour the organism.

R. L. THORNTON

THE STARK EFFECT FOR KRYPTON.

Krypton has been investigated in the region 4800—6700 Å. in electric fields up to 86 KV/cm. A 28 foot concave grating in a stigmatic mounting was employed. A total of 45 lines were observed; the majority of these were affected by the field. No combination lines were observed; this is to be expected in view of the wide separation of the krypton terms. The observed patterns are of the abnormal type. Many of the components expected to appear are missing. Possible explanations of this are discussed. The observed displacements do not depend on the hydrogen differences, but are given qualitatively by the Pauli theory.

STARK INTENSITIES IN HYDROGEN AND HELIUM.

A new type of canal ray tube is described which may be operated at gas pressures as high as one-half mm. Results obtained for $H\beta$ show qualitatively that agreement with theory is obtained for both polarizations. This is in contradiction to previous results at lower gas pressures. A comparison of photographs of $H\beta$ taken from pure hydrogen and from a helium-hydrogen mixture shows no change in the intensity distribution. For helium also a general qualitative agreement with theory is obtained.

HORACE GEORGE ISBISTER WATSON

A NEW DEVICE AND METHOD FOR GEOPHYSICAL PROSPECTING.

When a conductor lies in an alternating magnetic field, currents are thereby induced in it. These currents produce a secondary field which combines with the primary field to produce a distorted resultant field about the body. A particular form of distortion is that known as elliptical polarization—a condition similar to that existing at the centre of a four pole induction motor with one set of field magnets weaker than the other. This type of distortion can only exist when a conducting body is present. Hence its presence is a certain indication of a conducting body.

The author's work deals with the application of this phenomena in geophysical prospecting.

A device was developed for measuring the degree, nature (clockwise or anti-clockwise) and direction of the polarization. This device, which is known as a ratiometer, is considered in detail as to its functioning, design and susceptibility to error. It is shown that it is remarkably free from errors of practical magnitude over the limits of changing conditions likely to be met in practice.

From elementary considerations it is shown that, for all practical purposes, the application of simple rules to the results of an examination of the polarization produced in the field of a horizontal primary loop will yield good information as to the plan and approximate information as to the dip, depth and width of a conducting body.

In practice some difficulty is encountered by untrained observers, in operating the device, because of harmonic frequencies in the power supply. Means are suggested for minimizing this trouble.

As far as the location of ore is concerned considerable trouble is met from conducting clay beds. To eliminate or minimize this difficulty several methods are considered theoretically. The use of the vertical loop seems the most promising. No experimental results have been obtained to check these theories.

Results of the successful application of the above ratiometer, and associated theory, to known ore zones in conjunction with the horizontal loop are given.

D. R. WEBSTER

STUDIES OF GASTRIC SECRETION UNDER NORMAL AND SOME PATHOLOGICAL CONDITIONS.

Studies were made of the composition of the gastric juice secreted under different stimuli, the results obtained affording further evidence that the different cytological elements of the gastric glands are under the control of separate mechanisms, either nervous or humoral. The secretory effect of carbon dioxide on the stomach was studied, and the results suggested that this might be one of the factors of an interdigestive phase of secretion. The gastric secretion was investigated in dogs with pyloric obstruction and it was proved that pyloric obstruction *per se* does not produce any hypersecretion or alkalosis. The mechanical phase of gastric secretion was shown to be dependent on the properties of the food introduced into the intestine. Fat proved to have an inhibitory effect on the first phase and an augmentary effect on the second phase of gastric secretion, exhibiting a selective inhibitory action on pepsin.

In dogs with pyloric obstruction, when anorexia developed, the gastric contractions were found to resemble normal stomach movements, reacting in the same manner to substances introduced into the intestine. Some observations were made on hibernating woodchucks obstructed below the pancreatic ducts.

Vitamin B deficiency greatly diminished the gastric secretion and abolished the secretory effect of sham-feeding and histamine. The addition of yeast to the diet quickly restored the normal secretory reaction.

PH. D.

GEOLOGY

JOHN THOBURN WILLIAMSON

THE ORIGIN AND OCCURRENCE OF THE CHROMITE DEPOSITS
OF THE EASTERN TOWNSHIPS, QUEBEC.

The chromite deposits of the Eastern Townships of Quebec occur in elongate intrusive masses of post-Ordovician age. These intrusives are ultrabasic in character and consist of a series ranging from dunite to granite and are the result of differentiation in place. The dunite peridotite portion of the ultrabasic complex is largely serpentinized. Chromite occurrences are restricted to the dunite peridotite. The mineral occurs in both massive and disseminated form, the deposits showing a linear arrangement due to movement in the magma. They are considered to be the result of the magmatic differentiation within the ultrabasic magma. Even where the country rock has been altered by circulating waters, the chromite has been unaffected by them.

PH. D.

CHEMISTRY

CHARLES VERNON WILSON

PART I: THE STEREOCHEMISTRY OF CERTAIN TERTIARY AMINES.
PART II: STUDIES ON LACTOLS.

The condensation of certain γ -ketonic esters with aromatic aldehydes has been shown to produce either lactols or the isomeric open chain acids. Ten of these compounds have been prepared and four methods have been used to distinguish between the lactol and the open chain structure, (1) reaction with acetyl and thionyl chlorides, (2) action of *p*-bromaniline on the chloride thus formed, (3) loss of carbon dioxide when heated above the melting point and (4) indirect titration with N/100 barium hydroxide solution. The limitations of each method are discussed.

A complete review of all previous work on tertiary amines having three different substituent groups, is given, including theories that have been proposed to account for their non-resolvability. A method of attacking the problem from a new viewpoint is described. This was unsuccessful because it was found impossible to prepare unsymmetrical 1:4 dibromides.

PH. D.

CHEMISTRY

CARL ARTHUR WINKLER

AN INVESTIGATION OF THE CONTINUITY OF STATE IN ONE AND
TWO COMPONENT SYSTEMS.

An apparatus has been devised, and a technique developed, whereby the pressure-temperature relationships of systems of one or more components may be investigated with ease and accuracy; the pressure-temperature relationships for three two component systems comprised of carbon dioxide, methyl ether and propylene have been studied. This work forms the basis for proposed future investigations on two component systems.

The surface tensions of methyl ether and propylene have been determined with a high degree of accuracy, at temperatures more closely approaching the critical than had previously been done for other liquids. In addition to assisting in the elucidation of the problem of continuity of state, the data have been of interest and importance in testing numerous relationships in the critical region. A preliminary investigation has also been made of the applicability of the ring method, with the aid of a quartz spiral, to the determination of surface tension in the neighborhood of the critical temperature.

An apparatus and technique have been developed for the investigation of densities in either uni- or poly-component systems near, or at, the critical point. Data are presented, and generalizations drawn, which not only indicate the extreme versatility of the apparatus, but substantiate the postulate of discontinuity of state at the critical point.

A.A. BOWMAN B.Sc.
M.E.I.C.
MECHANICAL AND ELECTRICAL ENGINEER

814 New Birks Bldg.
140 ST. CATHERINE ST. WEST
MONTREAL, CANADA.

November 12th, 1932

Dear Sir Arthur:-

May I confirm my reasons for suggesting our again admitting a graduate to qualify extramurally for a Master degree?

At one time, Master of Engineering (Ma.E.) or Master of Applied Science (M.A.Sc.) was granted to a Bachelor of Science either by a post graduate course, or, after two years standing, to a graduate who presented an acceptable thesis and passed a special examination. The engineering degree was given for general engineering work, and the Applied Science degree for work more along Pure Science lines. The latter extramural qualification was withdrawn later. Under graduate school conditions of today, the M.Sc. and M.ENG. degrees are graduate school degrees. My suggestion, therefore, is to reinstate the original extramural qualification by permitting Bachelors of Science (McGill) to qualify for the M.A.Sc. degree by approved thesis on their own specialty, and examination as laid down. Many advantages would accrue, both to the University and our graduates; and I can think of no very serious disadvantages.

(1) - Extramural qualification is already recognized and practiced by our permitting graduates to qualify for the doctorship (D.Sc.). If a graduate can so attain the senior degree, surely he can attain the junior (Master degree). The graduate school would keep the degree standard to a high level by their own standard of thesis and examination.

(2) - In her Department of Extramural Relations, McGill lives up to her ideal of serving her community, especially to those who have lacked opportunities for university education. Further, she has a right to expect the support of the community in return for this service, and does get their support. It is an ideal admirably carried out in a practical way. Similarly, the reciprocal service already being carried on between McGill and her graduates, benefits both; and it is my hope that this relationship will eventually culminate in a Department of Graduate Relationship, where these ties will intensify and develop. In the strength of our university - graduate relationship - I can think of no greater service to her graduates than that McGill should encourage and develop the habit of study which she taught the graduates in their under-graduate days. An extramural degree would keep alive this love of study in the graduates, would encourage them to achieve results, not only for their own benefit in being of greater value to their employers, but by making available the results of their experience to university and the scientific world generally. As matters are now, a graduate has very little incentive to keep up the intellectual standard which was set for him in his university days. Much of his experience is lost by not being preserved in definite form. My experience in efforts to get papers from the members for presenting at the Engineering Institute of Canada is a case in point. Some graduates leave school regretting that they are unable to remain and carry on their studies. Most of them have to go to work. McGill would give a lasting service to those men by holding out a hope of attainment of a higher degree by continuing their study. On the other hand, such a service must be

reciprocal; I know of no factor in our valued relationship, which would keep a graduate in touch with the university, take an interest in its welfare, than by the possibility of attaining such a degree. Anything that can keep the Alma Mater alive in the mind and heart through the long years in which he is submerged in his daily toil, will be twice blessed - "Blessing him that gives and him that takes". The effort made and the results produced in attaining such a degree, would not only be a great benefit to the graduate himself, but I think it would be an equal benefit, by placing at the disposal of the university so much valuable information otherwise liable to be lost. The results of original research of every kind are probably the most valuable asset that modern scholarship produces. We see the results in post-graduate thesis work generally. I believe that similar results might be expected in the benefit to the university from the production of such valuable personal experience attained through the years in practical conditions of daily life work.

To change the subject. We were talking yesterday about methods of raising funds for McGill. To me, it is a question of sooner or later starting a department for this sole purpose, where day by day, opportunities and methods of taking advantage of them would be studied, just as day by day I myself study every possible opportunity for increasing the sale of our own product. This morning, for instance, I noticed in the GAZETTE that two of the largest subscribers to the Government Loan are the Dominion Stores and Super-Test Petroleum Corp. Today one of the few business lines which are becoming more profitable every day is the ^{Chain} Dominion Store, and in this instance I would investigate the Dominion Stores - who they are, and while I was at it, investigate the

other chain stores; and then get into touch with the leading officials of this Company in order to make their acquaintance, and then in the next drive, we would have the data. It may very well happen that we might be able now to see some of the capitalists behind this organization and get a subscription. The same way with these oil companies. I would have a complete index and file at the University "Department of Finance", with accurate surveys of the possibilities of every wealthy organization both in Canada and in those American cities who have affiliations in Canada, and day in and day out these activities would be carried out. I would not wait for a periodic canvass. The whole business would be done very day. Before a wealthy man was allowed to die, I would have been cultivating his acquaintance in the hope of persuading him to leave money to McGill. It seems to me that it is just a sales proposition, properly handled.

I congratulate you on not having heard from me for at least four years. Such letters as this must be an affliction.

With kind regards,

Yours very truly

A.A. Bowman.

AAB/BD
(Dict. 10/11/32)

Sir Arthur Currie,
Principal,
McGill University,
Montreal.

*as the most speakeeth —
Here is the draft of what was
to be a model of reasoning
and scholarship. But it would
be less human — and I am
going out of town on Monday.
May I send it as it is?
AAB*

November 14, 1932.

A.A. Bowman, Esq., B.Sc.,
814 New Birks Building,
M o n t r e a l .

Dear Mr. Bowman,

I am this morning in receipt of your letter of November 12th. Please accept my thanks for so clearly setting forth what is in your mind regarding the subject matter of our conversation last Wednesday. I have no time to make further extended comments thereon, but I promise to give the matter serious attention and also have it considered at the next meeting of the Faculty of Graduate Studies and Research.

With all good wishes,

I am

Ever yours faithfully,

Principal.

A.A.BOWMAN B.Sc.
M.E.I.C.
MECHANICAL AND ELECTRICAL ENGINEER

814 New Birks Bldg.,
1440 ST. CATHERINE ST. WEST
MONTREAL, CANADA.

November 21st, 1932

Dear Sir Arthur:-

Answering yours of the 14th instant. I appreciate your intention to bring the matter before the Faculty of Graduate Studies and Research.

Would it not be better first to submit the matter to some of your organization to whom it's possibilities are more likely to appeal; for instance, those upon whom the financing presses most heavily, those who look at McGill from a broader and, in a sense, from an outside point of view - your Secretary, one or two of your Deans and Faculties, one or two of your Board of Governors, some of the graduates, both inside and outside the University; and then go to the Faculty afterwards. If the advantages of the matter are questioned by these men whom you consult, it can be dropped. If it appeals to them, then you can meet the Faculty's objections - which I anticipate - with some weight of University approval behind the matter. To outline my reason, "Consider the general case", as Chandler used to say. To me, the highest efficiency in human intercourse is being attained in business, especially in the practical use of human motives and reactions. Therefore, to me McGill is a manufacturing Industrial, just like my own Company; and, therefore, your big problem outlined in your report, that of getting increased capital, is purely a "Sales Department" problem, such as we meet with every day; and it can be solved, I think, only in the same way.

I am afraid that I will always keep harping on the application of industrial organization experience to McGill and her problems. Like us, you have your "Financial Department", increasing, expending and controlling your funds. Like us you have your "Production Department", your Faculties manufacturing your product. Unlike us, unfortunately, you have no "Sales Department" - in your case a department for the sole purpose of "selling" McGill to the community - including your graduates, and persistently adding to your capital by donations and considering other possibilities to attain that end, in order that McGill shall get the large sums of money she must have if she is going onward and upward. Some day you will have such a Department, with which the Graduate Society might be merged into an enlarged and more important Department of Graduate Relationship. McGill recognizes the importance of her services to the community by her Department of Extramural Relations. She recognizes her duty to her graduates by graduate associate activities, such - for instance - as your Department of Unemployment, the publication of the "NEWS", the periodic re-unions. These are the nucleus of a "Sales Department", added to your own thought and activity for McGill's material advancement - unfortunately an added burden to your own administrative work - and in those of our graduates, both inside and outside of McGill who think and work for McGill's future.

Now, the pros and cons of any new project to widen our Canadian Ingersoll-Rand market, increase our sales and our profits, are first considered by our Sales Department and Finance Department. If the idea looks promising, it is submitted to our Production Department. The reason for this procedure is, of course, that it is our Sales Department, not our Production Department, who are in touch with our public outside

our Company, by whose practical support we have our being. Therefore, the Sales Department reflect the attitude of our public towards us, whereas the function of our Production Department is to adapt and apply their facilities for the practical carrying out of Sales Department's projects. It is our Sales Department, therefore, who are most sensitive to the importance of all new possibilities for extending our market. On the other hand, our Production Department's viewpoint is to adhere as long as possible to the manufacture of present designs, by improved methods - preferably in greater volume. The Sales Department are the Liberals, the Production Department are the Conservatives in our organization. Their viewpoints usually conflict; and upon the relative considerations between these views is based the decision by our Chief Executive. I apply this reasoning to the matter we have been discussing; and I am satisfied that it will be considered by the different parts of your McGill organization from very much the same respective standpoints. That is why I suggest getting the outside or "Sales" view before getting the Faculty view. Comparatively few changes in our own product would be made if they had to be initiated by our Production Department. Primarily, their aim is to standardize their output, both as to design and manufacture.

In your case it is proposed to reinstate extramural qualifications by thesis and examination, for the Master of Applied Science degree, formerly in force and afterwards replaced by standard graduate school qualifications. The same extramural qualifications for the Doctor of Science degree are still in force. I should judge that the reason for the change was the desire to stimulate graduate school

attendance. On the other hand, this action has worked a hardship on ambitious graduates who are, at present unable to qualify extramurally. Our suggestion is to restore this qualification, first, for McGill's sake, as a sales measure to create greater appreciation and interest on the part of the public, which she greatly needs; as a measure of increased service to her graduates, to encourage them to keep alive and burning the lamp of learning, which she lit in them; and to preserve much material of experience and research now largely going to waste. To those most sensitive to McGill's pressing need and her future, I am satisfied that the idea will be considered of value.

I think I can almost anticipate your Faculty, "Production Department", reactions to the matter. They are asked to revive the manufacture of a line of old time product, made in an old time way, both largely obsolete. They may make a general comparison between graduate school superiority, both of work and method, over any extramural qualifications by thesis and examination. They may meet our present Doctor of Science precedent with the hope, eventually, of bringing it under qualifications similar to that of the Ph. D. degree. The difficulty of establishing equivalent standards of extramural thesis of examination and work of such varying subjects, and methods of investigation, the possible lesser value of any work done outside, perhaps from a standpoint more practical and economic than purely scientific conditions; the anachronism of qualifying by non-academic work for an academic degree, and all for some University pro bono publico reason of no direct interest and benefit to the Faculty, may seem to be some of the Faculty objections. I have the highest respect for the breadth of view of your Faculty, as I have for our own Production Department; the consideration of any problem naturally is motivated from their own standpoint.

Setting aside the "Sales" advantages of the matter, I do feel that these Faculty objections can be met on their own ground. In the first place, my suggestion is not to throw open the Master of Science degree - which is a graduate school degree the world over; but to revive the Master of Applied Science degree, and only to our own Bachelors of Science. As the name implies, it will be a Master degree for outside and practical work, the qualifications being the product of extramural study, experience and research. The standards of qualifications, therefore, can be equally high as the graduate school standards, but it should be recognized that they will, in some degree, be different. The degree would be awarded for engineering and work done in applied science, physics, chemistry and metallurgy, for instance, as met with in the field. As to standards of the proposed Master of Science degree, the Faculty, of course, would establish their own standards of thesis and examination. I do not think it will be questioned that much valuable work, at least of Master degree calibre, is being done extramurally. A graduate does not stop thinking and studying when he graduates. Usually his work becomes more intensive. The average rating of such work can easily be ascertained by examining the transactions of the different societies and institutes of engineering, mining, chemistry and the other branches of practical science. I question if extramural work is becoming obsolete. Most of the large universities today are encouraging extramural work, and the results are often accepted (by Columbia, for instance) as part qualifications for a degree. This seems to be the answer to the question of the value of extramural study.

It is important, therefore, that this matter must be looked at from different points of view, from the standpoint of the general advantage to the University; and from the equally important standpoint

of the Faculty concerned, I am anxious that as complete an investigation as possible be made. To this end, would it be practical to consult your "Sales Department" and get their opinion on the advisability of the whole matter? I have in mind your submitting this to men in McGill like your new Governor, Major Geo. McDonald, Mr Walter Stewart, with the traditions of the McDonald benefactions behind him; in the University itself in your Deans - perhaps Dean Martin, who has had some experience in raising money; Dean Brown, whose opinion I value very highly, although he does not happen, himself, to be a McGill man; your Secretary, Mr Glassco, his kinsman of the Graduate Society, Professors McKergow, Norton Evans, Dodd, whose names happen to occur to me; and outside men like Gordon Pitts, President of the Graduate Society here; his predecessors - Messrs McKinnon and Jaquays. Also, Mr Durley of the Engineering Institute, and Mr Carlyle of the Canadian Institute of Mining and Metallurgy - men whose opinions I would especially value, as they are traveling all over Canada. Men like Irving Tait of Canadian Industries Limited, P.S. Gregory and Fraser Keith, Mr George Currie, and many other men, especially of the younger generation, because this matter is of interest to the present and coming generations rather than those of the past. I am afraid that in most of us, the lamp of learning has been allowed to glimmer and go out. However, I myself still keep the lamp as a memory of what once was; and it is in that spirit and my hope for McGill's future that I am so deeply concerned, and to that end I trust that my suggestion will be found to be of practical use. I am sorry to have written at such length, but I felt that the

case for this matter should be thoroughly established, and I hope
I have succeeded in doing so.

Yours very truly,

A. A. Bowman

AABowman/BD

Sir Arthur Currie, G.C.M.G., K.C.B.,
Principal and Vice-Chancellor,
McGill University, Montreal.

814 New Birks Bldg.,

November 21st, 1932

Dear Sir Arthur:-

Answering yours of the 14th instant. I appreciate your intention to bring the matter before the Faculty of Graduate Studies and Research.

Would it not be better first to submit the matter to some of your organization to whom it's possibilities are more likely to appeal; for instance, those upon whom the financing presses most heavily, those who look at McGill from a broader and, in a sense, from an outside point of view - your Secretary, one or two of your Deans and Faculties, one or two of your Board of Governors, some of the graduates, both inside and outside the University; and then go to the Faculty afterwards. If the advantages of the matter are questioned by these men whom you consult, it can be dropped. If it appeals to them, then you can meet the Faculty's objections - which I anticipate - with some weight of University approval behind the matter. To outline my reason, "Consider the general case", as Chandler used to say. To me, the highest efficiency in human intercourse is being attained in business, especially in the practical use of human motives and reactions. Therefore, to me McGill is a manufacturing Industrial, just like my own Company; and, therefore, your big problem outlined in your report, that of getting increased capital, is purely a "Sales Department" problem, such as we meet with every day; and it can be solved, I think, only in the same way.

I am afraid that I will always keep harping on the application of industrial organization experience to McGill and her problems. Like us, you have your "Financial Department", increasing, expending and controlling your funds. Like us you have your "Production Department", your Faculties manufacturing your product. Unlike us, unfortunately, you have no "Sales Department" - in your case a department for the sole purpose of "selling" McGill to the community - including your graduates, and persistently adding to your capital by donations and considering other possibilities to attain that end, in order that McGill shall get the large sums of money she must have if she is going onward and upward. Some day you will have such a Department, with which the Graduate Society might be merged into an enlarged and more important Department of Graduate Relationship. McGill recognizes the importance of her services to the community by her Department of Extramural Relations. She recognizes her duty to her graduates by graduate associate activities, such - for instance - as your Department of Unemployment, the publication of the "NEWS", the periodic re-unions. These are the nucleus of a "Sales Department", added to your own thought and activity for McGill's material advancement - unfortunately an added burden to your own administrative work - and in those of our graduates, both inside and outside of McGill who think and work for McGill's future.

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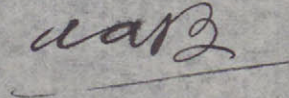
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case for this matter should be thoroughly established, and I hope I have succeeded in doing so.

Yours very truly,

A handwritten signature in cursive script, appearing to read "A.A. Bowman", with a horizontal line underneath.

AABowman/BD

Sir Arthur Currie, G.C.M.G., K.C.B.,
Principal and Vice-Chancellor,
McGill University, Montreal.

Eve

MC GILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

March 3, 1932.

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

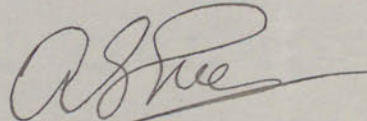
Dear Sir Arthur:

It is quite desirable to convert the Government to the view that it is better to reduce salaries and wages severely rather than throw more men out of employment. It is a matter of simple arithmetic, as follows:

For simplicity, take five men earning \$100 a month each. Dismiss one man and you have apparently saved \$100 a month. But this is not the case, because the man and his family have to be supported either by superfluous and unnecessary work or by charity, whether from the Government or private sources. Hence the net saving will certainly be not more than \$50 a month, with a train of evil consequences, dissatisfaction, underfed children, and so forth. On the other hand, if each man is reduced 20%, there will be a real saving of \$100 and little hardship because the price of food and clothing has fallen 20%, and the price of rents has come down and will continue to fall until better times.

This proposition is obvious and known to everybody, but the mystery is why it has not been acted upon.

Yours very sincerely,



Dr. A.S. Eve,
Dean, Graduate Faculty.

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

April 14, 1932.

Governor

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

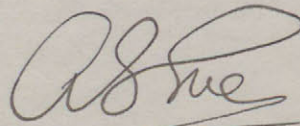
Dear Sir Arthur,

With respect to the new course with a view to the degree of Master of Civil Law, Dean Corbett is a member of the Graduate Faculty. I do not find the name of Professor LeMesurier on the list. He, however, is attending as Acting Dean. As the main burden of the new course will fall on Professor LeMesurier, I recommend that he be added to the Arts Division.

Prof. F.R. Scott is an Associate Professor, and I suggest that his name should not be added for the present, as two representatives should be sufficient.

I am wondering whether it would be a good thing to add the name of Professor Conklin, or whether we should wait until the new Professor of Parasitology be appointed. I rather gather, from Dean Barton, that it might be advisable not to act at present.

Yours very sincerely,



Dr. A.S. Eve,
Dean, Graduate Faculty.

John Glasco
Please bring LeMesurier's name up
for confirmation with at next meeting?
board. *W. Currie*

15/4/32

122 Arlington
Eleanor Street
St. Bonifacio



MCGILL UNIVERSITY

June 17th. 1932.

Sir Arthur Currie,
Dean C. F. Martin,
Professor J.C. Simpson,
McGill University,
Montreal.

Dear Sir,

I was talking yesterday with Dr. Scrimger about Medical and Surgical Research at McGill - a subject in which the Graduate Faculty is directly interested. You will recollect that a short time ago a new course was started entitled, Experimental Medicine and Research. The laboratory facilities for such a course were not satisfactory, as they were mainly at the Royal Victoria Hospital and not, therefore, available for students attached to the Montreal General Hospital. As a result, graduate students were attached to either the Physiological Laboratory (working under Dr. John Tait or Dr. Babkin), or to the Biochemical Laboratory (working with Dr. Collip).

Furthermore, the accommodation for students in Bacteriology is not sufficient, so that Professor Murray states that the best he can do is to take three research students - not three each year, but three altogether with an average of one a year. It appears, therefore, that the laboratory accommodation for Experimental Medicine and Surgery is at present, on the whole, inadequate.

The question is therefore raised as to whether it would be possible to allot a certain amount of room in the new Neurological Institute for research work, not only in Neurology but in Experimental Medicine and Surgery. This is a question on which I am not qualified to express any strong opinion, but it is certainly one which should have most careful consideration by the Dean and Faculty of Medicine, and by McGill University as a whole.

Yours very truly,

A. S. Eve,
Dean, Graduate Faculty.

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 20, 1932.

Letter not sent. Interviewed Dr. Eve instead
AWC:Dm. June 20/32

Dear Dr. Eve,

I have your letter of yesterday with reference to facilities for medical and surgical research at McGill.

We have always been aware that we did not have the laboratory facilities that we required, nor can I see that anything additional is likely to be provided in the near future. I confess that I am unable to appreciate your statement that such facilities as were provided were not satisfactory because they made no provision for students attached to the Montreal General Hospital. It seems to me that a student who wishes to do post graduate work must do it where facilities are available. I do not think we can ever undertake to duplicate at the General Hospital facilities for medical research such as are provided in the Royal Victoria Hospital, where Professor Meakins has his laboratories. We have enough troubles arising from hospital jealousy, without raising any more.

