The University
OF
British Columbia

CALENDAR

FOURTEENTH SESSION
1928 - 1929

VANCOUVER, BRITISH COLUMBIA
1928

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CONTENTS

Faculty of Arts and Science

Faculty of Applied Science

FACULTY OF AGRICULTURE

ACADEMIC YEAR 1928-1929

1928 **Monday,** August 27th.	Matriculation Supplemental Examinations begin.
Wednesday, September 12th.	Supplemental Examinations in Arts begin.
Tuesday, September 18th.	Supplemental Examinations in Applied Science begin.
Wednesday, September 19th,	Last day for Registration of First Year Students in the Faculties of Arts and Science, and Agriculture.
Friday, September 21st.	Last day for Registration of all other students.
Monday, September 24th.	Lectures begin.
Monday, October 8th.	Last day for payment of First Term fees.
Saturday, October 13th.	Last day for Change in Students' Courses.
Wednesday, October 17th.	Meeting of the Senate.
Friday, December 7th.	Last day of Lectures for Term.
Monday, December 10th.	Examinations begin.
Wednesday, December 19th.	Meeting of the Senate.
Thursday, December 20th.	Examinations end.

1929 Monday, January 7th.	Second Term begins.
Monday, January 21st.	Last day for payment of Second Term fees.
Wednesday, February 20th.	Meeting of the Senate.
Thursday, April 11th.	Last day of Lectures.
Monday, April 15th.	Sessional Examinations begin. Field Work in Applied Science begins immediately at the close of the Examinations.
Thursday, April 25th.	Last day for payment of Graduation fees.
Wednesday, May 8th.	Meeting of the Senate.
Thursday, May 9th.	Congregation.
Thursday, May 9th.	Meeting of Convocation.
Monday, June 24th.	Junior Matriculation Examinations begin. (Date of Senior Matriculation Examinations to be arranged.)
Friday, August 30th.	Meeting of the Senate.

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The Principal of Victoria Normal School, D. L. MACLAURIN, ESQ., B.A.

(*e*) Representative of High School Principals and Assistants, ...

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The Anglican Theological College of British Columbia, Vancouver, REV. W. H. VANCE, M.A., D.D.

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THE UNIVERSITY OF BRITISH COLUMBIA

HISTORICAL SKETCH

The creation of a University in British Columbia was first advocated by Superintendent Jessop in 1877, but it was not until 1890 that the Provincial Legislature passed an Act establishing a body politic and corporate named "The University of British Columbia." In 1891 this Act was amended to require that a meeting of the Senate be held within one month after the election of the Senators by Convocation. The Senators were elected, but a quorum did not assemble on the date fixed by the Chancellor, Dr. I. W. Powell, of Victoria. Thus the first attempt to establish a University in British Columbia failed.

However, some of the work normally done in a University was begun in 1894, when an Act was passed which permitted the affiliation of high schools in the Province with recognized Canadian Universities. In 1899 Vancouver High School was affiliated with McGill University in order to provide First Year work in Arts, and took the name of Vancouver College. First Year work in Arts was offered by Victoria High School when it became Victoria College by affiliation with McGill University in 1902. In the same year Vancouver College undertook the Second Year in Arts.

In 1906 an Act was passed incorporating the Royal Institution for the Advancement of Learning of British Columbia, which, in the same year, established at Vancouver the McGill University College of British Columbia. The scope of the work undertaken by this college was gradually increased until at the time it was taken over by the University of British Columbia it was giving three years in Arts and Science, and two years in Applied Science. When the University of British Columbia opened in the autumn of 1915, both the McGill University College of Vancouver and Victoria College, which since 1907 had been a part of it, ceased to exist.

Definite steps to establish the University were taken by Dr. H. E. Young, Minister of Education, in 1907, when he introduced a "University Endowment Act." This Act was followed in 1908 by an Act establishing and incorporating the University of British Columbia and repealing the old Act of 1890-1. This Act, with its subsequent amendments, determines the present constitution of the University.

As authorized by an Act passed by the Provincial Legislature in 1910, the Lieutenant-Governor in Council appointed a Site Commission to decide upon a site for the proposed University. The Commission held its first meeting on May 25th, 1910, in Victoria, and after a thorough examination of the Province recommended the vicinity of Vancouver. In the autumn the Executive Council decided to place the University at Point Grey—the site which the Commission had named as its first choice. In 1911 the Legislature passed an Act authorizing the Lieutenant-Governor in Council to grant this site to the University. The grant was increased in 1915, so that it now consists of 548 acres at the extremity of Point Grey. The waters of the Gulf of Georgia form more than half the boundary of the University Campus. A tract of some 3,000 acres of Government land immediately adjoining the site, and lying between it and the City of Vancouver, has been set aside by the Government in order that University revenue may be provided by its sale or lease.

In February, 1912, the Hon. H. E. Young, Minister of Education, called for competitive plans which should include plans in detail for four buildings to be erected immediately, and a block plan showing all the proposed buildings on the Campus. Messrs. Sharp and Thompson, of Vancouver, B. C., were the successful competitors, and were appointed University architects.

The first Convocation, held on August 1st, 1912, chose Mr. F. L. Carter-Cotton as first chancellor of the University. In March, 1913, the Lieutenant-Governor in Council appointed as President of the University F. F. Wesbrook, M.A., M.D., C.M., LL.D. On April 4th, 1918, Dr. R. E. McKechnie was elected

Chancellor; on April 12th, 1921, he was re-elected for a second term; on April 3rd, 1924, for a third term, and on April 7th, 1927, for a fourth term. On the death of President Wesbrook, October 20th, 1918, L. S. Klinck, Dean of the Faculty of Agriculture, was appointed acting President, and on June 1st, 1919, President.

From its opening in 1915 till the Summer of 1925, the University carried on its work in temporary quarters on part of the site of the General Hospital in Fairview.

Construction work was commenced on the Science Building at the permanent site in Point Grey in 1914, but was interrupted because of war conditions. Work on this building was resumed in 1923, and in the Autumn of the same year the contract was let for the Library. These two buildings which are of stone and are fire-proof, conform closely to the original plans as prepared by the architects in 1914. The initial units of these structures, as well as nine other buildings which are of a less permanent character and are described at a later page in this Calendar, were completed in 1925, and at the beginning of Session 1925-26 the University commenced work in its new quarters.

The Inauguration of the new buildings was held on October 15th and 16th, 1925, on which occasion honorary degrees were granted by the University for the first time.

THE CONSTITUTION OF THE UNIVERSITY

The Constitution of the University is governed by the British Columbia University Act B.C.R.S. 1924 c. 265, which provides

> That the University shall consist of a Chancellor, Convocation, Board of Governors, Senate, and the Faculties; that the first Convocation shall consist of all graduates of any university in His Majesty's dominions resident in the Province two years prior to the date fixed for the first meeting of Convocation, together with twenty-five members selected by the Lieutenant-Governor in Council. After the first Convocation it shall consist of the Chancellor, Senate, members of the first Convoca-

tion, and all graduates of the University; that the Chancellor shall be elected by Convocation; that the Board of Governors shall consist of the Chancellor, President, and nine persons appointed by the Lieutenant Governor in Council; that the Senate shall consist of: (*a*) The Minister of Education, the Chancellor, and the President of the University, who shall be Chairman thereof; (*b*) the deans and two professors of each of the Faculties elected by members of the Faculty; (*c*) three members to be appointed by the Lieutenant-Governor in Council; (*d*) the Superintendent of Education, the principals of the normal schools; (*e*) one member elected by the high-school principals and assistants who are actually engaged in teaching; (*f*) one member elected by the Provincial Teachers' Institute organized under subsection (*e*) of section 8 of the "Public Schools Act"; (*g*) one member to be elected by the governing body of every affiliated college or school in this Province; (*h*) fifteen members to be elected by Convocation from the members thereof;

It is further provided that the University shall be non-sectarian.

The University Act gives the University full powers to grant such degrees in the several Faculties and different branches of Knowledge as the Senate may from time to time determine. It reserves for the University the sole right in this Province to confer degrees, except in Theology, and it expressly enacts that "No other university having corporate powers capable of being exercised within the Province shall be known by the same name, nor shall any such university have power to grant degrees."

THE WORK OF THE UNIVERSITY

The University of British Columbia is an integral part of the public educational system of the Province, and its function is to complete the work begun in the public and high schools.

It is the policy of the University to promote education in general, and in particular to serve its constituency through three channels—teaching, research, and extension work.

As regards teaching, the University furnishes instruction in the various branches of a liberal education and in those technical departments which are most directly related to the life and industries of the Province. The scope of the teaching activity of the University is fully described in Sec. 9 of the Act.

In order to make the teaching of the University more vital and for the advancement of knowledge, research is encouraged in every department.

The people of the Province are informed of the results of special work by the staff of the University through a system of extension lectures. The University sends lecturers to various parts of the Province during the examination weeks in December and April. In the case of places which can be visited without prejudice to the duties of the lecturer at the University, lectures are arranged to take place during the University term. A list of subjects and lecturers can be obtained on application to the Secretary of the Extension Lecture Committee, through whom all arrangements are made.