The laboratories in the biological building are, of course, available to all students.

Furthermore, the matter you mention in connection with research in Bacteriology has been placed before us by Professor Murray. I may say that a little over a year ago I had a memorandum from Professor Murray giving me his requirements, and these I met in full and was told by him last September that he was well satisfied with what had been made available. This year he asked for an additional amount for further facilities, and his demand was met.

I cannot see how it would be possible to provide in the Neurological Institute anything additional for research students in Medicine and Surgery, unless it be in those branches of the subjects which have to do with neurology and neurosurgery. The Neurological Institute must be provided and equipped with the money that is at present available. I cannot see any hope of getting any more at present. The whole Institute, including

Over

cost of building, furnishing, equipment, maintenance, appropriation for research, will represent an investment of \$2,200,000,- approximately the amount that has been invested in the Pathological Institute.

Ever yours faithfully,

Principal

May 22, 1933

Dr. A. S. Eve,
Physics Building.

Dear Dr. Eve,

Will you kindly furnish me, at your
earliest convenience, with a statement showing,

- (1) The names and the amounts paid to members
of our staff for reading theses submitted
by McGill post-graduate students.
- (2) The names and amounts paid to outsiders
for reading theses submitted by McGill
post-graduate students.

Ever yours faithfully,

Principal



MCGILL UNIVERSITY

May 27, 1933.

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

Dear Sir Arthur:

My secretary, Miss Brown, has prepared in a very clear form the information desired in your letter of May 22nd.

It will be recollected that every student for a Master's degree pays \$20, of which half goes to the Second Examiner, the First Examiner in the Department concerned receiving no remuneration as it is part of his proper duty. There is, however, one exception which I inherited, namely that of Economics. As a rule the Second Examiner is a man outside the University, whereas this is unusual in most other cases. Occasionally, however, in two or three cases in fact, it has been advisable in cases of dispute or doubt to have two Outside Examiners. In the case of the Ph.D. a student pays \$35 and at present \$25# of this goes to the Outside Examiner who must not be a McGill man. This is an excellent arrangement and preserves a high standard of excellence in our Ph.D. degrees.

At the same time I am concerned that whilst we pay \$870 to Outside Examiners, the bulk of which goes to Toronto, Dalhousie, British Columbia, Queen's, Saskatchewan, Mount Allison and Tufts, we receive in return, so far as I know, not a single penny from Toronto, Dalhousie and Queen's, and this one-way traffic is most undesirable. The remedy, however, does not seem to be clear, though I have spoken to some of my friends at Toronto and Queen's about it.

Yours very truly,

Dr. A.S. Eve,
Dean, Graduate Faculty.

in future \$20,

MCGILL UNIVERSITY
FACULTY OF GRADUATE STUDIES AND RESEARCH

Fees Paid to Second Examiners

May, 1933

1. Amounts paid to McGill examiners:

	<u>Name of Professor</u>	<u>Amount</u>	<u>Name of Students, with Depts.</u>
<u>M.Sc.</u>	Dr. E.W.R. Steacie	\$10	G.T. Shaw (Agr. Chemistry)
	Dr. B.P. Babkin	10	Billingsley, L.W. (Biochem.)
	Prof. J.G. Coulson	20	Levitt, J. Whyte, J.H. (Botany)
	Dr. R.L. Stehle	20	Bennett, R.D. Pullman, J.C. (Chemistry).
	Dr. R.R. McKibbin	20	Champagne, G.A. Scarrow, J.A. (Chemistry).
	Dr. J.S. Foster	20	Elkin, E.M. Mason, C.T. (Chem.)
	Dr. D.L. Thomson	20	Horwood, J.F. (Chemistry) Evans, G.T. (Exp. Medicine).
	Dr. A.N. Shaw	10	Larocque, G.L. (Chemistry).
	Prof. G.W. Scarth	20	Mackinney, H.W. Stovel, H.V. (Chemistry).
	Prof. J.C. Simpson	10	Kershman, J. (Exp. Medicine)
	Prof. W.G. McBride	30	Byers, A.R. Harris, J.J. Schindler, N.R. (Geology)
	Prof. J.W. Bell	20	Denis, F.T. Keating, B.J. (Geology).
	Dr. J.H. Mennie	10	Wilson, N.L. (Geology).
	Prof. E.A. Lods	10	Hamilton, G.H. (Plant Pathology)
	Dr. John Beattie	10	Richardson, L.R. (Zoology).
<u>M.A.</u>	Prof. F. Clarke	20	Taylor, G.R. (Chinese), Judge, Mabel E. (French).
	Prof. R. du Roure	30	Baker, K.G. Challies, G.S. Heuser, H.K. (Economics).
	Dr. C.W. Hendel	10	Binmore, Mary E. (Education).

<u>Name of Professor</u>	<u>Amount</u>	<u>Name of Students, with Depts.</u>
Dr. C. Macmillan	\$10	Gill, Dorothy A. (Education)
Dean Sinclair Laird	10	Steeves, L.R. (Education)
Dr. C.E. Kellogg	10	Calder, Alice D. (English)
Dr. H.D. Brunt	10	Hartwell, R.M. (English)
Prof. S.R.N. Hodgins	10	Hill, Olive M. (English)
Dr. G. Abbott-Smith	10	Kronman, Ruth Y. (English)
LeMaitre, Prof. G.E.	10	Montgomery, H. Rose (English)
Dr. J.C. Hemmeon	30	Putnam, Adelaide D. (English) Bateson, Nora (History), Reynolds, L.G. (Sociology).
Dr. S. Leacock	10	Silver, Helen (English)
Prof. A.S. Noad	10	Currie, C. (Philosophy)
Prof. D. Howat	10	Webster, E.C. (Psychology)
Prof. L.C. Marsh	10	Berry, J.W. (Sociology)
Prof. J.E. Lattimer	10	Craig, G.H. (Sociology)
Prof. G.W. Latham	10	Younge, Eva R. (Sociology)
<u>M.Eng.</u>		
Dr. C.T. Sullivan	10	Evans, D.E. (Civil)
Dr. D.A. Keys	10	Chipman, R.A. (Electrical)
Prof. A.R. Roberts	10	Jamieson, D.M. (Mining)
Dr. A. Stansfield	10	O'Shaughnessy, M.J. (Mining)
Prof. F.F. Osborne	10	Westwood, R.J. (Mining)

Summary

<u>M.Sc.</u>		<u>M.A.</u>		<u>M.Eng.</u>	
Agr. Chemistry	\$10	Chinese	\$ 10	Civil	\$10
Biochemistry	10	Economics	30	Electrical	10
Botany	20	Education	30	Mining	30
Chemistry	100	English	70		<u>\$50</u>
Exp. Medicine	20	French	10		
Geology	60	History	10		
Plant Pathology	10	Philosophy	10		
Zoology	10	Psychology	10		
	<u>\$240</u>	Sociology	40		
			<u>\$220</u>		

2. Amounts paid to outside examiners:

	<u>Name of Examiner</u>	<u>Amount</u>	<u>Name of Students, with Depts.</u>
<u>Ph.D.</u>	Dr. W.L. Holman (Univ. of Toronto)	\$25	Hess, E. (Bacteriology)
	Prof. A.T. Cameron (Univ. of Manitoba)	25	Kutz, R.L. (Biochemistry)
	Dr. W.P. Thompson (Univ. of Saskatchewan)	25	Armstrong, J.M. (Botany)
	Dr. Harry F. Lewis, (Inst. of Paper Chem. Appleton, Wis.)	25	Barsha, J. (Chemistry)
	Dr. D.E. Worrall (Tufts College, Mass.)	50	Boyer, R. Cressman, H.W.J. (Chemistry)
	Dr. H.E. Bigelow (Mt. Allison Univ.)	50	Hallonquist, E.G. Spanagel, E.W. (Chemistry)
	Dr. J. Russell (Eastman Kodak Co. Rochester, N.Y.)	25	Hampton, W.F. (Chemistry)
	Dr. E.H. Archibald (Univ. of British Columbia)	50	Holcomb, R.K. Stewart, W.W. (Chemistry).
	Dr. H.S. King (Dalhousie University)	25	Massey, E.E. (Chemistry)
	Dr. R.H. Clark (Univ. of British Columbia)	25	Moore, L.P. (Chemistry)
	Dr. D. McIntosh (Shawinigan Chemicals Ltd.)	25	Price, A.F. (Chemistry)
	Dr. C.C. Coffin (Dalhousie University)	25	Reeve, H.A. (Chemistry)
	Dr. E.H. Boomer (Univ. of Alberta)	25	Richardson, R.E. (Chemistry)
	Dr. L.F. Goodwin (Queen's University)	25	Tapp, J.S. (Chemistry)
	Dr. S. Basterfield (Univ. of Saskatchewan)	25	Wilson, C.V. (Chemistry)
	Dr. W.H. Martin (Univ. of Toronto)	25	Winkler, C.A. (Chemistry)

<u>Name of Examiner</u>	<u>Amount</u>	<u>Name of Students with Depts.</u>
Dr. H.C. Cooke (Geological Survey)	\$25	Burton, F.R. (Geology)
Dr. E.S. Moore (Univ. of Toronto)	25	Price, Peter (Geology)
Dr. T.L. Walker (Univ. of Toronto)	25	Williamson, J.T. (Geology)
Dr. R.W. Wood (Johns Hopkins Univ.)	25	Haslam, R.N. (Physics)
Dr. Oldenberg (Harvard University)	25	Snell, A.H. (Physics)
Dr. R. Ladenburg (Princeton University)	25	Thornton, R.L. (Physics)
Prof. E.G. Young (Dalhousie University)	25	Webster, D.R. (Physiology)
<u>M.Sc.</u>		
Dr. L.E. Kirk (Central Exp. Farm)	10	Nowosad, F.S. (Agronomy)
Dr. Ralph F. Shaner (Univ. of Alberta)	10	Power, R.M.H. (Anatomy)
Prof. J.C.B. Grant (Univ. of Toronto)	10	Power, R.M.H. (Anatomy)
Prof. Miller (Queen's University)	10	Spector, L.L. (Pathology)
Dr. L.E. Howlett (National Research Council)	10	Aikman, E.P. (Physics)
Dr. A. Willey (R.R. 1, Mille Isles, Que.)	10	Clark, Annie E. (Zoology)
<u>M.A.</u>		
Prof. Kemp (University of Toronto)	40	Bowker, E.E. Greenlees, W.S. Lusher, D.W. Rountree, G.M. (Economics)
Prof. Mackintosh (Queen's University)	10	Marsh, L.C. (Economics)
Prof. Swanson (Univ. of Saskatchewan)	10	Stone, F.V. (Economics)

<u>Name of Examiner</u>	<u>Amount</u>	<u>Name of Students, with Departments</u>
Prof. A. Celieres (Adelphi College, Garden City, N.Y.)	\$10	Kent, Josephine P. (French)
President Carleton Stanley (Dalhousie University)	10	Carl, Selma C.E. (German)
Prof. Dombrowski (University of Montreal)	10	Carpenter, Lula A. (French)
<u>M.Com.</u>		
Prof. Mackintosh (Queen's University)	20	Crabtree, H.K. Weissenburger, P.C.A. (Economics)
Dr. Marvin (Royal Bank of Canada)	10	Crabtree, H.K. (Economics)
<u>M.Eng.</u>		
Mr. John Young (Canadian Marconi Co.)	10	Jaderholm, H.W. (Electrical)
Mr. G.R. Hale (Shawinigan Water & Power Co.)	20	Stanley, T.D. Shapiro, C.H. (Electrical)
Mr. R.J. Durley (Engineering Institute)	10	Rankin, R.A. (Mechanical)

Summary

<u>Ph.D.</u>	Bacteriology	\$ 25	<u>M.Sc.</u>	Agronomy	\$10
	Biochemistry	25		Anatomy	20
	Botany	25		Pathology	10
	Chemistry	400		Physics	10
	Geology	75		Zoology	10
	Physics	75			\$60
	Physiology	25			
		<u>\$650</u>		<u>M.A.</u>	
				Economics	60
<u>M.Eng.</u>	Electrical	\$30		French	20
	Mechanical	10		German	10
		<u>\$40</u>			\$90
			<u>M.Com.</u>	Economics	\$30

GRAND TOTALS

McGill Examiners

Outside Examiners

M.Sc.	\$240
M.Eng.	50
M.A.	<u>220</u>
	\$510
	<u> </u>

Ph.D.	\$650
M.Eng.	40
M.Sc.	60
M.Com.	30
M.A.	<u>90</u>
	\$870
	<u> </u>

McGill Examiners	\$510
Outside "	<u>870</u>
	\$1380
	<u> </u>

Division of Money to Outside Institutions

University of Toronto	\$150
Dalhousie University	85
University of British Columbia	75
Queen's University	65
University of Saskatchewan	60
Mt. Allison University	50
Tufts College, Mass.	50
University of Alberta	35
University of Manitoba	25
Institute of Paper Chemistry, Appleton,	25
Eastman Kodak Co., Rochester, N.Y.	25
Shawinigan Chemicals, Ltd.	25
Geological Survey, Ottawa	25
Johns Hopkins University	25
Harvard University	25
Princeton University	25
Shawinigan Water and Power Co.	20
Central Experimental Farm	10
National Research Council	10
Dr. A. Willey	10
Adelphi College, Garden City, N.Y.	10
University of Montreal	10
Royal Bank of Canada	10
Canadian Marconi Co.	10
Engineering Institute of Canada	<u>10</u>
	\$ 870

For Wednesday

MEMO REPROPOSAL FOR EXTRA-MURAL CREDIT FOR GRADUATE STUDENTS.

At a conference held at Macdonald of those engaged in graduate teaching, it was brought out that, ⁱⁿ certain Universities in Britain, as well as in the United States and Canada, credit for extra-mural work, under proper safeguards ~~was~~ allowed. It was therefore decided to draw up a tentative plan embodying the general principles that should apply in case any such scheme should be considered. The following were the main points upon which general agreement was expressed:

1. That no steps be taken that would tend, in any way, to cheapen or depreciate the value of the graduate degrees offered by the University. ✓
2. That an effort should be made, however, to meet the request of the Professional Institute to allow a certain amount of credit for work done, under suitable conditions and supervision, by properly qualified candidates. ✓
3. That one year of resident graduate study should be a pre-requisite for any graduate degree, though this year might be taken in two instalments.
4. That, in all cases, the departmental requirements for resident course work must be fulfilled.
5. That no application for extra-mural credit be considered unless the equipment and supervision available is of a character to satisfy the department concerned.

6. That a student carrying on thesis work at an outside laboratory should confer at required intervals with the professor in charge of his work, and may be required to present written reports at suitable intervals.
7. That, unless the candidate is devoting his entire time to the subject of his thesis, the period ordinarily required for the completion of his work should be increased by ^{at least} one third.

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

April 19, 1932.

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

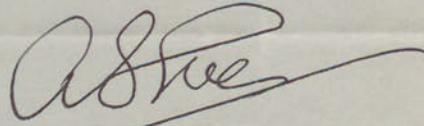
Dear Sir Arthur:

Dr. Bridges was in the Faculty of Arts and in the Department of Psychology. He is now in the Faculty of Medicine teaching Abnormal Psychology.

I have consulted with Dr. W.D. Tait and with Dr. J.C. Meakins and in their opinion he should not be retained in the Faculty of Graduate Studies, inasmuch as he is not guiding research or giving instruction to graduate students.

If you approve of his removal from the list, would you please notify the Registrar accordingly.

Yours very sincerely,



Dr. A.S. Eve,
Dean, Graduate Faculty.

To Registrar
please note
and pass to Bursar

Antarrick

27/4/31

Governors

Noted. 46/lu.
23 Apr. 1932.

April 23, 1932.

Dean A. S. Eve,
The Graduate Faculty,
McGill University.

Dear Dean Eve,

I approve of your suggestion that Professor Bridges be removed from the list of those giving instruction in the Graduate Faculty, and am noting this for the next meeting of the Board. The Registrar will be instructed accordingly.

Yours faithfully,

Principal.

UNIVERSITY OF MINNESOTA
DEPARTMENT OF AGRICULTURE
UNIVERSITY FARM, ST. PAUL

December 5, 1931.

DIVISION OF AGRICULTURAL BIOCHEMISTRY

President of McGill University,
Montreal, Canada.

Dear Sir:

As chairman of a committee of this college I am desirous of ascertaining the manner in which the term "Fellow" is applied to members of the staff of your institution. Will you kindly define the title as related to duties, tenure of office, sources and relative range of stipend, and in such other particulars as serve to distinguish a "Fellowship" from other types of service. If you recognize several classes of Fellow, such as "Research Fellows", "Industrial Fellows", "Teaching Fellows" etc., will you please indicate the distinctions between them in this same connection.

Yours very truly,

C. H. Bailey

C. H. Bailey
Professor of Agricultural Biochemistry

Wear Professor Eve.

*Will you please answer for
me.*

10/21/31

W. L. Barrett

COPY TO SIR ARTHUR CURRIE

December 11, 1931.

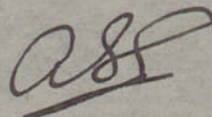
Prof. C.H. Bailey,
Department of Agriculture,
University of Minnesota,
University Farm, St. Paul,
Minnesota, U. S. A.

Dear Sir;

The word "fellow" is used in a very indiscriminate way both in Canada and at McGill. For example, we have a Moyse Travelling Scholarship; Great Britain awards "1851 Exhibition" Scholarships; the Royal Society of Canada award annually twelve Royal Society Fellowships; there are Rhodes Scholarships; the National Research Council of Canada awards annually three grades of research endowments, entitled Grade I Fellowships, Grade II, Studentships, Grade III, Bursaries.

I do not think that it is possible in these circumstances to arrive at any precise definition of the word "Fellow," in the rather concise form in which the title is used at Oxford and at Cambridge.

Very truly yours,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Enc.



Forest Products Laboratories
of Canada,
Isabella & Metcalfe Sts.,

Ottawa, November 4th, 1932.

Dear Sir:

In the Dominion Government Service at Ottawa there are several departments or branches of departments carrying on scientific researches. These branches provide positions each year for a considerable number of University graduates. Many of such graduates have entered the Federal Service with a bachelor degree but have had no opportunity for obtaining advanced courses leading to higher degrees. Frequently they have undertaken responsibilities which have made it impossible, for financial reasons, for them to take extended leave for the purpose of carrying on advanced studies. In many cases the work which they are performing is of a very specialized nature and is carried out under the direction of highly qualified officers.

If it were possible for such men, by special arrangement with Canadian Universities, to proceed to higher degrees such as D.Sc., or Ph.D., extra murally, it would be a great incentive to them and would tend to enhance the value of their services and at the same time improve the status of the scientific branches of the Federal Service.

A special committee of the Professional Institute of the Civil Service was appointed some time ago to explore possible ways and means of improving the position of scientific workers in the permanent service, who are desirous of improving their position by special study. This committee would greatly appreciate information from you regarding facilities of your University for obtaining, (1) a Master's Degree, (2) a Doctor of Science degree, and (3) a Doctor of Philosophy degree, extra murally. The Committee would also welcome any suggestions you may care to make in this connection.

To Dean Evie.

For comment please
A.W. Lawrence

7/11/32

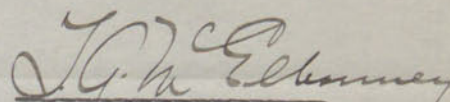
The Committee studying this matter consists of the following:-

Dr. E.S. Archibald, Director, Experimental Farms, Department of Agriculture,
Dr. J.M. Swaine, Associate Dominion Entomologist, Department of Agriculture,
Mr. L.L. Bolton, Assistant Deputy Minister, Department of Mines,
J.A. Rodd, Director of Fish Culture, Department of Fisheries,
H.M. Lancaster, Chief Dominion Analyst, Department of Pensions and National Health,
F.E. Lathe, Director, Division of Research Information, National Research Council,
N.T. Allan, Honorary-Secretary of the Professional Institute,
T.A. McElhanney, Superintendent, Forest Products Laboratories of Canada, Department of Interior.

On behalf of the Committee,

TAMcE-R.

Yours truly,


T.A. McElhanney
Superintendent.

Sir Arthur W. Currie, G.C.M.G.,
K.C.B., LL.D.,
Principal,
McGill University,
Montreal, P.Q.



MCGILL UNIVERSITY

November 8, 1932.

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

Dear Sir Arthur:

The letter written to you from Ottawa on November 4th. by the Superintendent of the Forest Products Laboratory of Canada raises a question of great importance. Hitherto, McGill has insisted on resident study both for the Master's degree and for the Ph.D. degree.

It seems to me desirable to discuss this question with both the Arts Division Committee and with the Science Division Committee when they meet on November 24th. In this way we should gather an opinion of a very representative body of the University, and at least it would be possible to state a case for the consideration of the Faculty of Graduate Studies and Research at their next meeting on or about December 1st.

It is right to add that in several cases Civil Servants have attended, more particularly at Macdonald College, for two half-sessions spread over two years. I understand that they have had leave of absence for this purpose, without salary; but I am not certain that this is the case.

Yours very truly,

A handwritten signature in cursive script, appearing to read 'A.S. Eve'.

Dr. A.S. Eve,
Dean, Graduate Faculty.

November 9, 1932.

Professor A. S. Eve,
Dean of the Faculty of Graduate Studies,
McGill University.

My dear Professor Eve,

Thank you for your letter of
November 8th regarding the letter from the Superintendent
of the Forest Products Laboratory of Canada to me.
Will you please return this letter, taking a copy, if
you wish, for your files. I agree with you that the
matter should be discussed in Faculty.

Yours faithfully,

Principal.



MCGILL UNIVERSITY

November 10, 1932.

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

Dear Sir Arthur:

I return the letter from the Superintendent of the Forest Products Laboratory, retaining a copy for my files.

X The question raised will go before the Arts Division Committee at 4 p.m. on November 24th. and before the Science Division Committee at 5 p.m. on the same day. Their report will go before the Faculty of Graduate Studies and Research probably on December 1st. at 4 p.m. Due notice of this meeting will be sent to you.

We shall be very glad to have you attend at the Divisional Committees, if you wish to do so.

Yours very truly,

Dr. A.S. Eve,
Dean, Graduate Faculty.

B7



MCGILL UNIVERSITY

January 26, 1933.

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

Dear Sir Arthur:

A meeting of the Graduate Faculty has been arranged for 4 p.m. on Wednesday, February 1st. and I trust that it will be convenient for you to take the Chair.

Two or three points of some difficulty are likely to arise, namely our relations with the Professional Institute of the Civil Service, Ottawa, and the conditions of the Guy Drummond Fellowship.

I will send you a draft of the proposals of the Professional Institute in a day or two.

Yours very truly,

Dr. A.S. Eve,
Dean, Graduate Faculty.

FACULTY OF GRADUATE STUDIES AND RESEARCH

Suggestions by the Committee on Advanced Education, of the
Professional Institute of the Civil Service of Canada

- A As regards the Master's degree, it is suggested that the Faculty of McGill consider the re-establishment of a ruling permitting McGill graduates to take the Master's degree without further residence. Such candidates would, of course, be subject to the usual rules of examinations. This concession might be limited to those graduates who have had two or more years' experience in a government laboratory, under conditions which might be considered as equal to an additional year's work at the University.
- B For graduates of other Universities the residence requirement of one year is, in our view, necessary, but we would ask that a student be permitted to take this year in two, or possibly three parts.
- C That one year's residence after the Master's degree has been obtained, either at McGill or any other University of satisfactory academic standing, be considered as fulfilling the residence requirement for the Ph.D. degree.

It would appear to us as reasonable that a professional civil servant of high scientific attainments in his field, having a Master's degree, and whose work is undoubtedly of a high quality, might be granted the concession of one year's residence only, despite the fact that he may be a graduate of another university.

- D Where any concessions are made it is suggested that co-supervision of extra-mural study be instituted, both for the guidance of the student and the protection of the standards of McGill University.

Suggested Reply

Master's Degree

Those not McGill graduates.

- (a) One full session of residence, or
(b) Two full half-sessions of residence.

McGill graduates.

On recommendation of the Department and with the approval of the Faculty in full session, residence requirements may be reduced, in some cases, to the last half-session only.

Ph.D. Degree

One full session, or two half-sessions of residence may be deemed sufficient in special cases approved by the Faculty in full session, provided they have fulfilled the above requirements for a Master's degree at McGill.

January 27, 1933.

A.S. Eve.

MCGILL UNIVERSITY

FACULTY OF GRADUATE STUDIES AND RESEARCH

Memorandum

Suggestions by the Committee on Advanced Education, of the
Professional Institute of the Civil Service of Canada.

- A As regards the Master's degree, it is suggested that the Faculty of McGill consider the re-establishment of a ruling permitting McGill graduates to take the Master's degree without further residence. Such candidates would, of course, be subject to the usual rules of examinations. This concession might be limited to those graduates who have had two or more years' experience in a government laboratory, under conditions which might be considered as equal to an additional year's work at the University.
- B For graduates of other Universities the residence requirement of one year is, in our view, necessary, but we would ask that a student be permitted to take this year in two, or possibly three parts.
- C That one year's residence after the Master's degree has been obtained, either at McGill or any other University of satisfactory academic standing, be considered as fulfilling the residence requirement for the Ph.D. degree.
- It would appear to us as reasonable that a professional civil servant of high scientific attainments in his field, having a Master's degree, and whose work is undoubtedly of a high quality, might be granted the concession of one year's residence only, despite the fact that he may be a graduate of another university.
- D Where any concessions are made it is suggested that co-supervision of extra-mural study be instituted, both for the guidance of the student and the protection of the standards of McGill University.

January 26, 1933.

A.S. Eve.

MCGILL UNIVERSITY
FACULTY OF GRADUATE STUDIES AND RESEARCH

February 7, 1933.

Mr. Jas. Gibbard, Chairman,
Committee on Advanced Education,
Professional Institute of the Civil Service of Canada,
Laboratory of Hygiene, Dept. of Pensions and National Health,
Elgin Building,
Ottawa, Ontario.

Dear Sir:

A meeting of the Faculty of Graduate Studies and Research was held on February 1st. 1933, and there was much discussion on the question raised in your letter of January 12, 1933.

I enclose a memorandum for your consideration, and trust that you will find that it will meet your requirements. If, then, you know of any men or women who wish to make application for either the M.Sc., M.Eng., or Ph.D. degree, it is desirable that they should do so without delay so that their cases can receive proper consideration.

Yours very truly,

A.S. Eve,

Dean, Faculty of Graduate Studies
and Research.

MEMORANDUM CONCERNING HIGHER DEGREES

IN THE CASE OF MEMBERS OF THE PROFESSIONAL INSTITUTE OF THE
CIVIL SERVICE OF CANADA

With reference to the requests summarised in the letter of January 12, 1933, from the Chairman of the Committee on Advanced Education, the Faculty of Graduate Studies and Research felt that a liberal interpretation of the existing regulations for the Ph.D. partially covered these requests. In particular, on page 29 of the Announcement of the Faculty of Graduate Studies and Research, it states clearly that candidates "must follow a course of at least three years' resident study at a University or other institution of higher learning or research. Of these three years, at least one year for graduates of McGill and two years for candidates who are not graduates of McGill, must be spent at this University, including preferably the final year. The other years may be spent at institutions approved by the Faculty. Special exceptions regarding resident study may be made with the consent of the proper Divisional Committee and the Faculty. The evaluation of work done in other institutions for the degree is decided by the proper committee of the Division of the Faculty, and this committee may require the student to attend before them to report on his work and may require him to pass a special examination on his work".

This leaves it open for the Faculty to deal with these special cases as they arise, and in view of the familiarity we now have with your needs, you may depend upon the most favourable consideration possible. The Faculty, in full session, decided that it preferred to reserve its judgment, case by case, at present.

With regard to the M.Sc. and M. Eng. (which may be the first year of the Ph.D. course), the following new concessions were approved.

(1) Candidates for the degrees of M.Sc. or M. Eng. who are graduates of McGill University and have had two or more years' experience in a Government Department, performing as their main duty, work of the same type as that proposed for research, may, on recommendation of a Department and with the approval of the Faculty in full session, have their residence requirements reduced to one-half session only. It is understood that these candidates must take the usual final examinations in all subjects required.

With reference to graduates from Universities other than McGill, it was felt by the Faculty that no further concession could be made. Under present conditions, it is possible to obtain the degree of M.Sc. or M.Eng. with one full session of residence, or two full half-sessions of residence.

(2) A Government laboratory might be accepted as one of the institutions mentioned in the regulations on page 29 of the Announcement, as a place where outside work might be performed.

The questions of the M.A., M.C.L., and M.Com. were not considered.

N.B. This memorandum is forwarded for your information and consideration, and has yet to be formally confirmed. Have you any comments to make, please?

February 7, 1933.

Fidelity-Orion Skin
ESSEX MFG. CO.

Candidates for the degrees of M.Sc. or M.Eng. who are graduates of McGill University and have had two or more years' experience in a Government Department, performing as their main duty work of the same type as that proposed for research may, on recommendation of a Department and with the approval of the Faculty in full session have their residence requirements reduced to one-half session only. It is understood that these candidates must take the usual final examination in all subjects required. No special concessions can be made to Civil Servants who are graduates of universities other than McGill.

@ Government laboratory may be accepted as one of the approved outside institutions under the Ph.D. regulations.

Copy

Sir Arthur Currie

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

November 25, 1932.

Mr. T.A. McElhanney,
Forest Products Laboratories of Canada,
Isabella & Metcalfe Sts.,
Ottawa, Ontario.

Dear Mr. McElhanney:

The question raised in your letter to the Principal about higher degrees for Civil Servants came before the Arts Division Committee and also before the Science Division Committee yesterday. A special Committee was appointed to confer with you and such others as you choose to name.

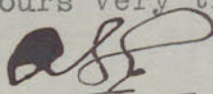
As the Faculty meeting is on December 7th. I shall be extremely glad if you could meet us at 3 p.m. on Wednesday, November 30th. in the Faculty Room of the Arts Building, McGill University. The Committee chosen to meet you consists of:

Sir Arthur Currie
Dean A.S. Eve
Dean Ira A. Mackay
Dean E. Brown

Dean F.M.G. Johnson
Dr. J.J. O'Neill
Dr. W.H. Brittain
Dr. W.D. Tait

Please let me know how many are likely to attend. I hope that we shall see you and Dr. Swaine, at least. I am forwarding, under separate cover, three Announcements of the Graduate Faculty so that you may see our present regulations for higher degrees.

Yours very truly,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Pa

MCGILL UNIVERSITY
FACULTY OF GRADUATE STUDIES AND RESEARCH.

Memorandum on higher degrees.

MASTER'S: Awarded for:

1. Definite courses of instruction higher than the honour courses in the undergraduate curriculum.
2. For a thesis which must be, in some measure, a contribution to knowledge, and written in good literary style.
3. One year's residence at McGill is essential.

DOCTOR OF
PHILOSOPHY.

Ph. D.

Two years of residence essential for those not graduates of McGill, and at least one year for McGill graduates.

1. Definite instruction extending over two years.
2. Research work.
3. A thesis which must display original scholarship, expressed in satisfactory literary form. There must be a distinct contribution to knowledge.

DOCTOR OF
CIVIL LAW.

D.C.L.

Given only to B.C.L.'s from McGill, seven years after graduation demanding eminent services in the domain of law and a thesis which must be a valuable contribution to legal science. Standard much higher than for the Ph. D. degree.

DOCTOR OF
LITERATURE.

D. Litt.

Graduates of McGill of seven years' standing, distinguished for special research in Arts and Literature. Standing much higher than for the Ph. D. degree.

DOCTOR OF
SCIENCE.

D. Sc.

Given only to graduates of McGill seven years after the Bachelor's degree; given on published works. Standard much higher than for the Ph. D. degree.

DOCTOR OF
MUSIC

Mus. Doc.

Given to Bachelors of Music of McGill, seven years after the taking of their degree.

N.B. Graduates of other Universities can, on payment of fees, be admitted "ad eundem" to the McGill Mus. Bac., if they wish to proceed to the Mus. Doc. No resident study required.

For details, see Announcement, page 30-31.

HONORARY
LL.D's.

LL.D.

These degrees do not, at present, fall under the jurisdiction of the Faculty of Graduate Studies.

MCGILL UNIVERSITY

FACULTY OF GRADUATE STUDIES AND RESEARCH

Memorandum to the Heads of Departments.

Dear Sir:

At a recent meeting of the Faculty of Graduate Studies and Research a new arrangement was authorised of which you may like to take advantage. Those who are engaged in research work at McGill, who are not undergraduates, who are not enrolled in the Graduate Faculty with a view to a degree, and furthermore are not receiving any emolument from McGill, may be recommended by the Head of the Department as "Honorary Research Associates". Their names will be considered at the forthcoming meetings of the Science Division Committee on February 22nd. and of the Arts Division Committee on March 8th. I should be very glad to learn if you have any names to submit. Final election will be made by the Faculty at their next meeting.

.....

The Department of Romance Languages does not desire to see selected passages for a Ph.D. examination in French. The Department of Germanic Languages, however, desires to see the selected passages in advance, inasmuch as the standards in German vary greatly in different Departments. Since, however, Heads of Departments are entitled to conduct the examination themselves, it is not possible for me to do more than make a suggestion that the selected passages should be forwarded to Dr. H. Walter for his approval or for any recommended change.

.....

There is a bound copy of all the examination papers set last year in the Graduate Faculty, in the Office of the Dean's Secretary, Macdonald Physics Building. This is open for inspection to anyone interested.

.....

Heads of Departments are reminded that in May recommendations can be forwarded to the Dean with reference to the Governor General's Silver Medal for the best scientific thesis.

.....

It is requested that suggestions be sent as soon as possible for a suitable lecturer for the Somerville Lecture next November. The subject should be one connected in some way with Natural History, such as Biology or Geology, although Astronomy, Chemistry, Mathematics and Physics are not debarred.

.....

Students requiring special supplemental examinations must make application at the Dean's Office and pay \$10. to the Bursar before the special examination paper is set.

Yours very truly,

A.S. Eve,

Dean, Graduate Faculty.

February 11, 1933.

Biology Macdonald



MCGILL UNIVERSITY

January 14, 1933.

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

Dear Sir Arthur:

I send an outline of the meetings and a report of the special Committee which met at Macdonald College, and these will be presented at the next meeting of the Science Division Committee on January 25th. 1933.

Yours very truly,

Dr. A.S. Eve,
Dean, Graduate Faculty.

December 19, 1932

MEMORANDUM

MEETING AT MACDONALD COLLEGE, DECEMBER 17th.

Present: Dean A.S. Eve, Dr. J.F. Snell, Acting Dean,
Prof. G.W. Scarth, and the Heads of the Biological
Dr. N.J. Berrill, Departments.
Dr. C.L. Huskins

1. Distinction between "minor" and "cognate" subjects.
2. Parasitology, M.Sc. and Ph.D. - minor details considered.
3. The question of the title of "Animal Industry". Should it be "Animal Nutrition and Breeding"? Should this include Animal Parasitology? *Pathology?*
4. Regarding Dr. Huskins' scheme, it was urged that Entomology, Parasitology and Plant Pathology should be moved out of section A to section B.
5. A Committee was appointed to give effect to the above suggestions, consisting of the Heads of the Biological Departments at Macdonald together with Prof. Scarth and Prof. Huskins.

Dr. T.W.M. Cameron then showed visiting members the new Parasitological Laboratory

ASS

MEETING AT MACDONALD COLLEGE,

SATURDAY, DEC. 17, 1932

(Notes taken by Dr. C.L. Huskins, McGill)

Present:

Dr. A.S. Eve, Dean, Faculty of Graduate Studies and Research,
Dr. J.F. Snell, Acting Dean, Faculty of Agriculture,

Dr. N.J. Berrill, Dept. of Zoology, McGill
Dr. W.H. Brittain, Dept. of Entomology, Macdonald
Prof. T.G. Bunting, Dept. of Horticulture, Macdonald
Prof. T.W.M. Cameron, Dept. of Parasitology, Macdonald
Dr. R.L. Conklin, Dept. of Animal Pathology, Macdonald
Prof. J.G. Coulson, Dept. of Plant Pathology, Macdonald
Prof. E.W. Crampton, Dept. of Animal Husbandry, Macdonald
Prof. P.H.H. Gray, Dept. of Bacteriology, Macdonald
Dr. C.L. Huskins, Dept. of Botany, McGill
Prof. W.A. Maw, Dept. of Poultry Husbandry, Macdonald
Prof. E.G.D. Murray, Dept. of Bacteriology, McGill
Prof. H.R. Murray, Dept. of Horticulture, Macdonald
Prof. A.R. Ness, Dept. of Animal Husbandry, Macdonald
Prof. L.C. Raymond, Dept. of Agronomy, Macdonald
Prof. G.W. Scarth, Dept. of Botany, McGill
Prof. R. Summerby, Dept. of Agronomy, Macdonald

Dr. Snell asked Dr. Eve to take the chair.

Dr. Eve's Preliminary Statement. Shortage of funds for some years to come. How shall we best pool resources? Must preserve independence of action, but can we get more real co-operation - not merely passing resolutions, but method of working together.

Civil Service, Professional Institute, is asking for special facilities, but sorry cannot give announcement yet.

Problem of Minor Subject. Unless he has proper undergraduate training and serious work in the minor subject, it must be called a cognate or supporting subject, not a "minor".

Submission of scheme for "Advanced Degrees in Agriculture and the Biological Sciences".

Cameron objects that parasitology is a biological subject, not an agricultural one.

E.G.D. Murray suggests substitution of "ecology" for "industry".

Maw would add Poultry Husbandry and Animal Husbandry to the A column.

E.G.D. Murray objects to Ph.D. in any applied subject.

Discussion of Prof. Cameron's Ph.D. Scheme.

Crampton - If Parasitology is separate from Animal Industry, then there should be a Department of Animal Breeding and Nutrition (to include Animal and Poultry Husbandry Depts.)

Summerby - Suggested a smaller Committee to consider the problem. The Animal Industry Dept. should not be scrapped without replacing by some new scheme.

Discussion on p. 26 of Graduate Faculty Announcement. Substitute "Macdonald College" for "Agricultural" after "Bacteriology". Also, should "Macdonald College" be added after all subjects?

Committee Nominated by Dr. Eve

Dr. W.H. Brittain,
Dr. R.L. Conklin,
Prof. E. W. Crampton,
Prof. G.W. Scarth,
Prof. R. Summerby
Dr. C.L. Huskins

The whole Macdonald College staff will consider the problem further before the meeting of this Committee.

Dr. Huskin's scheme.

• Advanced Degrees in Agriculture and the Biological Sciences.

Courses of study and research leading to the degrees of M.Sc. and Ph.D. in agricultural and biological sciences may be taken either in one Department where offered in the Departmental Announcements following (in certain cases), or jointly between any one Agricultural Department and one Biological Department. In the latter case work in one Department will be considered as the major subject, and in the other as a cognate subject. The candidate's chief research shall be conducted under the direction of the professor in charge of the major elective, but the professors of both departments chosen will act in advisory capacities, and where necessary as examiners.

The subjects in which joint work may be taken are listed below:

Strike out Depts. which do not wish to be included	A	B
	<u>Agricultural Sciences</u>	<u>Biological Sciences</u>
	Agronomy	Bacteriology
	Agricultural Bacteriology	Biochemistry
	Entomology	Botany
	Horticulture	Genetics
	Parasitology	Plant Physiology
	Plant Pathology	Zoology
		Animal Physiology
		Protozoology

Departments already included in the Department of Animal Industry may be added here if they so wish.

Requirements for the degree of M.Sc.

A minimum of one session of resident study; a general examination in both the major and minor subjects of study; presentation of a thesis giving indication of capacity for independent research.

Requirements for the degree of Ph.D.

Three sessions of resident study; a comprehensive examination in both major and minor subjects; presentation of a thesis embodying original research. Only those students who show completely satisfactory evidence of capacity for independent research in their M.Sc. studies will be permitted to register for the degree of Ph.D.

December 15, 1932.

MINUTES OF MEETING TO CONSIDER POSSIBILITY OF
GREATER COORDINATION BETWEEN BIOLOGICAL
DEPARTMENTS.

Dec. 24th, 1932.

Present: Dr. Snell (Chairman), Professors Brittain, Crampton,
Conclin, Huskins, Searth and Summerby.

The following proposals and recommendations were made and
unanimously approved:

1. Proposal: To add the following paragraph under the list of major subjects leading to the degree of Ph.D. on p.29 of Graduate Announcement:

"In addition, the degree of Doctor of Philosophy may, in suitable cases, be given for work in two interrelated subjects, even though one of them be not included in the foregoing list. In such cases the candidate's research shall be conducted under the direction of the professor in charge of the major elective but the professors of both departments will act in an advisory capacity.

Explanation:

The object of this proposal can best be illustrated by an example. The Department of Agronomy does not list subjects in which the Ph.D. is offered, but, within the Department, work in plant breeding and nutrition carries the student with into the realm of genetics or plant physiology. The Department of Botany would welcome the opportunity to utilize the facilities for large scale work that the Department of Agronomy offers. The same principle applies to work in animal breeding and genetics or to animal nutrition and biochemistry.

The foregoing proposal, therefore, does not violate the principle set forth on p.23, that a higher degree is granted essentially for work in one subject

2. That, in view of the demand for advanced work in Animal Pathology, the provision of ~~a course~~ in this field be considered.
3. In view of the creation of a Department of Parasitology, it is recommended that the course in parasitology be deleted from those given under the Department of Animal Industry and that the name of the latter department be changed to that of: "Department of Animal Nutrition and Breeding".

4. It was pointed out by certain members that it was often desirable for a student to take a course or courses in a cognate subject not given in the department under which his research is being performed. For example, a student working in Plant Physiology might require a course in the Department of Biochemistry, or an entomological student one in the Department of Zoology.

At present he can take such a course without writing the examination and without credit. Otherwise he may elect it as a minor, which would hardly be in order in cases where but a single course is involved. The opinion was expressed that it should be possible to require a student to take courses in cognate subjects as an integral part of their work, without having to elect them as a minor, substituting such a course, if necessary, for one given in their own department. It was pointed out, however, that this end is effected in certain cases by simply listing such courses in the departmental announcement (see Course D. Department of Animal Industry). To cover cases not specifically provided for, a clause to the following effect might be inserted in the Announcement.

"Where desirable, the student may take courses in cognate subjects, offered by departments other than that in which his research is being performed and such courses will be considered as a part of his major work."

MCGILL UNIVERSITY
FACULTY OF GRADUATE STUDIES AND RESEARCH
DEPARTMENT OF PARASITOLOGY
(At Macdonald College)

Professor of Parasitology:- Thomas W.M. Cameron

The Institute of Parasitology is equipped especially for post-graduate study and research and in addition to the usual laboratory facilities, it is provided with aquarium, constant-temperature rooms and quarters for both large and small animals. There is available an excellent collection of parasites of man and domestic animals and this is continually being increased. The Institute has its own special library and arrangements have been made whereby the periodicals usually containing parasitological papers are seen as soon as published.

Master of Science

Pre-requisites: Evidence of a good grounding in general zoology is essential and a previous knowledge of elementary parasitology is highly desirable. "A", "B" and "C" are essential for this degree; a minor subject from group "E" may be selected, depending on the research problem selected and the candidate's previous training.

Doctor of Philosophy

Candidates should have a degree in which zoology is a major subject and when the special subject for research is an economic one, qualifications in human or veterinary medicine or agriculture are desirable: if the special branch of research is in non-economic animals, a degree with honours in zoology is desirable. A minor subject from group "E" may be selected but the examination in this should be completed by the end of the second year of study, the final year being devoted entirely to supervised research and preparation of thesis.

- (A) A systematic study of the animal parasites of man, domestic and economic animals:- Morphology, classification, life histories, bionomics, host-reactions, chemo-therapy and control. Rule of Nomenclature; use of catalogues and bibliographies, precise writing and methods of preparing papers for publication.
- (B) Practical Parasitology: Laboratory and post-mortem technique. Use of drawing apparatus and microphotography. Culture methods and life histories.
- (C) Field Work: Parasitological surveys. Collections in the field. Methods of Control.
- (D) Medical and Veterinary Entomology - (See Department of Entomology, course D).
- (E) Ancillary subjects relative subject of research, e.g. - Animal Husbandry, Agronomy, Bacteriology, Biochemistry, Pathology, Pharmacology, Physiology, Entomology, etc., as may be arranged. The subject or subjects in this group should be selected with due regard to the candidate's research problem.

Conklin

MACDONALD COLLEGE

McGILL UNIVERSITY

RAILWAY STATIONS AND EXPRESS:

STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:

MACDONALD COLLEGE, QUE., CANADA

FACULTY OF AGRICULTURE

OFFICE OF THE DEAN

December 5th, 1932.

Sir Arthur W. Currie, G.C.M.G., K.C.B.
Principal,
McGill University,
Montreal, Que.

*Saw Conklin
Dec. 8th*

Dear Sir Arthur:

On Saturday I saw Dr. Conklin and conveyed to him the apology of Dean Eve for the oversight through which notice of Dr. Thompson's oral examination failed to reach him. I found him disposed to be quite reasonable in regard to further co-operation in respect to Dr. Thompson's research.

He tells me he is not receiving notices of the meetings of the Faculty of Graduate Studies and that he has had intimation that in spite of the Announcement, he is not recognized as a member of that Faculty. He states also that his course in Animal Physiology in the Department of Animal Industry (Course E, on page 36 of this year's Announcement) was offered on the understanding that suitable equipment would be available and that, although he had discussed the equipment with Dean Barton, it was not ordered. Two students are registered for this course and it would appear that we are under obligation to provide equipment. Dr. Conklin thinks he can borrow some of the equipment for use this year, and I have asked him to give me a list of what we must buy and an estimate of its cost.

A graduate course on Pathogenic Microbiology was formerly offered by Dr. Conklin in the Department of Bacteriology (Macdonald College). You will find it listed as Course 2 on page 33 of the Announcement of the Faculty of Graduate Studies for 1929/30. Dr. Conklin would like to have this course reinstated in the Department of Animal Industry and could also offer a course in Pathology of the Genitourinary system open to graduates in Veterinary Medicine. I have suggested that he outline these courses and apply to the Faculty of Graduate Studies for their inclusion in the next announcement.

MACDONALD COLLEGE

McGILL UNIVERSITY

RAILWAY STATIONS AND EXPRESS:
STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:
MACDONALD COLLEGE, QUE., CANADA

FACULTY OF AGRICULTURE
OFFICE OF THE DEAN

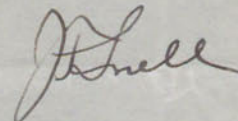
Sir Arthur W. Currie

-2-

It will no doubt be better for you to have a personal interview with Dr. Conklin than for me to attempt to report what he told me about the history of the relations between his department and that of Bacteriology. His status in the Faculty of Graduate Studies ought to be made clear, and, in my opinion, Dr. Cameron should also be appointed to that Faculty.

Dr. Conklin is in Montreal regularly on Thursdays, attending the Clinical Pathology meetings held in the General Hospital at one o'clock. Today he is confined to the house with an attack of grippe.

Faithfully yours,



Acting Dean.

JFS/Y

MACDONALD COLLEGE

McGILL UNIVERSITY

RAILWAY STATIONS AND EXPRESS:
STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:
MACDONALD COLLEGE, QUE., CANADA

FACULTY OF AGRICULTURE
OFFICE OF THE DEAN

November 25th, 1932.

Sir Arthur W. Currie, G.C.M.G., K.C.B.
Principal,
McGill University,
Montreal, Que.

Dear Sir Arthur:

I am enclosing copy of a letter from Dr. Conklin protesting against his connection with the work of Dr. Thompson and of other graduate students, past and present, being ignored. This letter was received the day it was written and I have deferred forwarding it until I had an opportunity to see Professor Gray and Dr. Thompson.

It appears to be quite true that the researches pursued by Messrs. Pugsley, Thompson, Forbes and Duckworth have been based on suggestions of Dr. Conklin and have a close connection with his study of contagious abortion of cattle. I have made no inquiry regarding the other students referred to.

*Saw
we //*
Dr. Thompson tells me that when he undertook his work for the degree of Ph.D., Professor Gray suggested that he undertake a dairy project. After consulting Dr. Conklin and others, Mr. Thompson decided to undertake a study of organisms involved in the disease of contagious abortion and states that his original application form bore the name of Dr. Conklin as director of his research. Professor Gray thinks that this must have been altered by the Executive of the Graduate Faculty. Dr. Conklin was absent when Mr. Thompson handed in his thesis and presumably the reason the thesis was not submitted to Dr. Conklin was that his name no longer appeared as director of research. Before his oral examination, Mr. Thompson interviewed Dean Eve and suggested that Dr. Conklin should be called to the examination. He understood that this would be done and thinks that it must have been due to an oversight that no notification of the examination was sent to Dr. Conklin.

Dr. Thompson informs me that he received assistance not only from Dr. Conklin but from Professor Murray and Professor Gray and says he is not in a position to decide who did most for him. In continuing the work, he believes that the co-operation of Dr. Conklin is practically essential, as he alone has the information as to the affected herds. Presumably as Dr. Thompson

MACDONALD COLLEGE

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FACULTY OF AGRICULTURE
OFFICE OF THE DEAN

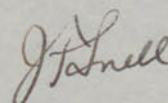
Sir Arthur Currie

-2-

is no longer a graduate student, no person other than himself will be responsible for his work. He, however, hopes for the friendly advice of all those who have helped him in the past. Dr. Thompson is in the department of Professor Gray and that is no doubt the reason that the grant was placed under the charge of the latter. I am told that Professor Murray is trying to make arrangements with the railways for the travelling expenses of Dr. Thompson in connection with the research and that unless this can be arranged, the grant of \$200.00 will probably be insufficient to provide for all expenses.

Dean Eve and Professor Murray will be able to give you further information.

Faithfully yours,



Acting Dean.

JFS/Y
ENCLO/

Macdonald College, Que.
November 23rd, 1932.

Dr. J.F. Snell,
Acting Dean,
College.

Dear Dr. Snell:

Regarding the graduate and research work of Dr. R.R. Thompson:- during the past few years I have suggested the research projects and assisted in directing the research for the following students: Mr. Townsend in Bacteriology (M.Sc.), Mr. Gough in Bacteriology, Mr. Pugsley in Chemistry, Mr. Thompson in Bacteriology, Mr. Thompson (Ph.D.) in Bacteriology, Mr. Forbes in Chemistry and Mr. Duckworth in Chemistry - the latter two now in progress. I have also assisted in planning and supervising the work of Mr. Boothroyd in Plant Pathology. From the above list you may note that the graduate work emanating from the Veterinary Department has assumed rather a wide scope. No immediate credit has fallen to this department for any part taken in the above work, nor have I attempted to usurp the rights of other departments in asking that credit be given to this department. However, owing to recent developments, I feel that it is now time that a record be made of the part taken by myself in the work mentioned.

The work done by Dr. R.R. Thompson for his Ph.D. thesis is the controversial point. This work was planned, the animals used were selected by and the procedure suggested and work carried out under my constant supervision. Despite this fact I have never had an opportunity to read the completed thesis, nor to take part in the oral examination of the candidate. A recommendation emanating from the examining committee, suggested that assistance be provided for furthering this research. Dean Barton received a letter from the Principal asking that he investigate the possibilities of continuing the research of Dr. Thompson. When Dean Barton approached me as to what lines of work should be followed, I stated very clearly to him that I had no intention of outlining further work from which other departments might obtain full credit and this department merely supply the ideas and the efforts of supervising the details. From a pedagogical standpoint, this appears to me to be quite improper, and if any standard is to be placed upon the ability of members of the staff as teachers and as being able to conduct and supervise graduate work, then the facts which I have mentioned clearly point to the fact that the Veterinary Department should be given proper standing in this matter.

-2-

At the time of departure, Dean Barton advised me that the sum of \$200.00 had been set aside for the research work of Dr. Thompson. He also stated that this money would be requisitioned for by Professor Gray, and that he anticipated that I would furnish the ideas of the research. This I absolutely refused to do.

I hope that you will take this matter up with the Principal and have a suitable adjustment made in this case.

Yours very truly,

(Sgd) R.L. CONKLIN.

Professor of Animal Pathology.



MCGILL UNIVERSITY

November 30, 1932.

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

returned to Dr. Eve

Dear Sir Arthur:

I forward for your inspection the application form of Mr. R.R. Thompson, which was duly signed by Professors Conklin, Gray, Murray, and Thomson. You will note that I made a mistake at the Oral Examination in omitting to invite Professor Conklin. Knowing that his subjects were Bacteriology and Biochemistry, I asked the Professors of those subjects to attend, namely, Murray, Gray, Collip, Thomson, and some others. It was an entire oversight on my part in neglecting to invite Professor Conklin, and we should have been delighted to have him at the Oral, all of us.

I may point out that after the theses are returned from the examiners, we have to organize these Orals at a very busy time, towards the end of September, and it is extremely difficult to fit them in satisfactorily in order that they may get their degree at the October Convocation.

Please return the enclosed application form as it is the only copy in my office. With your approval, I should like to send a copy of this letter to Professor Conklin.

Yours sincerely,

Dr. A.S. Eve,
Dean, Graduate Faculty.

Enc.