RETIRING ALLOWANCES

In March, 1924, the Board of Governors of the University of British Columbia adopted the contributory plan of retiring allowances for members of the teaching staff. Contracts are placed with the Teachers' Insurance and Annuity Association of America, a corporation made possible by the Carnegie Corporation "to provide insurance and annuities for teachers and other persons employed by colleges, by universities, or by institutions engaged primarily in educational or research work."

In May, 1924, the University of British Columbia was elected as a member of the list of institutions associated with the Carnegie Foundation for the Advancement of Teaching and received a grant of $50,000.00, payable in ten annual installments, for the purpose of providing supplementary annuities for the older professors of the institution.

ENDOWMENTS AND DONATIONS

However well supported by public funds, a University must depend to a great extent upon private benefactors. In anticipation of endowments the Act provides that:

> "Any person or corporation may, with the approval of the Senate, found one or more professorships, lectureships, fellowships, scholarships, exhibitions, prizes, or other awards in the University, by providing a sufficient endowment in land or other property, and conveying the same to the University for such purposes, and every such endowment of lands or other property shall be vested in the University for the purpose or purposes for which it is given."

Only a limited number are in a position to make endowments, but many—including alumni and friends of higher education—may add greatly to the usefulness of the University by making contributions that lie within their power. It is gratifying to note that the number of those who assist in this way has been constantly growing.

The removal of the University to its permanent home in Point Grey has greatly stimulated interest in its welfare and progress, and within the last two years many valuable donations have been received, especially in the form of equipment for the various Laboratories.

Among donations received recently special mention should be made of the very fine Ethnological collection representing the arts, handicraft and weapons of Polynesia donated to the University by Mr. Frank Burnett, Sr., and also of the estate of the late Mr. David Thom, of Hammond, B. C., bequeathed by him to the Faculty of Agriculture. Mr. Thom left his entire estate, consisting of a farm of thirty-five acres and cash and bonds amounting to fifty-five hundred dollars—a total net value of approximately eleven thousand dollars, to be used for the assistance and encouragement of students in the Faculty of Agriculture.

The Royal Institution for the Advancement of Learning of British Columbia presented to the University a life-size

portrait of the late Francis Lovett Carter-Cotton, LL.D., first Chancellor of The University of British Columbia. The painting is by Mr. F. Horsman Varley, A.R.C.A.

At a public ceremony presided over by the Chancellor of the University, the Governor of the Hudson's Bay Company, Mr. Charles V. Sale, presented to the University the collection of paintings known as the Hudson's Bay Company and the Native Sons of British Columbia Permanent Loan Collection. These valuable historical canvasses, eight in number, represent early scenes in the history of the Province of British Columbia. The pictures were painted by Mr. John Innes, of Vancouver, and are hung in the Library.

The subjects are:

1. Commander Vancouver's meeting with Spaniards off Point Grey, A.D. 1792.

2. Alexander Mackenzie recording his arrival at the Pacific, A.D. 1793.

3. Simon Fraser in the Fraser Canyon on his journey to the sea, A.D. 1808.

4. The Hudson's Bay Company's fur brigade passing down the Okanagan, A.D. 1825-35.

5. James Douglas building the Hudson's Bay Post at Victoria, A.D. 1843.

6. James Douglas taking the oath as first Governor of British Columbia, A.D. 1858.

7. Finding of placer gold by pioneer miners in the Cariboo, about A.D. 1858.

8. The overland pioneers journeying through the Rockies, A.D. 1862.

A list of the other most important gifts received during last year is given below under the various departments.

Department of Botany

(For Herbarium and Botanical Gardens)

SEEDS

Royal Botanic Gardens, Edinburgh.
Royal Botanic Gardens, Kew (England).
New York Botanical Gardens.
Brooklyn Botanical Gardens.
Botanic Garden, Darjeeling.
Botanic Garden, Polonia.
Arnold Arboretum, Massachusetts.
Mr. John Hutchison, Victoria.
Dr. G. B. Sudworth, Washington, D.C.
Dr. O. Malte, Ottawa.
Prof. F. J. Lewis, Edmonton.
R. Salgues, Brignoles, France.
Odessa Botanical Gardens, Odessa.

HERBARIUM SPECIMENS

Prof. M. L. Fernald, Gray Herbarium.
J. W. Adams, University of Pennsylvania.
Dr. G. A. Purpus, Mexico.
Prof. W. L. Jepson, University of California.
Miss J. Bostock, Monte Creek, B. C.
Mrs. J. P. MacFadden, New Denver, B. C.
R. Glendenning, Esq., Agassiz.
A. E. Pickford, Esq., Victoria.