MACDONALD COLLEGE

McGILL UNIVERSITY

RAILWAY STATIONS AND EXPRESS:
STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:
MACDONALD COLLEGE, QUE., CANADA

FACULTY OF AGRICULTURE
DEPARTMENT OF BACTERIOLOGY

Dec. 3, 1932.

Sir Arthur Currie,
Principal, McGill University,
Montreal, Que.

Dear Sir:

I am very sorry to have been absent on Thursday last when you made a special trip to the Institution to see me. On Thursdays at one o'clock I attend the clinical pathological meetings in the General Hospital.

Dr. Snell stated this morning that he felt that I should communicate with you and make an appointment to discuss the matters which you had in mind.

Yours very truly,

R. L. Conklin

R.L. Conklin,
Professor of Animal Pathology.

C/R.

January 31, 1933.

List of Students and Examiners

Additions

p. 2	Gishler, P.E.	Ph.D.	Chemistry	42	2	44
p. 9	Marsh, L.C.	M.A.	Economics	11	-	11
	Dr. S. Leacock		Prof. Mackintosh, Queen's University			
p. 10	Mitchell, Mavis	M.A.	Education	8	10	18
p. 14	Jäderholm, H.W.	M.Eng.	Electrical	12	-	12
	Dr. F.S. Howes		Mr. J.M. Conroy, Canadian Marconi Co.			
	McDonald, D.M.	M.Eng.	Mechanical			
	Rankin, R.A.	M. Eng.	Mechanical	5	-	5
	Prof. C.M. McKergow		Mr. R.J. Durley, Engineering Institute			

Revised Totals

Ph.D.	91	7	98
M.Sc.	54	3	57
M.A.	41	45	86
M.Eng.	27	-	27
M.Com.	5	-	5
M.C.L.	2	-	2
	<hr/>		
	220	55	275
	<hr/>		

Corrections

p. 13	Weissenburger, P.C.A.		
	Outside examiner - Prof.		
	Mackintosh, Queen's Univ.		
p. 9	Baker, K.G.		
	Dr. Hemmeon	Prof. du Roure	
	Heuser, H.K.		
	Dr. Leacock	Prof. du Roure	

MCGILL UNIVERSITY

FACULTY OF GRADUATE STUDIES AND RESEARCH

LIST OF CANDIDATES FOR DEGREES IN THE GRADUATE FACULTY, 1932-33

Doctor of Philosophy

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>		
Atkinson, Hammond J.	Agr. Chem.		1				
Findlay, Gordon H.	Agr. Chem.		1		2	-	2
Bynoe, Evan T. Dr. F. Smith	Bacteriology		1				
	Prof. G.B. Reed, Queen's University. (Sept.)						
# Hess, Ernest Prof. P.H.H. Gray	Bacteriology	Biochem.	1		2	-	2
	Dr. W.L. Holman, University of Toronto						
Anderson, Evelyn H. Dr. J.B. Collip	Biochemistry			1			
	Prof. A.T. Cameron, University of Manitoba						
Black, Peter T.A.	Biochemistry	Physiol.	1				
# Chapman, Clifford W.	Biochemistry		1				
Denstedt, Orville F.	Biochemistry		1				
Kutz, Russell L. Dr. J.B. Collip	Biochemistry	Histol.	1				
	Prof. A.T. Cameron, University of Manitoba						
McKeown, Thomas	Biochemistry		1		5	1	6
Armstrong, John M. Dr. C.L. Huskins	Botany			1			
	Prof. W.P. Thompson, Univ. of Saskatchewan						
Hearne, Edna M. Dr. C.L. Huskins	Botany			1			
	Prof. R.O. Earl, Queen's University (Sept.)						
Orton, Oliver S. <i>Scarb</i>	Botany		1				
Spier, Jane D.	Botany			1	2	2	4
Argue, George H.	Chemistry		1				
Ball, William L.	Chemistry		1				
Barsha, Jacob Dr. H. Hibbert	Chemistry		1				
	Dr. O. Kress, Director, Inst. of Paper Chemistry, Appleton, Wis.						
Bell, Adam C.	Chemistry		1				

2
5

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Boyer, Raymond Dr. C.F.H. Allen	Chemistry	Dr. D.E. Worrall, Tufts College, Mass.	1		
# Brocklesby, H.N.	Chemistry	Physics	1		
Cressman, H.W.J. Dr. C.F.H. Allen	Chemistry	Dr. D.E. Worrall, Tufts College, Mass.	1		
de Montigny, R.	Chemistry		1		
Gray, Kenneth R. Dr. H. Hibbert	Chemistry	Dr. J.W. Bain, University of Toronto	1		
Hallonguist, E.G. Dr. H. Hibbert	Chemistry	Dr. H.E. Bigelow, Mt. Allison University	1		
Hampton, William F. Dr. J.H. Mennie	Chemistry	Physics Dr. John Russell, Eastman Kodak Co. Rochester	1		
Holcomb, Robert K. Dr. F.M.G. Johnson	Chemistry	Dr. E.H. Archibald, Univ. of British Columbia	1		
Holmes, Edward L.	Chemistry		1		
Kay, Muriel G.	Chemistry			1	
King, Ellis G.	Chemistry		1		
Koerber, Irene V. Dr. H. Hibbert	Chemistry	Dr. W.L. Evans, Dept. of Chemistry, Ohio State University, Columbus, Ohio.		1	
Lusby, George R. Dr. O. Maass	Chemistry	Dr. E. Heuser, International Paper Co. (Sept.) Hawkesbury, Ont.	1		
Makara, Frank R.	Chemistry		1		
Marshall, H.B. Dr. H. Hibbert	Chemistry	Dr. J.A. McRae, Queen's University	1		
Mason, Clarence T. Dr. W.H. Hatcher	Chemistry	Dr. J.S. Foster (M.Sc. thesis)	1		
Massey, Ernest E. Dr. C.F.H. Allen	Chemistry	Dr. H.S. King, Dalhousie University	1		
Moore, Leonard P. Dr. H. Hibbert	Chemistry	Dr. R.H. Clark, University of British Columbia	1		
Morris, Herbert E.	Chemistry		1		
Normington, J.B.	Chemistry		1		
Plewes, Argyle C.	Chemistry		1		

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Plunguian, Mark	Chemistry		1		
Price, Aubrey F. Dr. O. Maass	Chemistry		1		
	Dr. D. McIntosh, Shawinigan Falls, Que.				
Reeve, Herbert A. Dr. E.W.R. Steacie	Chemistry		1		
	Dr. C.C. Coffin, Dalhousie University				
Richardson, R.E. Dr. O. Maass	Chemistry	Physics	1		
	Dr. E.H. Boomer, Univ. of Alberta				
Ross, Archibald S. Dr. O. Maass	Chemistry		1		
	Dr. K.H. Huntten, Univ. of Western Ont. Sept.				
Russell, John K.	Chemistry		1		
Sallans, Henry R. Dr. C.F.H. Allen	Chemistry		1		
	Dr. J.A. McRae, Queen's University				
Scarrow, James A.	Chemistry		1		
Sheps, Louis J.	Chemistry		1		
Solomon, Ernest	Chemistry		1		
Spanagel, Edgar W. Dr. C.F.H. Allen	Chemistry		1		
	Dr. H.E. Bigelow, Mt. Allison University				
Stewart, William W. Dr. O. Maass	Chemistry	Physics	1		
	Dr. E.H. Archibald, Univ. of British Col.				
Stovel, H.V.	Chemistry		1		
Tapp, James S. Dr. O. Maass Dr. E.W.R. Steacie	Chemistry		1		
	Dr. L.F. Goodwin, Queen's University				
Trister, Saul M.	Chemistry		1		
Wells, Franklin B. Dr. C.F.H. Allen	Chemistry		1		
	Dr. A.H. Blatt, Howard Univ. Washington				
Wilson, Charles V. Dr. C.F.H. Allen	Chemistry		1		
	Dr. S. Basterfield, Univ. of Saskatchewan				
Winkler, Carl A. Dr. O. Maass	Chemistry		1		
	Dr. W.H. Martin, University of Toronto				
			41	2	43
# Picard, R.I.C.	Economics		1		
# Rollit, J.B.	Economics		1	2	2

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Cameron, James W.M.	Entomology	Zoology	1		
# Marshall, James	Entomology	Zoology	1		2 - 2
Venning, Mrs. E.M.	Exp. Med.	Biochem.		1	(Sept.)
Dr. J.S.L. Browne	Dr. C.N.H. Long,	Cox Inst. for Medical Res.			
	University of Pennsylvania, Philadelphia.				- 1 1
Bray, Alton C.	Geology		1		
Prof. R.P.D. Graham	Prof. E.L. Bruce,	Queen's University			
Buckland, Francis C.	Geology		1		
# Burton, Frederick R.	Geology		1		
Prof. T.H. Clark	Dr. H.C. Cooke,	Geological Survey, Ottawa.			
Bell, A.M.	Geology		1		
Gerson, Harold S.	Geology		1		
Grimes-Graeme, R.C.H.	Geology		1		
Prof. R.P.D. Graham	Dr. E.S. Larsen,	Dept. of Geology, Harvard			
Halet, Robert A.F.	Geology		1		
Okulitch, Vladimir J.	Geology		1		
# Price, Peter	Geology		1		
Dr. J.J. O'Neill	Dr. E.S. Moore,	University of Toronto			
Schindler, Norman R.	Geology		1		
Prof. Gill	Prof. W.G. McBride	(M.Sc. thesis)			
Simard, Lionel R.	Geology		1		
Williamson, John T.	Geology		1		
Dr. J.J. O'Neill	Dr. T.L. Walker,	University of Toronto			12 - 12
Japp, Robert	History		1		
Mulligan, William O.	History		1		
Ross, Dorothy J.	History			1	2 1 3
Berger, Julius	Orient. Lang.		1		1 - 1

M

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Dunn, William K. Dr. A.N. Shaw	Physics		1		
	Dr. J.A. Gray, Queen's University (Sept.)				
Haslam, Robert N. Dr. J.S. Foster	Physics		1		
	Prof. R.W. Wood, Johns Hopkins University				
Katzman, John Dr. D.A. Keys	Physics		1		
	Dr. J.K. Robertson, Queen's University				
Ross, William B. Dr. A.S. Eve	Physics	Elect. Eng.	1		
	Dr. Rose, National Research Council				
Snell, Arthur H. Dr. J.S. Foster	Physics		1		
	Dr. Oldenberg, Harvard University				
Thornton, Robert L. Dr. J.S. Foster	Physics		1		
	Dr. R. Ladenburg, Princeton University				
Wendling, Andre V.	Physics		1		7 - 7
Baxter, Hamilton A.	Physiology		1		
Campbell, James	Physiology	Biochem.	1		
Giblin, Norris Dr. John Tait	Physiology		1		
	Sir Edward Sharpey-Schafer, Park End, N. Berwick, East Lothian, Scotland				
Komarov, Simon A. Dr. B.P. Babkin	Physiology		1		(Sept.)
	To be appointed later.				
Rawlinson, H.E.	Physiology	Histology	1		
Ross, Douglas A.	Physiology	Biochem.	1		
Sutherland, G.F.	Physiology		1		
Vineberg, A.M. Dr. B.P. Babkin	Physiology		1		(Sept.)
	Prof. N.B. Dreyer, Dalhousie University				
Webster, D.R. Dr. B.P. Babkin	Physiology		1		
	Prof. E. Gordon Young, Dalhousie University				9 - 9
Hebb, Donald O.	Psychology		1		
Morton, Nelson W. Dr. W.D. Tait	Psychology	Physiol.	1		(Sept.)
	Prof. H.E. Burt, Ohio State University				
Norris, K.E.	Psychology	Education	1		3 - 3
			<hr/>		
			90	7	97
			<hr/>		

Master of Science

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Duckworth, John Dr. J.B. McCarthy	Agr. Chem.	Biochem.	1		(Sept.)
Forbes, Franklin R. Dr. J.B. McCarthy	Agr. Chem.	Biochem.	1		
Shaw, Geoffrey T. Dr. R.R. McKibbin	Agr. Chem.		1		3 - 3
Nowosad, Frank S. Prof. L.C. Raymond	Agronomy	Botany	1		Dr. L.E. Kirk, Experimental Farm, Ottawa
Stobb, Peter C.	Agronomy	Chemistry	1		
MacVicar, R.M.	Agronomy	Botany	1		3 - 3
Lloyd, David C.P.	Anatomy	Physiol.	1		
McDonald, P. Robb	Anatomy		1		
Power, R.M.H. Dr. S.E. Whitnall	Anatomy		1		Prof. J.C.B. Grant, University of Toronto 3 - 3
Finlayson, Duncan A. Prof. Crampton	Animal Ind.		1		Prof. L.C. Raymond
Griffiths, Henry J.	Animal Ind.		1		2 - 2
Freeborn, Grace M.	Bacteriology			1	- 1 1
Billingsley, L.W. Dr. D.L. Thomson	Biochem.		1		Dr. B.P. Babkin
Harlow, Charles M.	Biochem.		1		2 - 2
Hunter, Albert W.S. Dr. C.L. Huskins	Botany	Zoology	1		Prof. L.C. Raymond
Levitt, Jacob Prof. G.W. Scarth	Botany	Plant Path.	1		Prof. J.G. Coulson
Whyte, James H. Prof. G.W. Scarth	Botany		1		Prof. J.G. Coulson 3 - 3

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Bennett, Robert D. Dr. J.B. Phillips	Chemistry	Dr. R.L. Stehle	1		
Champagne, George A. Dr. J.B. Phillips	Chemistry	Prof. R.R. McKibbin	1		
Elkin, Eugene M. Dr. E.W.R. Steacie	Chemistry	Dr. J.S. Foster	1		
Horwood, James F. Dr. W.H. Hatcher	Chemistry	Dr. D.L. Thomson	1		
Larocque, Gerard L. Dr. O. Maass	Chemistry	Dr. A.N. Shaw	1		
MacKinney, H.W. Dr. H. Hibbert	Chemistry	Prof. G.W. Scarth	1		
Pullman, Joseph C. Dr. H. Hibbert	Chemistry	Dr. R.L. Stehle	1		
Tomlinson, George H. Dr. H. Hibbert	Chemistry	Prof. G.W. Scarth	1		
Westaway, Frank W. Dr. O. Maass	Chemistry	Dr. A.N. Shaw	1		9 - 9
Kruming, Adolf O. Prof. G.A. Wallace	Elect. Eng.	Dr. D.A. Keys	1		1 - 1
# Finlayson, Leonard R. Dr. E.M. DuPorte	Entomology	Dr. J.J. DeGryse, Entomol. Branch, Ottawa	1		
Neil, Clifford A.	Entomology		1		
Peck, Oswald Dr. E.M. DuPorte	Entomology	Stuart Walley, Entomol. Branch, Ottawa	1		
# Pickett, A. DeF. Dr. W.H. Brittain	Entomology	Dr. N.J. Berrill	1		
# Thomas, Irwin E. Dr. E.M. DuPorte	Entomology	Dr. J.M. Swaine, Entomol. Branch, Ottawa	1		5 - 5
Christie, Ronald V. Dr. J.C. Meakins	Exp. Med.	To be appointed later	1		(Sept.)
Evans, Gerald T. Dr. J.C. Meakins	Exp. Med.	Dr. J.B. Collip	1		
Grant, William T. Dr. C.K. Russel	Exp. Med.	Dr. John Beattie	1		(Sept.)

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Kershman, John Dr. W.V. Cone	Exp. Med. Dr. J.C. Simpson		1		(Sept.)
Workman, E. Walter Dr. E.W. Archibald	Exp. Med. Dr. D.L. Thomson		1	5	5
Byers, Alfred R. Prof. J.E. Gill	Geology Prof. W.G. McBride		1		
Denis, Frank T. Prof. F.F. Osborne	Geology Prof. J.W. Bell		1		
Harris, Julius J. Prof. T.H. Clark	Geology Dr. F.D. Adams		1		
Keating, Bernard J. Prof. R.P.D. Graham	Geology Prof. J.W. Bell		1		
Wilson, Norman L. Prof. F.F. Osborne	Geology Dr. F.D. Adams		1	5	5
Jones, W. Hearne	Metall. Eng.		1	1	1
Gardner, Campbell M. Dr. T.R. Waugh	Pathology Prof. Miller, Queen's University		1		
Spector, Leo L. Dr. T.R. Waugh	Pathology Prof. Miller, Queen's University		1	2	2
Aikman, Edward P. Dr. J.S. Foster	Physics Dr. L.E. Howlett, National Research Council		1		
Cipriani, Andre J. Dr. J.S. Foster	Physics Elect. Eng. Dr. W. Rowles, Macdonald College		1		
Evelyn, Kenneth A. Dr. W.H. Watson	Physics Dr. O. Maass		1	3	3
Alley, Armine M.	Physiology			1	
Gray, Nelson M. Dr. B.P. Babkin	Physiology Dr. R.L. Stehle		1		(Sept.)
Nicholls, John V.V.	Physiology		1	2	3

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>		
# Cox, Harold A. Prof. J.G. Coulson	Plant Path.	Prof. G.W. Scarth	1				
Hamilton, George H. Prof. J.G. Coulson	Plant Path.	Prof. E.A. Lods	1				
McCullough, W.B.	Plant Path.		1	3	-	3	
Shaw, Hampden C.	Psychology		1	1	-	1	
Clark, Annie E. <i>dy-</i> Dr. H.B. Fantham	Zoology	Dr. A. Willey		1			
Richardson, Laurence R. Dr. N.J. Berrill	Zoology	Anatomy Dr. John Beattie	1				
					1	1	2
					<u>54</u>	<u>3</u>	<u>57</u>

Master of Arts

Graham, Gordon B. Dr. E.W.R. Steacie	Chemistry	Dr. A.N. Shaw	1	1	-	1	
(P) McIntosh, Gladstone A.	Chinese Studies		1				
Taylor, Gordon R. Prof. Kiang Kang-Hu	Chinese Studies	Prof. F. Clarke	1	2	-	2	
# Baker, Kenneth G.	Economics		1				
Bowker, Ernest E. Dr. J.C. Hemmeon	Economics	Prof. Kemp, University of Toronto	1				
Challies, George S. Dr. S. Leacock	Economics	Prof. R. du Roure	1				
Diplock, James P. Dr. S. Leacock	Economics	Prof. Mackintosh, Queen's University	1				
Greenlees, William S. Dr. J.C. Hemmeon	Economics	Prof. Kemp, University of Toronto	1				
# Heuser, Heinrich K.	Economics		1				
Lusher, David W. Dr. J.C. Hemmeon	Economics	Prof. Kemp, University of Toronto	1				
Rountree, G.M. Dr. J.C. Hemmeon	Economics	Prof. Kemp, University of Toronto	1				

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Shecter, Arthur	Economics		1		
Stone, Fred V. Dr. J.C. Hemmeon	Economics		1		
	Prof. Swanson, Univer. of Saskatchewan				10 - 10
Anderson, Edith C. Prof. F. Clarke	Education	Philosophy		1	
	Dean Laird				
Astbury, John S.	Education	Philosophy	1		
Binmore, Mary E. Prof. F. Clarke	Education			1	
	Dr. C.W. Hendel				
Crichton, Marjorie E.	Education	Philosophy		1	
Devenney, Hartland M.	Education	Philosophy	1		
Gill, Dorothy A. Prof. F. Clarke	Education	Philosophy		1	
	Dr. C. Macmillan				
Henry, Arthur M.	Education	Philosophy	1		
Holland, Catherine N.	Education	Philosophy		1	
Prince, Mrs. W.M. Prof. F. Clarke	Education	Psychology		1	
	Dr. A.G. Fleming				
Rexford, Orrin B.	Education	Philosophy	1		
Samson, James G.	Education	Psychology	1		
Steeves, Lewis R. Prof. F. Clarke	Education	Philosophy	1		
	Dean Laird				
Teakle, Cecil T.	Education	Philosophy	1		
Thompson, Winifred	Education	Philosophy		1	
Truax, Lydia B.F.	Education	Philosophy		1	
Wexler, Lillian E.	Education	Philosophy		1	
# Young, Harold G.	Education	Psychology	1		8 9 17
# Amaron, Errol C.	English	N.T. Greek	1		
Atto, Clayton H. Prof. A.S. Noad	English		1		
	Dr. C.E. Fryer				
Berry, William G.	English		1		
Blumenthal, Estelle H.	English			1	

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Calder, Alice D. Prof. G.W. Latham	English	Education		1	
	Dr. C.E. Kellogg				
Cohen, Sylvia L.	English	French		1	
Cohen, Riva Dr. H.G. Files	English	French		1	
	Prof. E.C. Hughes				
Craig, Grace L. De C. Dr. C. Macmillan	English			1	
	Prof. R. du Roure				
Hartwell, Robert M. Prof. G.W. Latham	English		1		
	Dr. Brunt, Macdonald College				
Hetherington, E. Mabel Prof. A.S. Noad	English			1	
	Prof. R.M. Sugars				
Hill, Olive Mary Dr. H.G. Files	English	Education		1	
	Prof. Hodgins, Macdonald College				
Kronman, Ruth Y. Dr. H.G. Files	English			1	
	Principal Abbott-Smith, Diocesan College				
McCaig, Margaret A.	English			1	
Michalopoulos, T.S.	English		1		
Milburne, Kathleen E. Dr. H.G. Files	English			1	
	Dr. C.W. Hendel				
Miller, Marjorie	English			1	
Montgomery, H. Rose Dr. H.G. Files	English			1	
	Prof. G.E. LeMaitre				
Putnam, Adelaide D. Dr. C. Macmillan	English			1	
	Dr. J.C. Hemmeon				
Rhodes, Frances M. Prof. A.S. Noad	English			1	
	Mrs. Vaughan				
Rowley, Anne	English			1	
Silver, Helen Dr. C. Macmillan	English			1	
	Dr. S. Leacock				
Ulrichsen, Barbara Prof. G.W. Latham	English			1	
	Dr. C.A. Dawson				5 17 22
# Baker, Carrie E. Prof. R. du Roure	French			1	
	Dr. C.E. Fryer				
# Bercovici, Ethel Prof. G.E. LeMaitre	French			1	
	Dr. C. Macmillan				
Gillson, C. Grace Prof. G.E. LeMaitre	French			1	
	Prof. A. Celieres, Adelphi College, N.Y.				

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
# Judge, Mabel E. Prof. R. du Roure	French	Prof. F. Clarke		1	
# Kent, Josephine P. Prof. R. du Roure	French	Prof. A. Celieres, Adelphi College, N.Y.		1	
<u>Kinnear</u> , Mary E.	French			1	
Walker, Margaret G. Prof. G.E. LeMaitre	French	Prof. P.F. McCullagh		1	
Wanner, Pierre L. Prof. R. du Roure	French	Prof. Dombrowski, University of Montreal	1		(Sept.)
# Weston, Grace E. Mme. Furness	French	Prof. Dombrowski, University of Montreal		1	1 8 9
Carl, Selma C.E. Dr. H. Walter	German	President Carleton Stanley, Dalhousie Univ.		1	- 1 1
Bateson, Nora Dr. C.E. Fryer	History	Dr. J.C. Hemmeon		1	
Lunn, Alice J.E. Prof. E.R. Adair	History	Prof. Noel Fauteux, University of Montreal		1	- 2 2
Levitsky, Nathan A.	Orient. Lang.		1		
Thomas, William	Orient. Lang.		1		2 - 2
Currie, Cecil Dr. C.W. Hendel	Philosophy	German Prof. A.S. Noad	1		
Minnion, Arthur M. Dr. C.W. Hendel	Philosophy	Dr. J.C. Hemmeon	1		2 - 2
<u>Barnes</u> , Vera F.	Psychology	English		1	
Dodds, Margaret R.	Psychology			1	
Hoover, Edward P. Dr. W.D. Tait	Psychology	German Prof. F. Clarke	1		
Peden, Gwen W.	Psychology			1	
Webster, Edward C. Dr. W.D. Tait	Psychology	Prof. D. Howat	1		2 3 5

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Berry, John W. Dr. C.A. Dawson	Sociology	Prof. L.C. Marsh	1		
Craig, Glenn H. Dr. C.A. Dawson	Sociology	Prof. J.E. Lattimer	1		
Davidson, Mary H. Dr. C.A. Dawson	Sociology	Prof. J. King Gordon, United Theol. College		1	
Gibbard, Harold A.	Sociology		1		
Hersheorn, Lottie R. Dr. C.A. Dawson	Sociology	Prof. L.C. Marsh		1	
Kemball, Alfred W. Dr. C.A. Dawson	Sociology	Dr. J.C. Hemmeon	1		(Sept.)
Mamchur, Stephen W.	Sociology		1		
Moellman, Albert	Sociology		1		
Ramsden, Mary E. Prof. E.C. Hughes	Sociology	Dr. J.C. Hemmeon		1	
Reynolds, Lloyd G.	Sociology		1		
Younge, Eva R. Dr. C.A. Dawson	Sociology	Prof. G.W. Latham		1	
					7 4 11
					40 44 84

Master of Civil Law

Alexander, Bernard M.	Commercial		1		
Casoy, Paul C.C.	Civil		1	2	- 2

Master of Commerce

Crabtree, Herbert K. Dr. J.P. Day	Economics	Prof. Mackintosh, Queen's University	1		
Crown, Ernest H. Dr. J.P. Day	Economics	Prof. Kemp, University of Toronto	1		
Heiber, Sol P.	Economics		1		
# Nelles, James G.	Economics		1		
Weissenburger, P.C.A. Dr. S. Leacock	Economics	Prof. Swanson, University of Saskatchewan	1		
					5 - 5

Master of Engineering

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
(P) Beadie, W.M.	Civil		1		
Evans, Delano E. Prof. R.E. Jamieson	Civil	Dr. C.T. Sullivan	1		
Johu, Llewellyn Prof. R.E. Jamieson	Civil	Mathematics Prof. A.R. Roberts	1		
Lochhead, Kenneth Y. Prof. R.E. Jamieson	Civil	Mathematics Dr. J.S. Foster	1		
(P) Poole, Gordon D.	Civil	Mathematics	1		
Savage, Palmer E. Dean E. Brown	Civil	Mathematics Dr. D.A. Keys	1		6 - 6
Burnham, Donald E. Prof. C.V. Christie	Elect.	Maths. & Phys. 1 Mr. G.R. Hale, Shawinigan Water & Power Co.			
Chipman, Robert A. Dr. F.S. Howes	Elect.	Maths. & Phys. 1 Dr. D.A. Keys			
de Angelis, Marius L.	Elect.		1		
(P) Farmer, Eric W.	Elect.	Maths. & Phys. 1			
Fisher, Charles B. Dr. F.S. Howes	Elect.	Maths. & Phys. 1 Prof. B. de F. Bayly, Univ. of Toronto			(Sept.)
Fisher, Frederick S.	Elect.	Maths. & Phys. 1			
Fisher, Sydney T. Dr. F.S. Howes	Elect.	Maths & Phys. 1 Prof. B. de F. Bayly, Univ. of Toronto			(Sept.)
Kelsey, Ernest S. Dr. F.S. Howes	Elect.	Dr. L.V. King	1		(Sept.)
Lynde, Carleton J.	Elect.	Maths. & Phys. 1			
Shapiro, Clarence H. Prof. E.G. Burr	Elect.	Maths. & Phys. 1 Mr. G.R. Hale, Shawinigan Water & Power Co.			
Stanley, Thomas D. Dr. F.S. Howes	Elect.	Maths. & Phys. 1 Mr. G.R. Hale, Shawinigan Water & Power Co.			11 - 11
Bowles, William S. Prof. J.A. Coote	Mechanical	Prof. R. deL. French	1		
Hendrick, M.M.	Mechanical	Soc. Research	1		
Richards, Victor L.	Mechanical	Soc. Research	1		3 - 3

<u>Name</u>	<u>Major</u>	<u>Minor</u>	<u>M</u>	<u>W</u>	<u>Total</u>
Brown, Edward E. Prof. W.G. McBride	Mining	Dr. A. Stansfield	1		
Jamieson, David M. Prof. O.N. Brown	Mining	Prof. A.R. Roberts	1		
O'Shaughnessy, M.J. Prof. W.G. McBride	Mining	Geology Dr. A. Stansfield	1		
Westwood, Robert J. Prof. J.W. Bell	Mining	Chemistry Prof. F.F. Osborne	1		
				4	- 4
				25	- 25

TOTAL NUMBERS

<u>Ph.D. Major Subjects</u>	<u>M</u>	<u>W</u>	<u>T</u>	<u>M.Sc. Major Subjects</u>	<u>M</u>	<u>W</u>	<u>T</u>
Agricultural Chemistry	2		2	Agricultural Chem.	3		3
Bacteriology	2		2	Agronomy	3		3
Biochemistry	5	1	6	Anatomy	3		3
Botany	2	2	4	Animal Industry	2		2
Chemistry	41	2	43	Bacteriology		1	1
Economics	2		2	Biochemistry	2		2
Entomology	2		2	Botany	3		3
Exp. Medicine		1	1	Chemistry	9		9
Geology	12		12	Electrical Engineering	1		1
History	2	1	3	Entomology	5		5
Oriental Languages	1		1	Exp. Medicine	5		5
Physics	7		7	Geology	5		5
Physiology	9		9	Metallurgical Eng.	1		1
Psychology	3		3	Pathology	2		2
				Physics	3		3
				Physiology	2	1	3
	90	7	97	Plant Pathology	3		3
				Psychology	1		1
				Zoology	1	1	2
					54	3	57
<u>M.A. Major Subjects</u>							
Chemistry	1		1	M.C.L. degree	2		2
Chinese Studies	2		2				
Economics	10		10	M.Com. degree	5		5
Education	8	9	17				
English	5	17	22				
French	1	8	9				
German		1	1				
History		2	2				
Oriental Languages	2		2				
Philosophy	2		2				
Psychology	2	3	5				
Sociology	7	4	11				
	40	44	84				

<u>M. Eng. Major Subjects</u>	<u>M</u>	<u>W</u>	<u>T</u>
Civil	6		6
Electrical	11		11
Mechanical	3		3
Mining	4		4
	<hr/>		<hr/>
	24		24
	<hr/>		<hr/>

PREVIOUS YEARS

<u>Degree</u>	<u>1928-29</u>	<u>1929-30</u>	<u>1930-31</u>	<u>1931-32</u>	<u>1932-33</u>
Ph.D.	53	56	70	100	97
M.Sc.	36	32	49	43	57
M. Eng.	--	--	--	16	24
M. Com.	--	--	--	3	5
M.C.L.	--	--	--	--	2
M.S.A.	1	3	7	--	--
M.A.	63	77	104	92	84
Qualifying	--	--	--	15	--
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	153	168	230	269	269
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Non-resident

— Qualifying

(P) Partial

Copy to Sir Arthur Currie

March 7, 1933.

Dr. J.F. Snell,
Macdonald College,
P. Que.

Dear Dr. Snell:

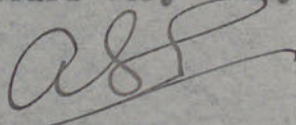
Thank you for your letter of March 6th. with the two copies enclosed.

It is quite true that appointments to the Faculty are made by the Governors on the recommendation of the Principal. In the case of the Faculty of Graduate Studies and Research, it is desirable that recommendations should be made to the Dean, who can discuss the case with the Divisional Committee concerned, whether Arts or Science. They can recommend further additions to the Faculty of Graduate Studies and Research, who can, in turn, recommend names to the Principal.

This seems rather an elaborate mechanism, but the Faculty is already large and most careful consideration should be given to additions.

It is unnecessary to add that this plan does not prevent the Principal recommending to the Governors independently of the Faculty. I am sending a copy of this letter to the Principal.

Yours very truly,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Agriculture

McGILL UNIVERSITY
MONTREAL

April 8th, 1929.

GRADUATE FACULTY

Dr. C. F. Martin,
Acting Principal,
McGill University.

Dear Dr. Martin:-

I return Dean Barton's letter.

The matriculation is alright in so far as it is better than their existing regulations. I should like to point out, however, that compared with the existing matriculation for B.Sc. of the University, it is still less than what is demanded for entry into the Science Faculty at McGill, and this to me seems to have a bearing on the change of title of the degree. You state you desire to bring this up to Corporation on the 17th, and I am wondering what part you mean. The matriculation only, or the change of degree from B.S.A. to B.Sc. If the latter, I shall have to oppose it because before the change can be effected, the content of the proposed Courses should be submitted and considered. I note that the proposed course is to be submitted to Dr. Nicholson. This is not sufficient. I think it should be carefully examined by a competent committee, and I should like to discuss this matter with you before Corporation of April 17th.

Sincerely yours,

*Dr. Brittain brought me in a copy of
draft of the proposed change for the
first two years. A great improvement
J.C.H.*

J.C. Harrison

Chairman Executive Committee.

MACDONALD COLLEGE

FACULTY OF AGRICULTURE
OFFICE OF THE DEAN

RAILWAY STATIONS, EXPRESS AND TELEGRAPH OFFICES:
STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:
MACDONALD COLLEGE, QUE., CANADA.

April 4th, 1929.

Dr. C.F. Martin,
Acting Principal,
McGill University,
Montreal, Que.

Dear Dr. Martin:-

The proposals in your letter of March 31st, were placed before the Faculty of Agriculture at a meeting held yesterday afternoon.

The matter of the matriculation standard had already been approved by the Faculty. The suggestion that it be altered to make physics or chemistry a required subject met with the approval of the Faculty and I have provided for it in the new schedule, which I am enclosing.

It is understood also that the High School leaving certificate must include the subjects required for matriculation.

The committee appointed by the Faculty to revise our degree course will be very glad to confer with Dr. Nicholson and to submit to him for his approval their proposals with regard to the fundamental sciences. In the matter of the degree, for which two alternatives were suggested, the Faculty voted unanimously to recommend that the degree be changed from B.S.A. to B.Sc., or, as you stated it under (a) in your letter, "To abolish the B.S.A. entirely and establish the B.Sc. leading to M.Sc."

I trust the action of the Faculty will be found satisfactory and that it will meet with your approval.

Yours faithfully,

J. L. Bartou

DEAN.
P.S. Our present B.S.A. in Agr. would be dropped.
HB/Y

7/13

April 3rd, 1929.

Proposed Revised B.S.A. Course Entrance Requirements.

All candidates for admission to the four year course leading to the B.S.A. degree shall produce one of the following certificates:

1. Of having passed the junior matriculation examination for entrance to the faculty of agriculture, which is held in June and September at McGill University, and at the local centres provided, including Macdonald College and the Nova Scotia Agricultural College, Truro, N.S. All enquiries relating to such examination should be addressed to the Registrar, McGill University, Montreal, Que.

Subjects of Examination
for 1930

	Marks Assigned	
1.	200	English
2.	100	History
3.	200	Latin <u>or</u> French <u>or</u> German <u>or</u> Spanish (French preferred)
4.	200	Elementary mathematics.
5.	100	Chemistry <u>or</u> physics.
6.	200	Advanced mathematics, <u>or</u> one of No. 3, not already taken, <u>or</u> two to be chosen from botany, physical geography, zoology, drawing, and the subject not taken in No. 5.

Total 1,000

For requirements in each subject of such examination please refer to the registrar.

2. A high school leaving certificate of the Province of Quebec, provided it includes the subjects required for matriculation standing.

3. Other certificates of having passed examinations the same or equivalent to those required for the matriculation examinations of McGill University, as follows:-

Province of Ontario.
Certificate of entrance to the Normal Schools.
Junior Matriculation Certificate.

Province of New Brunswick.
First class, Superior and Grammar School Licenses.
Grade XI Certificate.

Province of Nova Scotia.
Grade XI Certificate.

Province of Prince Edward Island.
First Class Teachers' License.
Second Year Certificate of Prince of Wales College.

Province of British Columbia.
Grade XI Certificate.

Province of Manitoba.
Second Class Teachers' Certificate.
Grade XI Certificate.

Provinces of Alberta and Saskatchewan.
The Departmental Certificate of Standard XI.

Newfoundland.
Junior Associate Grade Certificate.

United States.
Certificates granted by the College Entrance
Examination Board and by the New York State
Board of Regents.

Great Britain.
The Higher Certificate or the School Certificate of
the Oxford and Cambridge Schools Examination Board.
The Senior Certificate of the Oxford or Cambridge
Board of Examiners.
The First Class Certificate of the College of Preceptors.
The Higher Examination Certificate of the Scotch and
Welsh Education Departments.

Miscellaneous.
Other certificates such as those issued by reputable
universities or recognized public examining boards,
will be judged on their merits and accepted in so
far as they meet the entrance requirements.

Candidates for admission to the B.S.A. degree course who have failed to complete the matriculation requirements may be allowed to enter the first year as conditioned undergraduates, provided that they have not failed in more than two papers. Except by special action of the faculty no student will be permitted to carry matriculation conditions into the second year.

Students with incomplete requirements may obtain standing in subjects included in the McGill matriculation by writing McGill examinations.

All candidates for admission to the course leading to the B.S.A. degree, shall, before entering the second year, produce satisfactory evidence of having had a season's experience of at least five months duration on an approved farm. Students who are placed on farms through the college service will be required to submit a satisfactory report of their experience.

Note: College and experimental farms while affording excellent opportunities in special lines of work, are not approved for purposes of general experience.

Agriculture

MACDONALD COLLEGE

FACULTY OF AGRICULTURE
OFFICE OF THE DEAN

RAILWAY STATIONS, EXPRESS AND TELEGRAPH OFFICES:
STE. ANNE DE BELLEVUE, QUE.

POST OFFICE:
MACDONALD COLLEGE, QUE., CANADA

February 4th, 1927.

Sir Arthur Currie,
Principal
McGill University,
Montreal, Que.

Dear Sir Arthur:

You will recall that during your visit, last Monday, I mentioned to you that Dr. W.H. Brittain, our Professor of Entomology and Zoology should be a member of the Faculty of Graduate Studies and Research.

Dr. Brittain, as you know, is the Head of our Entomology Department. Post Graduate work is given in this department and this work is now under his direction.

In the last announcement of the Faculty of Graduate Studies and Research the position appears, but it is vacant. I, therefore, recommend that Dr. Brittain be given the appointment.

Faithfully yours,

H. Bartou
DEAN

HB/IB.

A ~~*30 A*~~

March 18th, 1927.

Dean G.H.S. Barton,
Faculty of Agriculture,
Macdonald College, Que.

Dear Dean Barton:-

I regret to have to tell you that Dr. Ruttan has informed me that the Executive Committee of the Faculty of Graduate Studies and Research will not recommend at the present time that the constitution of that Faculty be changed to admit Deans of schools where graduate studies and research are carried on.

I do not agree with the decision arrived at and have so stated in no uncertain terms. For the time being I know you will accept the decision without much audible comment.

Yours faithfully,

Principal.

February 7th, 1927.

Dr. R. F. Ruttan,
Dean, Faculty of Graduate Studies,
McGill University.

Dear Dean Ruttan:-

If there is no objection I propose to add to the Faculty of Graduate Studies the name of Dr. W. H. Brittain, Professor of Entomology and Zoology at Macdonald College. There is considerable postgraduate work given in that department and this work is now under his direction.

I also think it would be a sensible thing to do if the Faculty of Graduate Studies would alter its constitution and admit to membership in that body the heads of schools where postgraduate work is done. While Dean Barton does not supervise postgraduate work himself there is much work of that kind at Macdonald and it would seem to me to be in the interests of postgraduate work at that institution to have the Dean of the School of Agriculture on the Faculty of Graduate Studies.

Yours faithfully,



FROM

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

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

March 16th, 1927.

MEMORANDUM BY THE PRINCIPAL.

Dr. Ruttan came to see me today with reference to the Graduate Faculty. He stated that the Executive Committee of the Faculty wished to recommend that Associate Professor Williams, of the Department of Mathematics, be made an Associate Member of the Faculty and that Professors Brown, Christie, Shaw and Brittain be made members of the Faculty.

He also informed me that the Executive Committee were still of the opinion that Dean Barton should not become a member of the Faculty, pointing out that his only degree was a B.S.A. degree. They further intimated that if Barton were made a member the next thing they would expect was that Dean Thornton would be made a member, despite the fact that my letter to Ruttan distinctly stated and advised that the constitution be amended to admit only those Deans in whose Faculty postgraduate work was done.

March 15th, 1927.

Dr. J. A. Nicholson,
Registrar,
McGill University.

Dear Dr. Nicholson:-

In the preparation of this year's Calendar will you add to the Faculty of Graduate Studies and Research the name of W. H. Brittain, Professor of Entomology at Macdonald College.

Dr. Brittain suggests, and Dean Barton concurs, that on page 44 of the Announcement of the above mentioned Faculty the word "Zoology" should be dropped, as the only postgraduate work which Dr. Brittain gives has to do with Entomology and not Zoology.

Yours faithfully,

Principal.

March 17th, 1927.

Dr. J. A. Nicholson,
Registrar,
McGill University.

Dear Dr. Nicholson:-

Please note that the name of Professor Brittain, B.S.A., M.S., Ph.D., is to be added to the members of the Faculty of Graduate Studies and Research, and that Professor Christie is to be promoted from Associate member to full member.

I have received a recommendation from the Executive of the Faculty that Professor Ernest Brown and Professor Shaw be raised from Associate Membership to Membership. I am not ruling on the latter recommendation at the present time, but would like you to consult with me further concerning it before the Calendar is issued.

Yours faithfully,

Principal.

McGILL UNIVERSITY

Fees

FACULTY OF GRADUATE STUDIES
AND RESEARCH

MEMORANDUM

November 13, 19 30.

TO Sir Arthur Currie.

FROM Dr. A. S. Eve.

Herewith is a draft of the conclusions regarding fees reached by the Executive Committee at its meeting with Mr. Glassco last Wednesday. Would you please let me know if you approve ?

Enc.

Sally yes to the

AS Eve

FEEES

TUITION FEES

N.B. It is necessary to register and fill in three application forms every year. Application forms reaching the Dean's Office after October 8th must be accompanied by a cheque of \$10.00 to McGill University for late application.

For each preliminary or qualifying year (if any)	\$70.00
For each year of lecture courses or laboratory leading to the Degree of Master	70.00
For each year of residence leading to the Degree of Ph.D.	70.00
Registration fee for every year other than the above until the thesis is completed	5.00
Partial Students, lectures \$14.00 per session hour, laboratory \$5.00 per session hour, Caution money \$10.00, and Library fee \$4.00.	

GRADUATION FEES

Graduation fee for M.A., M.Sc., M.S.A. or M.Com.....	\$20.00
Graduation fee for Ph.D.	35.00
Graduation fee for D.Litt.	80.00
Graduation fee for the Degree of D.C.L.....	80.00
Graduation fee for the Degree of D.Sc.....	80.00
Graduation fee for the Degree of Mus.Doc.....	100.00
Fee for a degree conferred in absentia.....	20.00

Students taking the advanced Summer course in French will be remitted \$20.00 from the fee for M.A. for each Summer course. Students who have taken four Summer courses in French are excused in absentia fees.

Every student in Chemistry is required to deposit with the Bursar the sum of \$20.00 as Caution money to cover 10% of the cost of all chemicals and other supplies used by the student and damages done to furniture, apparatus, books, etc. This amount, less deductions, will be returned at the close of the session.

All fees for courses of instruction are payable on registration.

There is no fee for the degree of LL.D. or M.A. when granted honoris causa.

It was agreed that Caution money be abolished except for Partial Students.

Also that all Graduate Students should pay fees as above including Lecturers, Tutors, and Demonstrators, but that their salaries should be augmented by \$70.00 a year so long as they are paying fees of that amount for Graduate Studies.

November 17th, 1930.

Dr. A. S. Eve,
Dean of the Faculty of Graduate Studies,
McGill University.

Dear Dr. Eve,

I have read the
draft which you submit as to conclusions
reached regarding fees by the Executive
Committee of the Graduate Faculty at its
meeting with Mr. Glasco last Wednesday,
and I approve.

Ever yours faithfully,

Principal.

Scholarships

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

August 12, 1932.

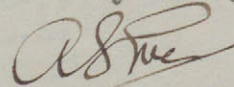
Mrs. McMurray,
Secretary to the Principal,
McGill University.

Dear Mrs. McMurray,

Can you please make any alterations to the enclosed list, send it forward to the Registrar, who will return it to me.

I will then send to both Sir Arthur and Mr. Matthews a correct copy, as far as we can achieve it.

Yours very truly,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Scholarships

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

February 17, 1932.

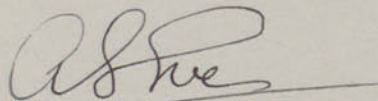
Sir Arthur Currie,
Principal and Vice-Chancellor,
McGill University.

Dear Sir Arthur:

Thank you for your valuable list of those who hold awards in the nature of Fellowships and Scholarships. In my report on the Graduate Faculty for the McGill News I included only those students who are or have been actual post-graduate students in the Faculty of Graduate Studies and Research, 1930-31

As you suggest, we have cut out the amounts of the value. My list was for the session 1930-31 and included only those who were, at the time, members of the Graduate Faculty. There is no harm, however, in adding those who have become recent holders of Scholarships. I have therefore deleted the values of the emoluments, and I enclose herewith an additional list of names of those whom you suggest. I am forwarding the proof together with the additional list to Mr. Fetherstonhaugh.

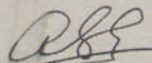
Yours very sincerely,



Dr. A.S. Eve,
Dean, Graduate Faculty.

Enc.

x If possible, I am seeing Fetherstonhaugh
at 3 p.m. this afternoon.



NAMES TO BE ADDED TO PROOF LIST

Red

McRae, Duncan Ross	Physics	1851 Exhibition Research Scholarship	Cambridge.
Dworkin, Dr. S.	Physiology	Amerien. Otological Society Fund	
Sutherland, Dr. G.F.	"	"	"
Ross, D.A.	"	"	"
			McGill
Kearns, Dr. P.J.	Obstetrics	A.A. Browne Memorial Fellowship Clara Law Fellowship	McGill
Brodie, Dr. M.	Medicine Pediatrics	Cooper Fellowship Cowans & Christmas Fund	McGill "
Cherobski, Dr. G.	Neurosurgery	Ottman Memorial	McGill
Gage, Dr. E.L.	"	"	McGill
Doubilet, Dr. H.	Exp. Surgery	Rockefeller Fellowship	McGill
Armour, Dr. J.C.	"	"	"
Harwood, Dr. R.U.	"	"	"
Komarov, Dr. S.A.	"	"	"
Ross, Dr. Dudley	"	"	"
Townsend, Dr. R.G.	"	"	"
Webster, Dr. D.R.	"	"	"
Morton, N.W.	Psychology	Special Research Assistantship	McGill
Webster, E.C.	"	"	"
Norris, K.V.	"	"	"
Bowker, E.E.	Sociology	"	"
Buckland, F.E.	Mining Engin.	Sir William Dawson Fellowship	McGill
Stobart, W.O.	Mining Engin.	Dr. James Douglas Research Fellowship	
Cameron, J.M.	Entomology	Macdonald College Alumni Graduate Scholarship	Macdonald
Ferguson, W.	Botany	"	"
Nowosad, F.S.	Agronomy	Dept. of Agriculture Quebec Research Grant	Macdonald.

NAMES TO BE REMOVED FROM PROOF LIST

Horsfall, Frank

Watson, J.B.

Evans, G.E.

MacLauchlan, D.W.

Challies, G.S.

bl

Totals of Emoluments.

McGill

\$58,810.00

Abroad

\$ 9,350.00

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

November 13, 1931.

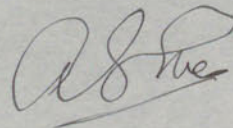
Sir Arthur Currie,
Principal and Vice-Chancellor,
McGill University.

Dear Sir Arthur:

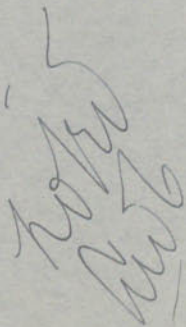
You may be interested to know that the total sum disbursed this year to holders of fellowships, studentships and bursaries from the National Research Council, Rockefeller grants, Moyses Exhibition, 1851 Exhibition, Rhodes Scholarship Fund, and grants from McGill University, amounts to \$51,360.00.

This is a very satisfactory sum, and it does not include awards to demonstrators. On the other hand, I have a report from the Universities of America Association stating that the larger American Universities last year averaged \$130,000.00 each in subsidies to students seeking Master's and Doctor's degrees.

Yours very sincerely,



Dean, Graduate Faculty.



*We have
some good
scholarships, after all,
for advanced work!*

MCGILL UNIVERSITY

MONTREAL

THE MACDONALD PHYSICS LABORATORY

October 26, 1931

Sir Arthur Currie, K. C. M. G.
Office of the Principal
McGill College
Montreal, P. Q.

Dear Sir Arthur,--

I enclose for your information a list of emoluments held by members of the Graduate Faculty at McGill or elsewhere for the current session. There may still be a few omissions in this list as it is difficult to get returns from every department. I venture to suggest that this list might well be printed in the McGill News and the McGill Daily, and I should be grateful for your opinion on this point, and also whether the value of the emoluments should or should not be stated.

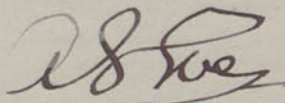
The list for Chemistry is very striking. Many of these boys have come to McGill from other parts of Canada.

I feel some pride in the fact that in Physics there are three "1851" Scholarships, one Rhodes Scholarship, and a Moyse Travelling Scholarship.

There are many departments that would be very glad to get some assistance, either from McGill or elsewhere.

You will understand that I have not included demonstrators and instructors who are paid by McGill University for their work in instructing undergraduates.

Yours very sincerely,



Dr. A. S. Eve, Director
Department of Physics.

Scholarships

13th December, 1929.

Dean F. C. Harrison,
Faculty of Graduate Studies.

Dear Dean Harrison,

Can you give me any assurance that those in your Faculty in receipt of Scholarships have made suitable acknowledgement to the donors of those Scholarships?

It is something very often forgotten.

Ever yours faithfully,

Principal.

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

December 16, 1929.

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

Dear Sir Arthur:

I have your note with regard to suitable
acknowledgments to be made by holders of Scholarships.

I do not know if this has been done for
those Scholarships set forth in the Graduate Faculty
Announcement, but shall make it my business to
ascertain.

Faithfully yours,

J. C. Harrison,
Dean, Graduate Faculty.

L.

Department of Mining Eng.,
McGill University, Montreal.

F. C. Harrison, Esq.,
Faculty of Graduate Studies,
McGill University.

Dear Sir:

In reply to your letter regarding the
extending of thanks to the donor of my fellowship,
I regret to say that I am incapable of so doing
owing to the fact that Dr, James Douglas died some
few years ago.

Yours sincerely,

Fred. S. Weldon

3592 University, D.
January, 9, 1930

Dr. F. C. Harrison,

Dean, Graduate Faculty,
Mc Gill, University.

Dear Sir:

In reply to your letter of January, 6th,
with regard to the donor of the fellowship
I hold in Economics, I understand that mine is
given by the Board of Governors of the
University.

I have already expressed my appreciation
to Dr. Leacock, who was responsible for me
securing the fellowship and am to-day
writing to A. P. S. Glasgow, Secretary of
the Board, thanking them for the opportunity
afforded me of studying at Mc Gill.

Thanking you for drawing this matter
to my attention, I am.

Yours very truly,
Andrew W. Hamilton

MCGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

January 6, 1930.

Mr. R. McD. Hardy,
Engineering Building.

Dear Mr. Hardy:

The Principal is asking if I know whether graduate students holding scholarships have written the donors thanking them for their courtesy, and for the opportunity of prosecuting further studies at McGill which the scholarship affords them.

Many of these donors are very much interested in students holding their scholarships, and it would be a considerate and gracious act on your part (if you have not already done so) to write to the donor of your scholarship in this sense.

As Sir Arthur Currie desires to know whether this has been done, I shall be glad to have your reply on this point.

Faithfully yours,

J. C. Hurston,

Dean, Graduate Faculty.

Dr. John Bonsall Porter Scholarship.

Thanked Dr. Porter personally

McGill University
Montreal, Que.
January 13, 1930

Dr. H. C. Harrison
Dean of Graduate Faculty
Cathological Building

Dear Dr. Harrison:

Just a note to inform you that I
have written, to the donors of the T. Sterry
Hunt Scholarship, thanking them for
their courtesy, etc, and to thank you
for reminding me of my duty. Until
the receipt of your letter, I will confess,
such an act was far from my
conscious thoughts

Sincerely,
Alfred L. Peider.

Wheatstone Laboratory,
King's College,
University of London,
London, England.

Feb. 28th, 1930.

Dr. F. C. Harrison,
Dean, Graduate Faculty,
McGill University,
Montreal, Quebec.

Dear Sir,

In reply to your request of January 6th, as to whether or not I have written to the donors of the McGill Delta Upsilon Memorial Scholarship thanking them for their courtesy in giving me the opportunity to continue my studies in England, I would state that I wrote to Dr. J. A. Nicholson thanking him officially, as I believe he is the chairman of the committee which has the allocation of this particular scholarship.

I did not write to the Fraternity Chapter itself as I was ignorant of the proper people to whom such a letter should be addressed.

If you consider this an advisable thing to do I should be very grateful to you if you would give me the names and addresses of the officials concerned.

Yours sincerely,

John T. Henderson

McGILL UNIVERSITY

MACDONALD CHEMISTRY AND MINING BUILDING

DEPARTMENT OF GEOLOGY

MONTREAL,

Feb. 9, 1930.

Dean Harrison,
Graduate School.

Dear Sir:

I am very sorry to have been so tardy in answering your letter, but unfortunately it was mislaid and I just found it among some papers in my drawer a few days ago.

I have not so far, written to the donors of the fellowship which I hold; as I did not know that this was customary.

Dr. Oneill informs me that he has never known of this being done in the past, and also that the Leroy Fellowship was founded by a large group of former classmates of the late Captain Leroy. Hence it would be difficult, not only to find out who to write to, but where to write.

However I will be only too glad to act on any suggestion you may offer.

Yours respectfully,

J. Williamson
(Leroy Memorial Fellow)

M. H. 30

*This reply came
this morning. perhaps
you would like to
attach it to those I
sent you yesterday*

W.H.

McGILL UNIVERSITY
MONTREAL

GRADUATE FACULTY

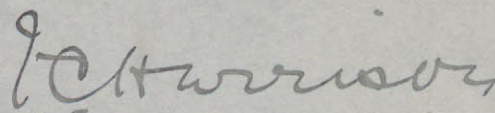
April 5th, 1929.

Professor James C. Simpson,
Medical Building,
McGill University.

Dear Professor Simpson:-

Just a note to let you know that Dr. Hamilton A. Baxter's case was brought up before the Executive Committee at its last meeting, and the Committee decided that it could not allow students to go forward to higher degrees from the degree of D.D.S. The subjects studied in the 3rd and 4th years were not of sufficient scope to permit of this. I have informed Dr. Baxter of this ruling.

Sincerely yours,



Chairman Executive Committee.

GENERAL BACTERIOLOGY

The Object of the Course:

To give biological students a general introduction to the study of microorganisms.

Instruction: Lectures and Laboratory work.

Lectures: Thirty (30) lectures:
Morphological and Cultural Methods.
Physiology of Microorganisms.
Physical Influences.
Chemical Influences.
Mutal Influences.

APPLIED BACTERIOLOGY

A short sketch to shew the relation of bacteria to:

1. The microbiology of the air.
2. " " of water and sewage.
3. " " of soil.
4. " " of milk and milk products.
5. " " of special industries.
6. The microbial diseases of plants.

The Microbiology of the Diseases of Man and Animals would constitute the present Course in the Medical Faculty.

Laboratory Work:

At least 3 two-hour periods a week for ten weeks.

Equipment Needed, in addition to that available in Pathological Building:

1 New Autoclav.....	450.00
Glassware.....	1000.00
Chemicals, Culture media, etc....	500.00

~~\$1950.00~~

Technical Assistance:

Some assistance during the Course, for washing, preparation of material, etc.

? \$100 a year

Demonstrators:

During the Course, additional assistance would be required for demonstration - at least 1 demonstrator for 20 to 24 students. It might be possible to obtain graduate students, and pay them a small honorarium.

Accomodation:

The large laboratory has at present places for 80 students. This is crowded, and gives each student less than two feet desk space. It would be advisable to complete the desk room in this laboratory. There is ample space for five more double benches and these should be installed and equipped. This would give more room for the Bacteriological Class of Dr. Bruere and would permit of more room for the proposed General Course. Further,

Cost?

it would provide cupboard room for each student, even if the class were taken in two sections.

At present two or three students are crowded into four feet of desk space, and I consider this much too crowded for bacteriological work - particularly when students are working with pathogenic organisms. Two or three students have to use the same burner and are forced to work together, and it is not to be wondered at that many cultures are spoiled by faulty manipulation.

The suggested new benches should not be so long as the present, but might be constructed for three or doubling up six students on each side. This would give either 30 or 60 laboratory spaces, and for the room a class of 70 or doubling up 140. For general bacteriology I suggest a maximum class of seventy (70), to be held, so far as the laboratory work is concerned, in two sections.

If it could be arranged the following is suggested as being the best method:

Lectures: On Monday, Wednesday and Friday -
a morning period.

Laboratory: Half the Class at 1.30 to 3.30 -
the other half at 3.30 to 5.30 -
on Monday, Wednesday and Friday.

J. H. Harrison

Sociology

May 12th, 1927.

Dr. R. F. Ruttan,
Dean, Faculty of Graduate Studies,
McGill University.

Dear Dr. Ruttan:-

Dr. C. A. Dawson, Associate
Professor Sociology, was in to see me to-day
and while here suggested that he be promoted to
membership in the Faculty of Graduate Studies.
Is there any objection?

Yours faithfully,

Principal.

November 1st, 1934.

Students of the Faculty of Graduate Studies and Research,
McGill University, taking work under the Faculty of
Agriculture, 1934/35.

Bynoe, E.T.	(Staff) Macdonald College, Que.	Ph.D.-Bact.
Cameron, C.D.T.	(Graduate Assistant) Melford, Inverness Co., N.S.	M.Sc.-Animal Nutrition.
Cameron, Donald	"Almanarre", Shandon by Helensburgh, Dumbartonshire, Scotland. Taking work at Edinburgh University.	Ph.D.-Entom.
Cameron, J.V.M.	(Part time asst.) Stellarton, N.S.	Ph.D.-Entom.
Cox, H.A.	Dominion Laboratory of Plant Pathology, Fredericton, N.B.	Thesis only- M.Sc.-P.P.
Dore, W.G.	(Part time asst.) Cowansville, Que.	M.Sc.-Agron.
Dyck, A.J.	(Research Asst. Quebec Government Grant) Macdonald College, Que.	Ph.D.-Chem.
Finlayson, L.R.	Dominion Parasite Laboratory, Belleville, Ont.	Thesis only- M.Sc.-Entom.
Gfeller, F.	Division of Field Crops, Central Experimental Farm, Ottawa, Ont.	Thesis only- M.Sc.-Botany-P.P.
Gobeil, A. Rene	Entomological Branch, Department of Agriculture, Ottawa, Ont.	Thesis only- M.Sc.-Entom.
Griffiths, H.J.	(Part time asst.) Macdonald College, Que.	M.Sc.-Parasit.
Gutteridge, H.S.	Experimental Farm, Ottawa, Ont.	M.Sc.-Animal Nut.
Howatt, L.J.	Dominion Laboratory of Plant Pathology, Fredericton, N.B. (Part time asst.)	Ph.D.-P.P.
Jones, T. Lloyd	c/o Mrs. Sorby, College Heights, Guelph, Ont.	M.Sc.-Parasit.
Levitt, J.	323 Grosvenor Ave., Montreal, Que. (From McGill).	Ph.D.-Botany- P.P.
Lindsay, Wm. E.	433 Mount Pleasant Ave., Westmount, Que.	M.Sc.-Entom.
Marshall, James	Wenatchee, Washington.	Thesis only- Ph.D.-Entom.
Matthewman, Wm.G. To enter for <u>second term.</u>	41 Monkland Ave., Ottawa, Ont.	M.Sc.-Entom.

Maxwell, Charles To enter for <u>2nd term.</u>	Entomological Laboratory, Fredericton, N.B.	M.Sc.-Entom.
Perrault, Champlain To enter for <u>2nd term.</u>	Plant Pathologist in charge, Dominion Experimental Farm, Ste. Anne de la Pocatiere, Que.	Ph.D.-P.P.
Peck, O.	Oyen, Alberta. Taking graduate work at Farnham House, Parasite Laboratory, Farnham Royal, Engld.	Ph.D.-Entom.
Pickett, A.D.	Wolfville, N.S.	Thesis only- M.Sc.-Entom.
Monro, H.A.U.	"Brulos", Addington Rd., West Wickham, Kent, England - 3576 Lorne Ave., Montreal, Que.	Ph.D.-Entom.- Zoology.
Prebble, Malcolm	Entomological Laboratory, Grand Cascapedia, Que. (Part time Asst.)	Ph.D.-Entom.
Puddington, Ira	(Teaching asst.) Macdonald College, Que.	M.Sc.-Chem.
Richmond, H.A.	Box 308, Vernon, B.C.	M.Sc.-Entom.
Sair, Louis	(Research Asst., Quebec Government Grant) Macdonald College, Que.	Ph.D.-Chem.
Stultz, Harold T.	(Part time Asst.) - R.R. No. 2, Peticodiac, N.B.	M.Sc.-Entom.
Swales, W.E.	(Staff) Macdonald College, Que.	Ph.D.-Parasit.
Thatcher, F.S.	(Half time Asst.) Macdonald College, Que.	Ph.D.-P.P.
Thomas, Irwin E.	228 Dundas St. E., Belleville, Ont.	Thesis only- M.Sc.-Entom.
White-Stevens, R.H.	Macdonald College, Que.	M.Sc.-P.P.-Hort.
Williams, S.B.	384 Arlington Ave., Ottawa, Ont.	M.Sc.- Animal Nutrition
Wishart, George	164 Dufferin Ave., Belleville, Ont.	M.Sc.-Entom.
Wronshall, C.L.	Cowansville, Que. (Research Asst.) to Pasture Com.)	Ph.D.-Chem.

McGILL UNIVERSITY

FACULTY OF GRADUATE STUDIES
AND RESEARCH

ABSTRACTS
of
THESES
for
HIGHER DEGREES



OCTOBER, 1933 AND MAY, 1934

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ABSTRACTS

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HIGH SCHOOL

THE UNIVERSITY OF MICHIGAN

MASTER OF ARTS

M. A.

ENGLISH

ERROL C. AMARON

THE DEVELOPMENT OF THE IDEA OF RELIGIOUS TOLERATION IN ENGLAND DURING THE RESTORATION, 1660-1702.

The thesis deals with the fact of Religious Toleration as well as with the idea. The first chapter traces the course of legal toleration through the reigns of Charles II, James II and William. Then follows a discussion of the Liberal Churchmen and the Cambridge Platonists. The contribution of the Royalists is seen through Browne, Pepys, Evelyn, Burnet and Halifax while Milton, Bunyan and Baxter speak for the Dissenters. A chapter is devoted to the Dramatists, with special reference to Dryden. Hobbes and Locke form a chapter on the Philosophers. The final chapter is on the Growth of Science, and Newton, Boyle, Ray, Mayow etc. are mentioned briefly. The conclusion is that both the fact and the idea of toleration progressed during the period, though there were marked restrictions for the Catholics. The fear of Popish tyranny is given as the reason for the exclusion of Catholics from legal toleration.

M. A.

FRENCH

CARRIE ELLA BAKER

LA PARTICIPATION DE LA FRANCE À L'EXPÉDITION DE RHODE ISLAND EN 1778.

Cette thèse est une étude de l'expédition de Rhode Island. Elle doit constater si la faillite de l'entreprise était due à un manque de coopération de la part de l'escadre française. Elle commence par une récapitulation des événements de la guerre en Amérique jusqu'à l'entrée de la France en 1778, avec un récit des négociations entre les deux pays, qui aboutirent à la signature du traité d'alliance; ensuite il y a une description détaillée de la campagne de 1778 avec attention spéciale aux efforts du comte d'Estaing à coopérer avec les Américains; enfin il y a un récit des opérations militaires autour de Newport. La thèse se termine par un exposé des résultats de la campagne et les conclusions qui s'imposent.

M. A.

ENGLISH

ELIZABETH SARAH BARNETT

THE MEMOIRS OF PIONEER WOMEN WRITERS IN ONTARIO.

This thesis deals with the letters of Frances Stewart, and the memoirs of Catherine Traill, Susanna Moodie, and Anna Jameson, which describe Canadian life between 1822 and 1850 from the point of view of the gentlewoman.

After a brief resume of the conditions in Britain and Canada which led to their emigration, each of the first three women is followed on her journey from the old country up to the time of reaching her log house in the wilderness. Housekeeping and social life in the bush are described; and more briefly, social life in towns as commented upon by Mrs. Moodie and Mrs. Jameson. Finally, there is a chapter on the interests of the four women in affairs outside the home.

The personalities of the women are contrasted and their hardships and methods of meeting hardships pointed out. The thesis closes with a brief estimate of the literary value of the memoirs.

M. A.

ECONOMICS

S. E. H. BRENHOUSE

THE CONTROL OF THE PROFIT SYSTEM.

The requisities of a sound system of social economy are maximum production and the most equitable distribution of wealth consistent with it. It is the contention of the writer that no radical departure from the present economic organization which is based on the individual's pursuit of profit as the main economic motive—is necessary to secure this. The outstanding impediment to the realization of maximum production is seen to be industrial depressions and the enforced idleness they cause. An analysis of depressions reveals that price stabilization holds the key to the solution. But the present technique of regulation cannot control the price level and the attempt is made to show how any desired level can be maintained under all conditions. It is shown that the control of the price level can be used to effect a redistribution of wealth.

M. A.

ENGLISH

GRACE LUCILLE CRAIG

A COMPARISON OF SOME EUROPEAN BALLADS

This thesis contains some Polish, Slovak, Serbian and Finnish ballads, collected in America and rendered into English for the first time by the author. There are also some translations of the Finnish ballads from the *Kanteletar* of Elias Lonnrot. A brief summary of the theories of poetic origins is given, some additional corroborative evidence in behalf of the communal theory of ballad origin included, and a reasonable comprehensive theory suggested. Similarities and differences in form and material among European ballads are analysed. A description of the later history of the ballad concludes the discussion.

M. A.

SOCIOLOGY

MARY HELEN DAVIDSON

THE SOCIAL ADJUSTMENT OF BRITISH IMMIGRANT FAMILIES
IN VERDUN AND POINT ST. CHARLES.

The hypothesis is the wage-earning British immigrant tends to segregate himself in "colonies", through which he gradually becomes assimilated to Canadian life. Two adjacent natural areas of Montreal, Verdun and Point St. Charles, which select British immigrants, are described ecologically. The British cultural traits which are brought to Canada are described in their unmodified form. Changes in the establishment of the home, in occupations, in education, income and expenditure practices, and possible social dependency which may be incurred in the process of adjustment are measured. The modification of British cultural traits are described as an indication of assimilation as British immigrants participate in the informal and formal social life of the "colony" and outer-community. Specific institutions, such as religious, charitable, recreational, fraternal and civic organizations, are described in the role they play and contacts with them indicate the process of assimilation.

M. A.

EDUCATION

DOROTHY A. GILL

THE DRAMA IN SECONDARY EDUCATION.

This discussion of the Drama is an attempt to estimate its suitability for inclusion in the curriculum of the Secondary School. It contains a resume of the history of the drama in England, with special reference to Shakespeare's age; an outline of the trends of the non-professional theatre in England, the United States, and Canada, in the last two decades—with a chapter devoted to its increasing importance in Educational institutions; and an analysis of the Drama as an instrument of Education.

M. A.

ECONOMICS

GEOFFREY GILROY

A HISTORICAL SURVEY OF ECONOMIC FLUCTUATIONS, 1800-1914

This survey, which is primarily concerned with Great Britain, presents various accounts and explanations of the economic fluctuations experienced between the years 1800 and 1914. Quotations from annual reviews, periodicals and a few histories make up the greater part of the work. Most of the extracts given are from writings composed at a time contemporary to, or shortly after the occurrence of the events discussed in them. The purpose of the study is to indicate economic conditions in the period considered, and to assist in reaching a clearer understanding of the nature of economic fluctuations.

M. A.

ENGLISH

VERNA BLANCHE HAGERMAN

THE LITERATURE OF THE MARITIME PROVINCES OF CANADA.
INFLUENCES AND TRENDS.

The English literature of these provinces begins with the coming, about 1760, of the New England immigrants, who brought with them their own traditions, with their subsequent influence. With the Loyalists (1783) came the influence of the late 17th and early 18th century English writers. An attempt is made to show why Loyalist influence upon literature and education was not greater. The Pre-Confederation period is a discussion of the works of Haliburton and Howe, both in regard to literary value and to public affairs. The Post-Confederation period, in which a definite national sentiment is evident, is represented almost entirely by poetry. Robert Norwood is considered both as poet and dramatist.

There is a brief discussion of contemporary prose and poetry and the trends are shown. The thesis includes only those writers who have received wide recognition and whose influence has been definite.

M. A.

EDUCATION

CATHERINE NISBET HOLLAND

THE RELATION BETWEEN ARITHMETIC IN THE ELEMENTARY SCHOOL
AND MATHEMATICS IN THE SECONDARY SCHOOL.

As the course is at present arranged in Quebec, arithmetic is the only mathematical subject taught in the seven grades of elementary school. Also, there is practically no correlation between the mathematical subjects taught in the secondary school—which course is designed to meet the needs of only the small percentage of pupils academically inclined. Arithmetic in the elementary school could be taught in six years in order to acquire: (1) the primary adaptations of number, (2) correct mathematical *ideas* on which future mathematics can be based. A course in General Mathematics should be offered in grades VII, VIII and IX, continuous with the arithmetic, developed round geometry, and designed to meet the needs of *all* secondary school pupils: (1) those leaving at the end of grade IX to enter the industrial or commercial world; (2) those with real mathematical ability who are destined to enter the senior grades, thence the university and the professions.

M. A.

FRENCH

RUTH JOYCE HOWIE

L'EVOLUTION DES IDÉES DE R. ROLLAND SUR LA VIE INTERNATIONALE.

Dès son enfance Romain Rolland manifesta un goût spontané et précoce pour les écrivains et musiciens étrangers à la France. Des relations personnelles avec Tolstoi, au cours de sa jeunesse l'orientèrent définitivement vers un idéal d'union et de fraternité internationales. La musique qui, pour lui comme pour son héros Jean Christophe, se révéla comme "la lumière qui devait illuminer sa vie" lui apparaît alors comme un des plus grands liens mystiques entre les peuples.

Pendant toute la première partie de sa vie Romain Rolland se fit l'apôtre d'un idéal de réconciliation morale entre les peuples d'Europe,—spécialement entre la France et l'Allemagne, mais aussi l'Italie. Chaque peuple devait conserver son antimonie politique et ses caractéristiques individuelles nationales. Romain Rolland pensait alors que ces caractéristiques bien loin de s'opposer se complétaient mutuellement et qu'une entente amènerait pour chacun un enrichissement moral inappréciable.

La guerre vint prouver à Romain Rolland qu'une pareille entente n'était pas possible dans les conditions présentes. Pendant quatre ans il fit vainement appel aux élites intellectuelles de tous les pays. L'idéaliste qu'était Rolland devient dans son désappointement, violent, sarcastique et critique virulent du nationalisme où il voit la cause profonde du désastre à la fois de l'Europe et de ses rêves.

Après la guerre Romain Rolland se construit une nouvelle doctrine: il reste sur le plan moral et ne se soucie que médiocrement des problèmes matériels. En esprit, il est fidèle à son idéal pané: l'union des peuples. Mais il élargit considérablement son point de vue: avant la guerre, c'est de l'Europe qu'il s'occupait presque exclusivement, maintenant c'est du monde entier qu'il s'intéresse et c'est le problème Orient-Occident qui passe au premier plan. D'autre part, l'union des peuples ne lui paraît pas possible dans le cadre de l'organisation sociale présente et ce n'est pas qu'avec l'avènement du Communisme qu'une réconciliation internationale réelle pourra, d'après lui, s'effectuer.

M. A.

ECONOMICS

JOHN STEELE JOHNSON

HISTORY AND ORGANIZATION OF THE MONTREAL STOCK EXCHANGE.

The object of the thesis is well described by its title. It is an attempt to describe the founding, history, and organization of the Montreal Stock Exchange.

The first three chapters are historical. The first traces the rise of the Stock Exchange as an institution; the second tells of the conditions under which it evolved in Canada. The third chapter describes the growth of the Exchange from its establishment in 1874 up to the present time.

The remainder of the thesis deals with the organization and constitution of the Montreal Stock Exchange and compares it to the organization and constitution of other great stock exchanges. There is a discussion in the last chapter about the much mooted question of stock exchange regulation, and while not actually taking sides, the chapter sketches the history of previous attempts to curb speculation by legislation.

M. A.

FRENCH

JOSEPHINE POWERS KENT

LE ROMAN REGIONALISTE DEPUIS LA GUERRE.

This is a study of the regional novel in France today. After defining "regional novel" and tracing its development through its predecessors beginning with Rousseau, it notes the importance of regionalism in France at the present time. Typical regional novels by various writers dealing with different regions are analysed. The novels about one particular province are grouped together.

Some of the most important novels discussed are: *La Brière* by Alphonse de Chateaubriant, *Nêne* by Ernest Pérochon, *Rabotiot* by Murice Genevoix, and Raymond Escholier's *L'Herbe d'Amour*.

M. A.

FRENCH

MARY ELIZABETH KINNEAR

LES ANIMAUX DANS COLETTE.

Cette thèse a pour objet de montrer comment Colette a présenté les animaux dans ses ouvrages. Colette possède une capacité de compréhension des animaux véritablement exceptionnelle dans l'histoire de la littérature française. L'origine s'en trouve sans doute dans les impressions profondes d'une jeunesse passée à la campagne auprès d'une mère qui vécut toujours entourée de bêtes. Mais son amour pour les animaux semble avoir été pourtant la conséquence indirecte des déceptions d'une vie conjugale malheureuse et des aspirations trop tardivement satisfaites de l'instinct normal maternel. Enfin une affinité spontanée, naturelle, bien que fort étrange, semble l'unir aux animaux. Par suite de cette affinité spéciale, elle peut établir une communication spéciale, quasi mystique entre sa propre âme et l'âme des bêtes qui l'entourent. Elle réussit ainsi à les comprendre probablement mieux que quiconque l'a pu faire en France avant elle et presque à franchir l'abîme que sépare l'humanité de l'animalité. D'autre part, en grande artiste qu'elle est par ailleurs, Colette réussit non seulement à présenter l'âme animale mais encore à dresser l'être total, moral et physique devant nous grâce à des évocations remplies de fraîcheur, de charme et de poésie.

M. A.

HISTORY

A. J. E. LUNN

ECONOMIC DEVELOPMENT IN FRENCH CANADA, 1740-1760.

This thesis, which deals with the last decades of the French regime in Canada, is the first part of a further thesis, which I hope to prepare, dealing with economic and social development in Canada from 1640-1774, that is, the transition period from French to English rule. The object of the present account is, therefore, to give some description of just what Great Britain received when Canada was ceded to her in 1763.

The most outstanding characteristics of economic activity in French Canada were inertness and government paternalism, the former usually being attributed to the latter. An attempt has been made to correct this impression in some degree and to arrive at a balance of the various factors which conditioned the economic life of Canada. The various phases of economic activity have been described and their relative importance estimated.

M. A.

MATHEMATICS

MORAY ST. JOHN MACPHAIL

ON THE LOCATION IN THE COMPLEX PLANE OF THE ZEROS OF A POLYNOMIAL.

Various methods are set forth, by which the Theory of Forms may be used to determine the number of roots of an algebraic equation within any region of the complex plane bounded by circles or straight lines. In all cases the principle is the same: we set up an appropriate associated Hermitian or quadratic form, and reduce it to its normal form. Then, provided the form is non-singular, the number of positive squares will equal the number of roots within the region in question, while the number of negative squares will equal the number of roots outside the region. Suitable forms have been proposed by Hurwitz, Cohn, Liénard and Chipart, and Fujiwara.

In addition some related theorems are given, in particular Cohn's proofs of the theorems due to Kakeya and Grace.

M. A.

FRENCH

LINA JOHANNA MICHEL

LA JEUNE FILLE DE LA BOURGEOISIE FRANÇAISE
DANS LE ROMAN D'APRÈS-GUERRE.

Le jeune fille de la bourgeoisie française d'après-guerre a évolué: la petite 'oie blanche' de jadis est loin derrière nous; la jeune fille moderne sait ce qu'elle veut et sait où elle va. Elle est instruite, cultivée, courageuse et énergique.

Elle continuera à évoluer vers la parité d'éducation, de travail et de droits entre les sexes. Mais malgré son indépendance, sa résistance contre l'autorité, son enthousiasme pour les études et son zèle dans les affaires,—ses aspirations, ses goûts, son coeur sont restés profondément féminins. La sentimentale sommeille sous l'enveloppe de la sportive ou de la femme d'affaires.

L'avenir est difficile, incertain, soit. La jeune fille d'aujourd'hui n'en a pas peur; elle est prête à lutter. Mais que le compagnon loyal se présente, ce sera l'éternelle histoire: elle ne le repoussera pas et elle sera prête à fonder un foyer—tout comme sa mère, tout comme sa grand-mère.

M. A.

ENGLISH

KATHLEEN ESTEY MILBURNE

THE STREAM OF CONSCIOUSNESS IN RECENT
ENGLISH FICTION BY WOMEN.

This thesis traces the birth and growth of the stream of consciousness method in English fiction, paying particular attention to the way it has been handled by such literary artists as Dorothy Richardson, Virginia Woolf, and the late Katherine Mansfield.

Chapter One deals with the growth of Modern Subjective Fiction, from the writing of Henry James to that of James Joyce. Chapter Two endeavours to show how Dorothy Richardson has used the method in her series of novels, *Pilgrimage*. Throughout the ten volumes she has never gone outside the consciousness of her main character, Miriam Henderson. Chapter Three deals with Mrs. Woolf's experiments which have demonstrated with variations of technique, what heights of sensitive artistry the stream of consciousness can attain. Chapter Four studies the work of the late Katherine Mansfield, who by introducing the stream of consciousness method into the short story, has created original beauty and fresh technical resources in that medium.

M. A.

ECONOMICS

GEORGE R. W. OWEN

FREEDOM OF OPINION.
A COMPARATIVE STUDY OF PUBLIC LIBERTIES
IN FRANCE AND CANADA.

This work treats freedom of opinion in France and Canada. Freedom of assembly; freedom of expression, by such means as speech, press, radio, theatre and cinema; and freedom of association, for trade unions as well as political groups; are compared in the two countries. The conclusion based on this comparative study is that there is much more freedom of opinion in France than in Canada and that the latter would do well to respect in a like manner the principles essential to a free expression of opinions.

(This thesis as presented was written in the French language, but an English translation is also available in the Library.)

M. A.

SOCIOLOGY

MARY E. RAMSDEN

DEPENDENCY AMONG BRITISH IMMIGRANTS IN MONTREAL.

Dependency among British immigrants in Montreal is treated in this study as an accompaniment of the maladjustments which arise in relation to the immigration process. There are two periods at which immigrants are likely to become dependent, first, when as newcomers, they find themselves living in transition areas of the city and facing problems of occupational adjustment in addition to the disorganization accompanying their move to a new social environment; and second, when they have passed the prime of life and have few savings with which to meet the crisis presented by old age. The newcomers show a tendency to apply first to the agencies of readjustment within their own national group or to the organizations of their church. If the neighbourly assistance which they receive here is not sufficient to meet their needs they will of necessity be turned over to the organized charities of the greater community.

If they do not become dependent until later on in life they may go directly to these latter organizations. At any rate, it is there that we find the greatest number of dependent Britishers; a number which is disproportionate to their percentage in the general population. When the characteristics of British cases are compared with the Canadian-born, however, it is found that they do not differ greatly. It is our hypothesis, therefore, that the former represent an adverse selection of persons from the British Isles, and their predisposition to failure is intensified by the inevitable process of immigrant adjustment.

M. A.

FRENCH

Laura Hall REXFORD
PIERRE LOTI ET LA TURQUIE.

This thesis presents a brief review of the childhood, early manhood and character of Pierre Loti before visiting Turkey.

The five visits of Loti to Turkey are discussed, particularly in their relationship to the influence they had on the character and mental outlook of the man. Loti's impressions of Turkey, its people, their social customs and their religion are compared with those of contemporary writers on Turkey.

Finally, the description of the Turkish woman and her life in the harem as depicted in "Les Désenchantées", is considered, and the question discussed as to whether it is truly representative of the Turkish woman of that day.

M. A.

EDUCATION

Reginald STEEVES
THE JUNIOR HIGH SCHOOL WITH PARTICULAR REFERENCE
TO MONTREAL.

The educational facilities for the Protestant children of Montreal deal finally with less than 10% of the school population, and are imperfect themselves. The same situation having prevailed in other countries, various attempts to remedy it have been made. England produced the Modern Schools; America evolved the Junior High School, which has been reproduced in Manitoba and British Columbia. All the attempts to provide more adequately for secondary school children have attained at least partial success. Montreal's Junior High School combines the best features of both. Thus it should admit all students at age 11 plus, discover the kind and amount of each individual's ability, and proceed to develop it. This involves a transitional training for the proper students of the present high school and a disciplinary and unified course of three years duration for the others, a training adjusted to their abilities and probable futures. The provision would thus be intelligent, adequate, and economical.

M. A.

ORIENTAL LANGUAGES

William THOMAS
THE PHILOSOPHY OF LIFE OF THE BOOK KOHELETH
IN THE LIGHT OF THE HEBREW TEXT,
AND WITH SPECIAL REFERENCE TO ENGLISH VERSIONS.

In the following pages an attempt is made to present the essential philosophy of Koheleth. The fact that the Hebrew Sage is always more interested in life as a whole, rather than in distinctive aspects or principles of life, has not always been appreciated, and consequently, attempts made hitherto to analyse the thought of Koheleth have largely failed. To endeavour to analyse Koheleth's thought, as one would analyse the thought of Plato or Aristotle, is an impossible task. It is the spirit of the teaching that counts, consequently all that has been attempted in this thesis, is to catch and characterize as far as possible, the spirit of the thought, rather than provide any logical analysis and description of the same. The description that follows takes the form of a running paraphrase of the broad thoughts on life that Koheleth enunciates.

M. A.

FRENCH

Grace Edson WESTON
QUELQUES INTÉRIEURS DANS LES ROMANS D'HONORÉ DE BALZAC.

Cette thèse est une étude de quelques intérieurs dans les romans d'Honoré de Balzac; elle comprend une analyse des impressions générales qui s'en dégagent pour voir si elles établissent un rapport entre la psychologie du personnage et son milieu.

Pour faciliter cette étude j'ai fait de ces intérieurs deux grandes divisions; les intérieurs de Paris

et ceux de Province avec les subdivisions suivantes; les intérieurs de luxe, les intérieurs bourgeois et les intérieurs du peuple.

Une étude détaillée de plusieurs intérieurs typiques de chaque division me permet d'arriver à la conclusion que la plupart de ces descriptions révèlent un rapport entre le caractère d'un personnage et son milieu.

MASTER OF SCIENCE

M. Sc.

PHYSICS

EDWARD PERCY AIKMAN

SOME STUDIES IN THE RAMAN EFFECT.

(1). A curved film-holder has been designed for the two-prism spectrograph used by the author in his Raman Effect investigations. This fits the focal curve of the camera lens and ensures practically perfect focus over the $4000-7000\text{Å}$ region of the spectrum.

(2). The Wood method of irradiation with mercury arc excitation has been used to obtain the Raman spectra of water and hydrogen peroxide.

(3). The feature of the water spectrum is a diffuse band of $3200-3500\text{cm.}^{-1}$ shift. This represents the vibration of the O-H linkage.

(4). The feature of the hydrogen peroxide spectrum is a sharp Raman line of 875cm.^{-1} shift. This is attributed to the oscillation of the extra oxygen atom.

A twenty-four hour exposure of a 70% solution reveals no evidence of an O-H oscillation, indicating that this must be very diffuse.

The low value of the oxygen shift indicates a different type of bond than the usual O-O binding, being obviously much weaker.

Suggested configurations for the hydrogen peroxide molecule which involve usual types of binding to the extra oxygen atom would therefore appear to be unsuitable. The experimental evidence can be explained if one considers this atom to be bound to the oxygen atom in the water configuration by means of a coordinate co-valent bond. This would explain the ease with which the peroxide decomposes.

M. Sc.

CHEMISTRY

L. M. BAXT

THE INVESTIGATION OF GASEOUS OXIDATION PROCESSES BY THE METHOD OF DILUTE FLAMES.

Dilute Flames

An attempt was made to investigate the oxidation of zinc ethyl by the method of "dilute flames". However, no flame could be obtained even at quite high temperatures and pressures. Furthermore, there was no evidence of any reaction whatever at the low pressures used. The oxidation of zinc ethyl is always accompanied by the deposition of a white precipitate, and this could not be observed.

This is in sharp contrast with the results obtained in the case of metal vapours, and the halogens. Even with oxygen, these metal vapours will react, although they do not emit light. When tried at higher pressures (2 or 3 cm.) the zinc ethyl would react, but no light was given off.

These results show that the oxidation of zinc ethyl has a fairly high heat of activation; otherwise we would obtain reaction at low pressures. Also, since there is this high activation energy, there are no free radicals or atoms in the process.

Diffusion Flames

A preliminary investigation of the oxidation of calcium vapour was attempted using the "diffusion flame" method. However, time was lacking, and no real results could be obtained.

M. Sc.

EXPERIMENTAL MEDICINE

RONALD V. CHRISTIE

THE INTRAPLEURAL PRESSURE: ITS SIGNIFICANCE IN HEALTH AND DISEASE.

A method has been developed for the simultaneous registration of the tidal air and intrapleural pressure, and measurement of the pulmonary elasticity and distensibility. The elasticity of the healthy lung is nearly perfect and the distensibility is comparatively constant. In emphysema there is an almost

complete loss of pulmonary elasticity and on this basis the characteristic changes in lung volume, haemo-respiratory exchange, and pulmonary ventilation can be explained. In congestive heart failure there is a marked decrease in distensibility and slight impairment of elasticity. Again the characteristic changes in lung volume, haemo-respiratory exchange, pulmonary ventilation, and venous return to the heart can be explained on this basis. The rationale of increasing the intra-abdominal pressure in the treatment of emphysema and heart failure is described.

M. Sc.

ZOOLOGY

ARTHUR COHEN

THE SOURCE OF CELLS IN REGENERATION AND GROWTH.

1. The literature dealing with the source of cells in regeneration in a number of groups of animals is reviewed.
 2. The source of cells in the growth of certain tissues of the frog-tadpole, newly-hatched trout and lamprey larvae is recorded.
 3. Increase of epidermal cells results from proliferation of the ordinary epidermal cells: there are no reserve or basal cells.
 4. Retinal sensory elements increase by proliferation of simple peripheral cells at the junction of iris and retina. Differentiation of the sensory cells commences only after division of the cell ceases.
 5. Mitotic division of the nuclei of muscle-fibres was observed. Increase in the number of fibres results from the division of simple, undifferentiated cells at the periphery of the myotome just beneath the epidermis.
 6. Intravascular multiplication of cells of the erythrocytic series by mitosis was observed in the 10mm. frog tadpole.
 7. Increase in number of cartilage cells results from mitotic division of the cartilage cells proper: there was no evidence of perichondrial contribution. In the trout amitotic division was also observed.
 8. Multiplication of notochord cells results from mitotic division of the peripheral highly protoplasmic and non-vacuolated cells.
 9. Gut epithelial cells increase by mitotic division of constituent cells: there was no evidence of basal cells. During division the basal border of the epithelial cell retracts towards the lumen of the gut, thereby assuming a spherical form.
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M. Sc.

EXPERIMENTAL MEDICINE

THEODORE C. ERICKSON

NEUROGENIC HYPERTHERMIA

Neurogenic hyperthermia is a definite syndrome not infrequently seen in neurosurgical practice. It has been only casually mentioned in the literature and no opinion has been previously ventured as to its etiology.

In its most typical form this condition occurs immediately after cranial operations or head injuries as a marked elevation of body temperature with a very rapid cardiac and respiratory rate and a constant unremitting cutaneous vasoconstriction and anhidrosis.

From experimental, clinical and pathological studies there is evidence that neurogenic hyperthermia has its origin in a derangement of the autonomic diencephalic mechanisms which are concerned in normal thermotaxis.

M. Sc.

ANIMAL NUTRITION AND BREEDING

DUNCAN ARCHIBALD FINLAYSON

THE EFFECT OF FERTILIZATION ON THE NUTRITIVE VALUE OF PASTURE GRASS.

This paper reports a study of the nutritive value of fertilized vs. unfertilized pasture herbage, with particular reference to the quality of the protein, as measured by comparative feeding trials. A technique for the management of growing rabbits as experimental animals for such tests is also described.

Significant differences were found not only between certain pure species of grasses but also between the mixed herbage from fertilized and unfertilized pastures, which could not satisfactorily be explained on the basis of the usually advanced theories, viz., energy value, protein level and mineral (Ca. and P.) content of these feeds.

From the results obtained in these studies, the conclusions seem warranted that:

- (1) quality of protein (amino acid balance) may be an important factor determining the nutritive value of pasture herbage and
- (2) the improvement brought about through fertilization may be the result of a change in the constitution of its proteins.

M. Sc.

AGRICULTURAL CHEMISTRY

FRANKLIN RUTHERFORD FORBES

CHEMICAL STUDIES OF BOVINE FOETAL FLUIDS
DURING VARIOUS STAGES OF GESTATION.

Chemical studies have been carried out on bovine amniotic and allantoic fluids with special reference to the sugars. Other organic substances were isolated and studied.

The proteins of amniotic fluid were not precipitated by trichloroacetic acid. Other means of precipitating the proteins have to be used, prior to colorimetric determinations of inorganic phosphorus.

Much larger quantities of sugar were found present in amniotic fluid than had previously been reported. The Herzfeld colourimetric method for the quantitative estimation of sugar was used. A modification was made to the method involving the use of a photoelectric cell in the apparatus. The sugar was identified as fructose.

An organic substance was isolated and studied.

Allantoin was isolated and identified from allantoic fluid at different stages of gestation. All of the fluids tested gave reactions for sugars.

M. Sc.

BOTANY

ALBERT WILLIAM SMITH HUNTER

A KARYOSYSTEMATIC INVESTIGATION IN THE *GRAMINEAE*.

The history and present state of the classification of the *Gramineae* is briefly reviewed. Some of the different characteristics on which phylogenetic systems have been based are considered. The subject of chromosome morphology is discussed in detail, and the application of idiograms and karyotypes to taxonomic studies is explained. The main purpose of the present study was to scrutinize and extend the findings of Avdulov who has recently published a monograph in which extensive changes, based on karyological studies, have been made in the classification of the *Gramineae*. Taking the grasses in order by tribes, Avdulov's results are summarized. To them are added the results of an original investigation of thirty-three species belonging to twenty-nine genera from ten tribes, and also new results from other workers. The evolution of different forms within the family is touched upon.

M. Sc.

PHYSICS

DONALD G. HURST

PHOTOELECTRIC CURRENTS IN IRRADIATED ROCKSALT CRYSTALS.

The internal photoelectric current in rocksalt crystals previously irradiated with β and γ rays has been studied. The observed decrease of the current with time has been shown to be due to the growth of a back voltage in the crystal. In these crystals a reverse current flows when the crystal is illuminated, without an external field, shortly after the passage of a photocurrent. This reverse current has been shown to be an ordinary photoelectric current due to the back voltage.

M. Sc.

AGRONOMY

R. M. MACVICAR

INHERITANCE OF SEED COLOR IN ALFALFA.

This paper presents the results of an investigation to determine the inheritance of black and white seed coat colors in alfalfa. The "black" character appeared to have arisen as a mutation in a third generation selfed line. Black x Yellow hybrid progenies in F_2 exhibited a wide range of seed coat color extending from normal yellow to dark mulatto. Inheritance proved to be fairly complex requiring the assumption of at least three factors. One gene, primarily responsible for pigmentation of the seed coat, and at least two modifying factors, were postulated as the most probable genetic explanation of the breeding behaviour. It was concluded that the character of blackseededness would be valueless from a utility standpoint.

Inheritance of the white seed coat character appeared to depend on a single factor difference, the white seeded parent being homozygous for a recessive factor which results in the absence of yellow pigment.

M. Sc.

ENTOMOLOGY

OSWALD PECK

SOME *ICHNEUMONIDAE* OF ALBERTA.

The major portion of this paper is a taxonomic study of the parasitoidal subfamily *Joppinae* (Family *Ichneumonidae*). Their hosts are species of the family *Noctuidae* and many of these are of economic importance in the prairie provinces. A taxonomic study of the western joppines, therefore, may be of value in biological control work. The methods of increasing the natural efficiency of parasitoids are reviewed, as well as the factors that modify or nullify attempts at control.

The taxonomic treatment of the subfamily *Joppinae* is preceded by descriptions of the external morphological structures that may be used in the identification of the various groups within the subfamily, special attention being given to the genus *Amblyteles* Grav. (s.l.).

The methods of classification by various workers are discussed and keys formed for all species reported from the province. The sole genus of major importance is *Amblyteles*, in which nearly sixty species are discussed. In most cases the type has been re-described, emphasizing the morphological structure rather than colour. Three new species have been named. Eleven others, mostly uniques, have been described and are probably new.

The thesis is in the nature of a preliminary survey.

M. Sc.

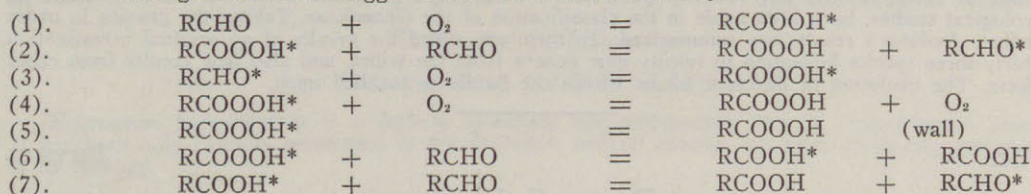
CHEMISTRY

SOLOMON ROSENBERG

KINETICS OF THE OXIDATION OF GASEOUS PROPIONALDEHYDE.

The kinetics of the oxidation of gaseous propionaldehyde have been investigated from 120 to 170°C by a static method. The reaction is a chain process and is similar to the oxidation of acetaldehyde. The rate is proportional to the square of the aldehyde concentration, and independent of that of oxygen. The apparent heat of activation is 15,400 calories per gram molecule.

The following mechanism is suggested for the oxidation of aldehydes:



In the absence of deactivation at the wall, this leads to
$$\frac{-d(\text{RCHO})}{dt} = \frac{2 K_1 K_6 (\text{RCHO})^2}{K_4}$$

in agreement with experiment.

M. Sc.

GEOLOGY

GEORGE SHAW

THE GEOLOGY AND PETROGRAPHY OF VIEWMOUNT AVENUE, WESTMOUNT.

The Monteregian hills are composed principally of plutonic igneous rocks of alkaline character including such rocks as nordmarkite, nepheline syenite, tawite, pulaskite, essexite, yamaskite, montrealite, rougemontite and olivine essexite. A study of the analyses of the various rock types indicates an average composition approximating that of essexite. It is reasonable to assume, then, that the stem type magma had the composition approximating essexite. The variation diagram plotted from the analyses of the various rock types suggests that the nepheline syenite, nordmarkite, tawite, pulaskite and laurdalite on the one hand, and yamaskite, rougemontite, montrealite and olivine essexite on the other, are acid and basic differentiates respectively of the original essexite magma. The diagram suggests differentiation by deformation.

In the thesis area are exposed essexite, nepheline syenite, camptonite, fourchite and tinguite intrusives penetrating the trenton limestone. The nepheline syenite, camptonite and tinguite form igneous breccias which give an excellent indication in the order of intrusion of the various rock types. The sequence of

intrusions established for the thesis area compares very well for that established for other parts of the mountain.

M. Sc.

GEOLOGY

LIONEL R. SIMARD

PYRRHOTITE IN ROCKS AND MINERAL DEPOSITS.

Although pyrrhotite is a mineral of common occurrence in nature its distribution has never been systematically investigated. This thesis represents the first attack on the problem. The polished surfaces of some 174 rock specimens were examined and the opaque minerals identified. Pyrrhotite was found to occur in basic igneous rocks and in metamorphic rocks. The results indicate that it occurs more commonly in rocks which contain nepheline. Pyrrhotite is most common in rocks of the Monteregian province. As pyrrhotite was found in only 14 of the 174 sections examined it would seem that this mineral does not occur as commonly in igneous and metamorphic rocks as it is usually considered to do.

Polished sections of a number of specimens of ore from pegmatites, high temperature and magmatic deposits were examined. Texture and mineral associations were determined.

Information was sought as to the constitution and the chemical, physical and mineralogical characteristics of pyrrhotite. This entailed a search and careful consideration of the literature on the subject. Pyrrhotite is a solid solution, probably of S in FeS. The most favored formula is Fe_nS_{n+1} , n having any value up to 18. The composition and various properties are found to depend on the conditions of formation. There are two modifications of pyrrhotite, a high temperature orthorhombic and a lower temperature hexagonal. X-ray analysis of pyrrhotite gave a holohedral hexagonal structure of space D_{6h}^2 with two molecules in the cell of unit dimensions.

M. Sc.

AGRONOMY

PETER CORNELIUS STOBBE

THE EFFECT OF SOME COMMERCIAL FERTILIZERS ON
THE CHEMICAL COMPOSITION OF PASTURE HERBAGE
IN THE EASTERN TOWNSHIPS OF QUEBEC.

This paper reports the results of chemical analyses made on samples of mixed pasture herbage collected from fertilized and unfertilized plots in 1931 and 1932 and of distinct species in 1932 only.

The % nitrogen in the mixed herbage was significantly increased by an application of superphosphate by lime and during the first year of the experiment by potash.

The calcium and phosphorus contents in the mixed herbage were significantly increased only by superphosphate. The calcium: phosphorus ratio was decreased by superphosphate in 1931 and increased by lime in 1932.

Nitrogen and calcium in the mixed herbage were closely related to the percentage of clover present in the pasture, while no such relation existed in the case of the phosphorus.

The percentages of nitrogen, phosphorus and calcium in the different species were greatly increased by an application of superphosphate and potash.

The clovers were very much higher in nitrogen and calcium than the grasses, but they differed only slightly in their phosphorus content.

M. Sc.

CHEMISTRY

H. V. STOVEL

THE EFFECT OF CHEMICAL TREATMENTS
ON THE STRUCTURE OF CELLULOSE FIBRES.

The work described in this thesis was undertaken with a view to determining the factors which influence the physical properties of various wood pulp fibres. A microscopic examination of fibres was carried out, and the influence of different agents on their structure noted. The tearing of sheets made from different pulps was also examined critically, to establish the mechanism of this tearing. Various factors influencing the characteristic stain reactions of different pulps were investigated. The observations made in the course of this work were recorded by photo-micrographs.

M. Sc.

CHEMISTRY

ELWOOD V. WHITE

THE STRUCTURE OF BEECH-WOOD LIGNIN.

The direct acetylation of a prepared beech-wood meal has been carried out with a view to the separation of an acetylated lignin. The maximum solution by acetylation was 76.7% of the lignin present in beech-wood.

A separation of the acetylated lignin in high yield by preferential solvent extraction was not obtained.

The soluble acetylated product was subjected to methylation followed by hydrolysis and a lignin fraction separated. The maximum yield was 24.7% of the lignin present in beech-wood.

The isolated lignin had the same methoxyl content as "Methyl alcohol" lignin isolated from spruce-wood and could be separated into ether soluble and ether insoluble fractions of different methoxyl content.

M. Sc.

EXPERIMENTAL MEDICINE

E. WALTER WORKMAN

THE EFFECT OF PARTIAL TRACHEAL OCCLUSION ON THE COMPENSATORY HYPERTROPHY OF AUTOTRANSPLANTS AND REMNANTS OF THE THYROID GLAND.

Experiments have been carried out in guinea pigs to demonstrate that hyperplasia of the thyroid gland and reversion to the colloid phase could be induced by subtotal extirpation of the thyroid gland and partial tracheostenosis. This reversion was observed in the thyroid remnant of the neck; also, in another series of experiments, reversion to the colloid phase took place in the neck remnants and autotransplants. It was concluded that the changes so produced must be due to a blood-borne factor. A "cyclic hypothesis" of thyroid physiology was presented, in which it was stated that the body requirements for thyroxin, the thyrotropic hormone and anti-thyrotropic substance, and the mobilization of iodine in the thyroid gland are all interrelated. On this basis the sequence of events due to subtotal thyroidectomy and after partial tracheostenosis was explained.

MASTER OF ENGINEERING

M. ENG.

ELECTRICAL

M. L. DE ANGELIS

REGENERATIVE BRAKING OF ELECTRIC CARS AND LOCOMOTIVES.
A STUDY OF ITS FUNDAMENTAL PRINCIPLES AND APPLICATIONS.

This thesis treats of the fundamental principles of regenerative braking as applied to electrically propelled cars and locomotives. It discusses the most important systems used.

The introductory chapter outlines briefly the history of the development of the problem. Chapter II deals with the advantages and disadvantages of this method of braking, shows its possibilities on level and mountain lines and gives the practical results obtained from its adoption on certain railroads. Chapter III describes the fundamental characteristics and requirements of the four principal systems and very particularly the direct current system. The recent application of compound motors on surface line and underground line vehicles is given due consideration. Chapter IV presents a mathematical analysis of the direct current system and gives in detail the method for calculating the speed-braking effort characteristics of a locomotive using a special excitation set. Chapter V concludes the study and gives a bibliography on the subject.

M. ENG.

ELECTRICAL

C. B. FISHER

SOME NON-LINEAR VACUUM-TUBE TOPICS.

A number of separate circuit problems in radio engineering are discussed, the problems being linked by the fact that they all involve non-linear impedance relations in vacuum tubes. There is also a general discussion given on non-linearity, and a critical bibliography. Among the topics discussed are: automatic volume control in radio receivers; some original work leading to a vacuum tube wattmeter; original analysis dealing with a heterodyne detector; a constant impedance circuit primarily intended to meet the

problems of coupling a pentode tube to a loud-speaker; and some original work on an amplifier involving de-generation to meet the same problem. A number of measurements are shown to back up the discussion on each topic.

M. ENG.

MINING

R. C. JEFFREY GOODE

PROBABLE CHEMICAL REACTIONS AND THEIR EFFECT
ON SULPHIDE FLOTATION.

An investigation was made of the chemical compounds formed between metallic sulphides, especially pyrrhotite and pyrite, and alkalis as commonly used in the grinding circuits of Sulphide Flotation Mills.

The effect of oxidation on these minerals was examined.

Experimental tests were made to determine the resultant action of these compounds upon chalcocopyrite flotation.

A hypothesis has been advanced, and experimental evidence produced, for the necessity of pre-flotation aeration in mills treating heavy sulphide ores.

M. ENG.

MINING

D. M. JAMIESON

AN INVESTIGATION OF THE POSSIBILITIES FOR
AIR CONDITIONING IN HOT, DEEP MINES.

In this discussion the following are the main divisions:—

- (1) A review of all the factors tending to increase the temperature and humidity of mine downcast air.
- (2) A review of the effects on the workers of hot, saturated air, and a discussion as to what may be considered the maximum safe temperature and humidity conditions.
- (3) A brief survey of all known examples of mine air-cooling and dehumidifying methods at present in existence.
- (4) A discussion pointing out that the limiting temperatures are even now being reached, and that for greater depths, air-conditioning must be resorted to.
- (5) A discussion of all possible methods of alleviating conditions, and the conclusion, that the conservation of the evaporative capacity of the surface air must be maintained, and the use of ice, or compressed air expanded in doing useful work, would be the best auxiliary means, worked in conjunction with the first.

M. ENG.

CIVIL

LLEWELLYN JEHU

AN INVESTIGATION OF STRESS IN WELDED JOINTS.

The object of this investigation was first, to evaluate the residual stresses in members which have been welded by various methods, and second, to determine the effect which stress relieving has upon them.

Four types of weld were considered in each case, these being:

- (1) Weld Metal deposited in one layer with bare electrodes.
- (2) Weld Metal deposited in two layers with bare electrodes.
- (3) Weld Metal deposited in one layer with covered electrodes.
- (4) Weld Metal deposited in two layers with covered electrodes.

The specimens in all cases were mild steel plates 12 inches wide, $\frac{3}{4}$ inches thick and 21 inches long with the weld metal deposited in "U" shaped grooves in the long sides of the plate.

The deformation caused by welding was first recorded after which the specimens were severed into strips in order to measure the elastic residual stresses throughout the various plates.

It was found that the stresses in the welds varied from about 10,000 to 40,000 lbs. per square inch and that, after stress relieving, the stresses in every case were reduced to less than 5,000 lbs. per square inch.

ERNEST STARKEY KELSEY

THE TRANSMISSION OF TRANSIENT DISTURBANCES
THROUGH LINEAR ELECTRICAL NETWORKS.

- Chapter I discusses the nature of transient disturbances and describes the Fourier-integral and the operational methods of representing them mathematically.
- Chapter II gives the more important network theorems applicable to transient conditions and includes a theorem (believed new) for deriving an equivalent network in which the concealed meshes are eliminated.
- Chapter III deals with the relations between the currents and voltages at the sending and receiving ends of a passive transmission network. The problem of determining the voltage and current at the receiving end, when either the voltage or current at the sending end is known, is solved in terms of the terminal impedances and certain parameters of the network. A series of identical networks in tandem is considered and a difference equation is shown to hold for a number of functions of the network.
- Chapter IV applies the formulae previously derived to the filter and the transmission line.
- Appendix 1 lists a few mathematical formulae.
- Appendix 2 derives a modified form of Heaviside's expansion theorem.
- Appendix 3 gives a method of analyzing a transient wave form into exponentially decaying components.

W. L. G. MUIR

EFFICIENCY IN THE VENTILATION OF METAL MINES BY MECHANICAL MEANS.

1. Mechanical ventilation notably increases human efficiency and safety.
2. Causes of loss of energy in centrifugal fans, and methods of reducing these losses, are described.
3. Centrifugal fans with blades curved backwards are more suitable for mine ventilation than centrifugal fans with blades curved forward.
4. Where the fire-danger is great, main fans should be on the surface. Air-lock troubles and leakage can be reduced by having main fans underground.
5. Various types of electric motors for driving fans are compared. Motors should be variable speed ones.
6. The efficiency of centrifugal fans is reduced by changes in mine resistance. Causes of changes in mine resistance are described.
7. Losses of energy due to bends, changes of area, and obstruction of airways are discussed.
8. The total costs of various types of ventilating shaft are compared.
9. Losses of energy in the air-circuit, and methods of reducing them, are discussed.
10. Various types of auxiliary ventilating equipment are compared.

VICTOR LLOYD RICHARDS

THE RE-DESIGN OF AN IRON FOUNDRY.

This thesis is the report of a survey of the iron foundries of a company which manufactures chilled cast-iron car wheels, brake shoes, and grey iron castings.

The first part includes:—

- (1) An analysis of the markets for the products of this plant, including a forecast of the probable developments of the immediate future, and
- (2) An examination of the influence of drastic fluctuations in business activity on policies concerning the installation of capital equipment.

The second part is a detailed investigation into the present equipment and capacity of the foundries. Plans for expansion are worked out where this is shown to be desirable. Emphasis is placed on the

importance of designing each department to allow for future growth, and to fit into a general plan for the routing of materials through the entire plant.

M. ENG.

CIVIL

PALMER E. SAVAGE
EXPERIMENTS ON CAVITATION.

Contains brief historical summary; outline of existing theories regarding production of cavities, pitting, noise and vibration; record of experiments conducted using vane to produce cavities; some results of endurance tests with relationship between microstructure of cast iron and its pitting; conclusions; bibliography.

MASTER OF CIVIL LAW

M. C. L.

CIVIL LAW

GREGORY CHARLAP
THE LEGAL STATUS OF THE WORKER IN QUEBEC.

The contract of employment in all its implications is dealt with in the light of the Quebec Civil Code, other statutory enactments and jurisprudence.

Employers' liability at common law, while superseded, to a certain extent, by workmen's compensation legislation, still plays an important part in the employer-employee relationship. It was treated on the basis of the Quebec Civil Code and jurisprudence, preceded by a survey of employers' liability in Great Britain, as a background.

The provisions and practical operation of the Workmen's Compensation Act, 1931, received thorough consideration. The study is based on the statute, material published by the Workmen's Compensation Commission and valuable data secured in a survey of the Commission's files at Quebec City.

DOCTOR OF PHILOSOPHY

PH. D.

BIOCHEMISTRY

EVELYN M. ANDERSON

THE INTERRELATIONSHIP OF THE ANTERIOR PITUITARY AND THE THYROID GLAND.

A study has been made of the physiological properties of the thyreotropic hormone of the anterior pituitary. Evidence of hyperfunction of the thyroid has been shown to occur in the rat and guinea pig following injection of the hormone. The toxins of staphylococcus aureus accentuate the effect of the thyreotropic hormone in the rat. Replacement therapy has been accomplished in the hypophysectomized rat with the thyreotropic hormone. A study has been made of the resistance to the hormone which develops in animals after prolonged injections. A substance which inhibits the action of thyreotropic hormone has been found in the serum of these animals. Animals of several different species have been used. Some of the physiological properties of the antithyreotropic substance have been investigated.

PH. D.

AGRICULTURAL CHEMISTRY

HAMMOND JOHNSON ATKINSON

ORGANIC MATTER AND ACIDITY IN PODSOL SOILS.

A new method of studying the acidity of the organic matter of podsol soils has been developed. The soil solution is displaced with distilled water from soil placed in glass percolators, concentrated on a steam-bath and dialysed through cellophane. Analysis of the dialysate has shown that up to 50% or more of the acidity may be accounted for as sulphuric and phosphoric acids. At any one time, 100 to 300 lbs. of sulphuric acid and 15 to 50 lbs. of phosphoric acid per acre may be present. Up to 50% of the acidity is non-dialysable. This acid material yields oxalic acid when oxidized below 20° C. with dilute alkaline potassium permanganate.

Field experiments showed that sodium carbonate and sodium hydroxide improved soil conditions and increased crop yields when used in amounts not exceeding one-twelfth of the weight of calcium compounds indicated by "lime requirement" test. Excessive sodium carbonate proved harmful.

PH. D.

CHEMISTRY

ADAM CARR BELL

THE ADDITION REACTIONS OF PHENYL VINYL KETONE.

Methyl cyanoacetate, cyanoacetamide and malononitrile all gave trimolecular products when added to phenyl vinyl ketone. Nitromethane gave a tetramolecular compound. Methyl cyanoacetate gave methyl 1,5-dibenzoyl-3-cyanopentane-3-carboxylate which, when treated with hydrogen bromide, gave the corresponding amide, an "imide bromide" and methyl 2-bromo-3-(β -benzoylethyl)-6-phenyldihydropyridine-3-carboxylate. Hydrolysis and decarboxylation of the same addition product gave 1,5-dibenzoyl-3-cyanopentane. Concentrated sulphuric acid converted the latter into the corresponding amide and 2-keto-3-(β -benzoylethyl)-6-phenyltetrahydropyridine. With bromine the cyanopentane gave 2-bromo-3-(β -bromo- β -benzoylethyl)-6-phenylpyridine in quantitative yield. The last two reactions are characteristic of δ -ketonic nitriles.

PH. D.

CHEMISTRY

IRENE KOERBER BUCKLAND

PHENOL DERIVATIVES OF LIGNINS.

The phenol condensation products of the "native" lignin found in spruce wood and of lignin isolated by the Freudenberg method have been prepared and their derivatives studied. When wood is extracted with phenol in the presence of hydrochloric acid as catalyst, two chemically different phenol lignins, in approximately equal amounts, are formed. On the other hand, when a previously isolated lignin, namely Freudenberg lignin, is subjected to the same treatment, only one phenol lignin derivative is produced and in a nearly quantitative yield, showing that there is a difference between "native" lignin and an "isolated" lignin.

The results of the present investigation can be correlated by applying the Brauns and Hibbert formula for the native lignin building unit and provide further evidence as to the structural identity of lignin prepared by different methods. The use of phenol derivatives of lignins as reference compounds for the study of lignin has been suggested.

RAIMBAULT DE MONTIGNY

PENETRATION IN SULPHITE COOKING.

The physico-chemical factors influencing the course of the sulphite process for making paper pulp have been studied. An experimental technique, making possible accurate control of conditions, has been further developed. The inter-relation of pressure, temperature, cooking liquor composition, hydrogen ion concentration, relative reaction velocities, wood structure, etc. have been investigated, leading to data of practical and of theoretical interest. Particular emphasis has been laid on the importance of the penetration of the reagents into the wood. Means of accelerating this penetration have been found, and, on the basis of this discovery, a new and more advantageous procedure for cooking wood has been developed. Evidence has been advanced in support of a penetration hypothesis to explain "burning" in the sulphite cook. Additional information on the penetration of liquids into wood has been obtained and theoretical explanations of the mechanisms involved have been given.

ROBERT ALFRED FRANS HALET

THE GEOLOGY AND MINERAL DEPOSITS OF THE
BEATTIE-GALATEA AREA, QUEBEC.

The Beattie-Galatea area is in Duparquet and Destor townships, northwestern Quebec. The main points of interest are: recent gold discoveries, and a long-standing controversy over the age of some porphyry intrusions. The geological features of the area include an east-west band of Timiskaming sedimentary rocks, with Keewatin volcanic rocks to the north and south of it. It is believed that these formations are closely folded into a synclinorium. Intrusive rocks fall into three groups: earlier basic rocks, later acidic porphyries, and still later diabase. The age of the earlier group is not precisely known. The relation of the porphyry intrusions to the structure is established beyond all reasonable doubt. The porphyries are younger than the Timiskaming series, and their intrusion was closely controlled by the regional structure, particularly in the case of the older quartz porphyry, and less so in the case of the younger bostonite porphyry. The "porphyry conglomerates" are studied in detail, and a logical explanation of their origin is offered.

The ore deposits are associated with porphyry intrusives. The Beattie ore is a siliceous replacement of bostonite porphyry with disseminated pyrite and arsenopyrite. The gold mineralization is low-grade, but this is compensated by the large size of the ore bodies. The geological and mineralogical features are studied, in an attempt to determine the physical conditions which controlled ore-formation.

E. MARIE HEARNE

CHROMOSOME STUDIES ON THE MECHANISM OF MEIOSIS
IN MELANOPLUS FEMUR-RUBRUM.

Chromosome configurations in *Melanoplus femur-rubrum* were studied in relation to different hypothesis concerning the interpretation of chiasmata and the mechanism of chromosome pairing. By means of differential staining it was possible to trace the individual chromatid structure in these configurations throughout the first division of meiosis. A ratio of 71 compensating to 35 non-compensating chiasmata was found. An explanation for the preponderance of the former type is given. Chiasma frequencies were determined and cytological interference was demonstrated. From the determination of terminalisation coefficients and configurations at metaphase the movement of chiasmata was found, in some cases, to be toward the spindle attachment. Chromosome contraction at the metaphase of spermatogonial divisions was found greater than at metaphase of the first division. A chiasma formed in a heteromorphic bivalent was demonstrated to be the result of crossing over. The interpretation of certain configurations was found impossible on the "classical" hypothesis.

GEORGE RUSSELL LUSBY

ALKALI COOKING STUDIES.

A study has been made of several problems related to the soda-cooking process. The sorption of sodium hydroxide and the nature of diffusion of sodium hydroxide, sodium chloride and hydrochloric acid into pre-soaked chips of different lengths, were measured at 20°, 50° and 75° C. The rate of cooking of black spruce wood at 160° with lithium, sodium and potassium hydroxides were found to increase with the atomic weight of the metal. In concentrated solutions at 160° C., potassium hydroxide reacted three

times as fast as sodium hydroxide. Temperature change had a very great influence on the rate of cooking. Alkali-lignin, cellulose decomposition products and salts in the cooking liquor decreased the rate of reaction.

PH. D.

CHEMISTRY

HERBERT EDMUND MORRIS

THE DISCONTINUITY AT THE CRITICAL TEMPERATURE:
ADSORPTION, DENSITY, DIELECTRIC CONSTANT.

An apparatus has been devised for measuring the apparent adsorption of gases, vapors and liquids on solid surfaces up to the critical pressure and critical temperature. The system propylene-alumina has been investigated. There was no discontinuity in the adsorption process with a change from vapor state to gaseous state as defined by the critical temperature. Apparently adsorption did not occur from the liquid state and there was a marked discontinuity in the adsorption curve with a change from liquid state to gaseous state. This may be due to a difference in the forces of attraction between liquid and gas or vapor molecules and the solid surface.

The discontinuity in density above the critical temperature has been confirmed and it has been shown that this is not due to a gravimetric effect.

A dielectric cell for use in determining the dielectric constants of a liquid and its equilibrium vapor has been described. The dielectric constant of propylene liquid and vapor has been determined. There was no indication that the values for liquid and vapor would be equal at the critical temperature.

All of these results are in accord with previous observations from this laboratory that there is a discontinuity in the region of the critical temperature.

PH. D.

PSYCHOLOGY

N. W. MORTON

THE INDUSTRIAL QUALITY OF THE UNEMPLOYED,
WITH PARTICULAR REFERENCE TO OCCUPATIONAL CLASSIFICATION.

Psychological tests were administered to Montreal unemployed men of a wide range of ability. The majority possessed sufficient ability to make industrial re-assimilation no special problem, but there was an abnormally large group of inferior mentality which may present a particular difficulty of rehabilitation. General mental ability and recency of employment varied negatively with age, and it seemed probable that clerical and mechanical ability and certain personality traits varied with age in the same way. Recency of employment apparently bore no relationship to education or test scores. Unemployed men receiving relief assistance were found to be older than and inferior to those not receiving aid. Employed clerical workers were superior in education, general alertness and clerical ability to unemployed clerical workers. Intelligence, education and clerical ability bore a marked relation to Taussig occupational grades, while technical and mechanical workers possessed greater mechanical ability, and salespeople showed differences in certain personality traits.

PH. D.

CHEMISTRY

JAMES BROWN NORMINGTON

THE CONDENSATION OF GAMMA KETONIC ESTERS
WITH AROMATIC ALDEHYDES;
RING-CHAIN TAUTOMERISM IN GAMMA KETONIC ACIDS.

Gamma ketonic acids of three distinct series have been prepared and their behavior in certain characteristic reactions determined. It has been shown that there is no relationship between the kind of groups present in these acids and their structures. To illustrate this, the action of methyl magnesium iodide and of acetyl chloride has been studied in detail. In the most highly branched series—the acrylic acids—the resemblance if the lactols to triphenyl carbinol has been noted. To account for the action of acetyl chloride, in the other two series, a mechanism for the reaction has been proposed and discussed.

PH. D.

GEOLOGY

VLADIMIR J. OKULITCH

GEOLOGY OF THE BLACK RIVER GROUP
IN THE VICINITY OF MONTREAL.

The rocks of the Black River Group (Middle Ordovician) in the vicinity of Montreal outcrop in a narrow belt which traverses across the Island of Montreal, Ile Bizard, and Ile Jesus. They comprise

three formations, the Pamela, Lowville, and Leray. The Pamela formation is ten feet thick and is made of impure dolomitic limestones and shaly limestones; the Lowville is sixteen feet thick and is made of fine-grained and oölitic, dove, thin-bedded limestones with frequent shaly partings; the Leray is twenty-two feet thick and consists of thick beds of black, light-weathering limestone, containing nodules of chert and irregularly horizontal streaks of brownish, sandy material. The formations thin out eastward, and probably were deposited in a narrow arm of the Black River sea, extending from Ottawa towards and beyond Montreal.

112 species of fossils, not counting ostracods and bryozoans were collected from the Black River of this vicinity; of these, 13 are new species, of which one is a new genus. The new species and genus are described and illustrated.

It is concluded that the Black River Group is distinct both palaeontologically and lithologically from the underlying Chazy and the overlying Trenton.

PH. D.

CHEMISTRY

ARGYLE CAMPBELL PLEWES

THE KINETICS OF THE OXIDATION OF MIXTURES
OF GASEOUS HYDROCARBONS WITH OTHER SUBSTANCES.

It has been suggested many times that aldehydes were of importance in the oxidation of saturated hydrocarbons. It would be expected that similar conditions would prevail during olefine oxidation. An investigation was therefore made of the oxidation of ethylene and ethane, and the effect of added substances—particularly acetaldehyde—on the rate of oxidation.

It was concluded that acetaldehyde and its products if oxidation were not of importance in the oxidation of saturated and unsaturated hydrocarbons; and the oxidation of saturated hydrocarbons proceeded by means of a primary dehydrogenation. More paraffin was cracked by the subsequent chain oxidation of the olefine.

The Bodenstein mechanism has been verified for unsaturated hydrocarbon oxidation. A new mechanism has been suggested for the oxidation of saturated hydrocarbons in general.

PH. D.

ECONOMICS

JOHN BUCHANAN ROLLIT

TRANSPORTATION AS A NATIONAL PROBLEM.

The writer points out the profound influence which the railways, as "equalizers of opportunity," have had in creating and maintaining the existing economic structure of Canada and how the recent development of competition from motor transport and, in lesser degree, air transport, threatens to make it impossible for them to continue this function, with serious consequences to the economic life of the nation. After a discussion of the vexed question of motor vehicle taxation and of the various means which might be taken to meet the growing competition from motor transport, it is concluded that the rationalisation of railway services (closer co-operation between our two great railway systems, or even their complete amalgamation, and the adoption of new units of railway rolling stock, such as the rail-car and oil-electric train), and the initiation of supplementary and auxiliary highway services by the railways offer the only practical solution.

PH. D.

PHYSIOLOGY

DOUGLAS ALLEN ROSS

PHYSIOLOGICAL ANALYSIS OF VIIIth NERVE RECEPTION.

This thesis covers several individual investigations.

SECTION I.—The responses of frogs, intact and operated, to turn-table rotation, have been graphically registered.

SECTION II.—Two equilibrial reactions, hitherto obtained only from frogs with labyrinthine operations, have been found to occur in normal frogs.

SECTION III.—With the string galvanometer, it has been found that the lagena is an auditory receptor in cypriniform fishes. The experimental evidence suggests that the saccular macula is a receptor for sound.

SECTION IV.—By the conditioned reflex method the cat has been tested as to reception of high auditory frequencies. The upper auditory limit has been found to be higher than was previously supposed. There is evidence that it may extend even above 60,000 cycles per second.

SECTION V.—A conditioned reflex method of testing the "time-sense" of animals has been evolved, and the results of a preliminary investigation on cats are given.

APPENDIX.—An improvement has been introduced into the "tube-coupled" circuit of E. R. Meissner. According to the theoretical analysis given, the voltage gain per stage may by it be increased by nearly 50 per cent. With one stage of amplification, measured D.C. voltage gains of over 3000 have been realized.

PH. D.

PHYSICS

WILLIAM BRUCE ROSS

INVESTIGATIONS ON THE KENNELLY-HEAVISIDE
AND APPLETON LAYERS.

Radio ionosphere investigations in connection with the International Polar Year, carried out in Montreal between January and August, 1933, using the amplitude variation method of Breit and Tuve, are described. Especial attention is paid to the variation of equivalent layer height with frequency, and a statistical analysis of the records is carried out. This clearly shows the presence of an intermediate reflecting layer and of "midnight E". The phenomenon of "persistent E" reflections is described and a number of typical curves are discussed. Comparison of the results with solar and meteorological records fails to show any correlation. Marked scattering in the values for maximum layer ionization is taken to be an indication of unstable conditions which permit the frequent occurrence of the above anomalous effects.

PH. D.

CHEMISTRY

J. K. RUSSELL

A STUDY OF THE NATURE OF VAPOUR SORPTION ON CELLULOSE.

The following measurements have been performed (1) the sorption of water vapor on beaten and unbeaten wood pulps. (2) The sorption of water on wood pulps which had been heated. (3) The sorption of methyl alcohol vapour on groundwood, unbleached kraft and bleached sulphite pulps. (4) The sorption of n-propyl alcohol vapour on bleached sulphite pulp and purified cotton both with and without preliminary washing of the samples with propyl alcohol. From the results of these measurements it has been concluded (1) That no chemical change takes place on the beating of pulps. (2) That the predominant factor governing the sorption of vapours on cellulose is the available volume within the cellulose structure and that this volume is governed by the internal tension of the sorbed liquid. (3) That adhesion between and within the fibres is a modifying factor in the available volume in the cellulose.

PH. D.

CHEMISTRY

H. R. SALLANS

1,5-DIKETONES: CYCLIC COMPOUNDS CONTAINING A CARBONYL GROUP;
A MECHANISM FOR THE FORMATION OF PIRYLUM SALTS.

Under the influence of alkali cyclic ketones of the cyclopentanone and cyclohexanone series add to chalcones forming semicyclic 1,5-diketones. Menthone an exception forms a bicyclic keto-alcohol containing a carbonyl bridge; the diketones may be dehydrated yielding closed ring structures and forming substances containing a similar bridge. The bridge in these compounds is not removed by heating. This behaviour is in marked contrast with that of similar ring systems produced by the Diels and Alder synthesis.

A second mode of ring closure results in the formation of perylum salts. Isolation of an oxygen heterocyclic methyl ether affords an intermediate step in the cyclicization, and has made it possible to formulate a plausible mechanism for this hitherto obscure reaction. Four varieties of salts are described, perchlorates, iron and antimony double salts of perylum chlorides, and tin double salts of perylum acetates.

PH. D.

CHEMISTRY

JAMES ALEXANDER SCARROW

ADDITION REACTIONS OF α -METHOXYBENZALACETOPHENONE.

Cyanoacetamide has been added to α -methoxybenzalacetophenone, with the production of a highly substituted piperidine. This, by the action of different reagents, has been converted into a number of pyridines and hydroxyridines.

Warm sulphuric acid opened the 6-membered ring of the addition product; and by a process involving the methoxyl-group, formed a new series of compounds having entirely different properties. These have been identified as heterocyclic 5-membered ring compounds by synthesis in another way. Some of the products, intermediate in this transition, have been isolated and described.

PH. D.

GEOLOGY

NORMAN R. SCHINDLER

IGNEOUS ROCKS OF DUPRAT AND ROUYN LAKE AREAS, QUEBEC.

A description is given of the geology of two areas fifteen miles apart; one, the Duprat lake area, is situated in a district characterized by massive copper deposits; the other, the Rouyn lake area, in a district of gold mineralization. A comparative study is made of the different types of metamorphism in the two areas.

The sodic character of the igneous rocks in both areas is stressed, and a discussion is given of the relations of this igneous assemblage to the "spilitic suite".

Composite intrusives of a peculiar type, encountered in the Duprat area, are fully described.

PH. D.

CHEMISTRY

ERNEST SOLOMON

KINETICS OF HOMOGENEOUS GAS REACTIONS AT HIGH PRESSURES.

Previous investigations of the kinetics of homogeneous unimolecular gas reactions have never been carried out in a high pressure region. A new apparatus and technique is described whereby it is possible to investigate these reactions over a wide pressure range.

This apparatus has been applied to the investigation of the decomposition of ethyl ether at 426°C. from 2,000 to 14,500 cms. The rate of reaction is found to increase with pressure to 10,000 cms. and then remain constant.

Due to the inability of current unimolecular theories to account for the results obtained, it is proposed to modify these theories. It is shown that by assuming that the number of degrees of freedom involved varies with the time between molecular collisions it is possible to explain these results. This theory is elaborated and shown to be a valuable addition to unimolecular theory.

PH. D.

CHEMISTRY

SAUL MICHAEL TRISTER

SYNTHESIS, STRUCTURE & PROPERTIES OF CYCLIC ACETALS.

Propionaldehyde, isobutyraldehyde, trimethylacetaldehyde, and dibromacetaldehyde have been condensed with glycerol, the isomeric five- and six-membered glycerol acetals isolated in each case, and their structure and physical properties determined and compared with those of related compounds.

The ratio in which the two isomers are formed from the different aldehydes has been carefully determined in each case and shown to depend to a marked degree, on the popularity of the aldehyde in question. The case of glycerol cyclic acetal formation (total mixed glycerol acetal formation) is shown to decrease, with increase in the negative polarity of the aldehyde group, while the proportion of the five- to the six-membered acetal increases.

This work has furnished further information on (a) ring-partition; (b) ring-migration; (c) the influence of polar radicals, or atoms, on the ease and nature of acetal condensations involving glycerol.

PH. D.

EXPERIMENTAL MEDICINE

ELEANOR M. VENNING

EXPERIMENTAL STUDY OF BLOOD FATS IN HEALTH AND DISEASE.

The study of blood fats has been divided into five sections.

I. Methods for the extraction and estimation of total fat, fatty acid, cholesterol, iodine number and lipid phosphorus, in blood and tissue have been carefully tested. The Stewart and White method has been shown to give erroneous values for fatty acid and a modified method has been worked out for the estimation of this substance.

II. The fasting level of blood lipoids in normal man has been determined and a moderate increase in these values has been shown to occur following the ingestion of 70 gms. of fat. In cases of mental depression the fasting blood lipoids are increased and a greater response occurs following the fat meal.

Fasting causes a preliminary decrease followed by an increase in plasma fatty acids, and the ingestion of 100 gms. of glucose a marked decrease in both normal and mentally depressed cases.

III. The changes occurring in the fat content of arterial and venous blood, muscle and liver due to muscular exercise, have been determined in the starved, phloridzinized and depancreatized animal.

Following exercise, the venous fats are lowered in the depancreatized animal while only slight differences occur between the arterial and venous fats in the fasted and phloridzinized animal. All the results are obscured by changes occurring in the concentration of the blood during exercise.

The muscles of these animals show a decrease in their fat content following exercise. No significant change in the fat content of the liver of the 24-hour fasted rat could be detected.

IV. The reported increase in plasma fatty acids following adrenalin injections have been shown to be due to faulty methods. Adrenalin has no effect upon the level of plasma fatty acids in the intact, decerebrated, or eviscerated cat. The changes occurring in the liver fats in rats following adrenalin injections are not great enough to warrant any positive conclusions.

V. The changes occurring in the blood fats following hepatectomy have been studied. The plasma fatty acids and cholesterol decrease at a faster rate in the hepatectomized than in the control cats. The iodine number rises sharply following hepatectomy, to a peak, and falls off again, and there is a rapid decrease in the phospholipids. No changes could be detected in the muscle fats.

PH. D.

PHYSIOLOGY

ARTHUR M. VINEBERG

SOME ASPECTS OF THE MECHANISM OF GASTRIC SECRETION.

It was found that, when electrical induction currents of varied strengths were applied to the vagus nerves of a dog, different types of gastric secretion were obtained. A weak stimulation produced a scanty flow of gastric secretion which was composed largely of alkaline mucus. A strong stimulus, on the other hand, resulted in a copious secretion of gastric juice having a high acid and enzyme content. Similarly certain chemical stimulants were found to activate special groups of cellular elements in the gastric mucosa. Thus histamine stimulated chiefly the acid-producing, pilocarpine mainly the pepsin-producing group. A histological study of the gastric mucosa before and after strong vagal or histamine stimulation showed marked changes in the peptic cells after prolonged vagal stimulation with only slight changes after histamine stimulation. The oesophagus was proved to be a source of the mucus found in the gastric secretion. This oesophageal mucus is produced in response to strong vagal stimulation and the mechanism of its production was shown to be a true secretory process. It was found that there is a blood chemical mechanism which exerts a general influence upon gastric secretion. When the CO₂ content of the blood is lowered below 30 vols. per cent., either by means of hyperventilation or by the production of a condition of acidosis, vagal or histamine stimulation fails to produce secretion.

PH. D.

CHEMISTRY

FRANKLIN BURNHAM WELLS

PART I.—THE CYANOCYCLOPROPANES.

1. Cyanoacetamide, malononitrile, and cyanoacetic acid added to vinyl phenyl ketone to form tri-molecular compounds.
2. Benzyl cyanide and p-nitrobenzyl cyanide did not add to vinyl phenyl ketone.
3. α -phenyl cinnamonitrile and p-nitrobenzyl cyanide reacted to form 1,3-dicyano-1,2-diphenyl-3-p-nitrophenyl propane, but this substance was intractable.
4. Benzaldehyde and benzyl cyanide did not react to form benzal bis benzyl cyanide.
5. The addition product of anthrone and benzal acetophenone had two carbonyl groups but would form a monoxime only.

PART II.—TRIVALENT ASYMMETRIC ARSENIC.

Three cyclic chloriarsines have been prepared, two of which gave evidence of optical activity while the third did not.

7-chloro-7,12-dihydro- γ -benzo-phenarsazine, prepared from phenyl- α -naphthylamine and arsenic trichloride, gave two diamers on treatment with silver- α -bromocamphorsulphonate.

When 12-chloro-7,12-dihydro- α -benzo-phenarsazine, prepared from phenyl- β -naphthylamine and arsenic trichloride, was treated with silver- α -bromocamphorsulphonate, two inactive compounds resulted.

One optically active compound was produced by the action of silver- α -bromocamphorsulphonate on 7-chloro-9-methyl-7,12-dihydro- γ -benzo-phenarsazine which was prepared from p-tolyl- α -naphthylamine and arsenic trichloride.