Department of Forestry

J. Fyfe Smith & Co., Ltd.—Exhibit woods, North American and foreign.
Dominion Forest Service—Hand specimen collection of Canadian woods; forestry publications.
New York State College of Forestry—Hand specimen collection of American woods.
United States Forest Service—Hand specimen collection of American woods; forestry publications.
Arthur Woodhouse—Six blueprints showing details of logging railroad structures.
Forests Department, Government of Western Australia—Exhibit specimens of commercial woods of Western Australia.

Department of Geology

Broken Hill Mining Managers' Association, Australia—Suite of ores.
Britannia Mines, B. C.—Suite of ores.
B. C. Nicholas—Geological survey of Canada reports.
Crow's Nest Pass Coal Co. Ltd.—Museum specimens of coal.
Major A. W. Davis—Suite of ores and rocks from the Monarch Mine and Kicking Horse Mine at Field.
J. Giegerich—Suite of rocks and ores from Chuquicamata, Chili.
F. F. Osborne—Minerals from Eastern Ontario and New York.
Dr. S. J. Schofield—Suite of rocks and ores from the Galena Farm Mine, B. C.
C. H. Stockwell—Rocks and ores.
S. S. Saunders—Metallic arsenic.

Department of Mechanical and Electrical Engineering

Messrs. The B. C. Electric Railway Co.—Rotary converter, special transformer, switch panel and instruments complete. All new and ordered by us. The bill paid by the B. C. Electric.
Messrs. The B. C. Electric Railway Co.—Single-phase rotary converter (used).
Messrs. The B. C. Electric Railway Co.—Standard bridge.
Messrs. The B. C. Electric Railway Co.—Siemens dynamometer and collection of instruments.
Messrs. Park Royal Engineering Co., London, England—Two switch panels, switches, circuit breakers and instruments to control Metropolitan Vickers generators.
Messrs. Park Royal Engineering Co., London, England—Case of instruments, ammeters, voltmeters, etc.
Messrs. Ferranti, Ltd., London, England—Two cases of instruments, ammeters, voltmeters, frequency meters, current transformers.
Messrs. Brook Ltd., Huddersfield, England—Squirrel cage induction motor, 10 H.P.
Messrs. Brittain, Ltd., London, England—Slip ring induction motor, 5 H.P.
Messrs. Reyrolle & Co., Newcastle-on-Tyne—Switch-gear mining panel, with relays, etc.

Messrs. Reyrolle & Co., Newcastle-on-Tyne—Wall plugs and fittings.
Messrs. The British Insulated & Helsby Cable Co.—Two cases of cable samples.
The Provincial Government—Compound engine and boiler.
Mr. Robert Sweatt, Vancouver—Coppus blower.
Messrs. The Hart Accumulator Co., Quebec—Accumulator panel.
Messrs. The Prestolite Battery Co., Vancouver—Six large car batteries.
Messrs. George Ellison, Birmingham, England—Switch gear, auto starters, star delta starters, slip-ring resistance starters and oil switches.
Messrs. Chas. Taylor & Co., Birmingham, England—Patent lathe, chuck and vice.
Dr. R. E. McKechnie, Vancouver—X-ray equipment.
In addition, the majority of the units in the Electrical and Mechanical Engineering Laboratories have been supplied by the makers at cost price.

SUGGESTED LOCAL SCHOLARSHIPS

As the number of Matriculation Scholarships offered at present is quite inadequate to the needs of the Province, a scheme which has great possibilities both for the growth of the University and the prosperity of the Province is earnestly recommended to consideration.

In the large universities, both of Great Britain and the United States, local or district scholarships have proved a strong bond between the community and the University, have brought the University close to the life of the young, and opened up the prospect of a University education to many who would not otherwise have contemplated it.

Such local or district scholarships might be established as Matriculation Scholarships, by City or Municipal Councils or other public bodies, or by private benefactors. They would be awarded by a local authority, but the University would reserve the right of confirmation.

In awarding such scholarships, standing in the Matriculation Examination need not be the only consideration. It is desirable that regard should be had also to financial circumstances, character, and intellectual promise. Scholarships may be offered for students taking a particular course, and in this way the study of such sciences and technical branches of knowledge as have special importance for the industries of the district may be encouraged. In short, local scholarships may be arranged to meet local needs and to prepare the native sons of the Province to play their part in the development of its resources.

THE LIBRARY

The University Library consists of 65,000 volumes and about 10,000 pamphlets. It includes representative works in all the courses offered by the University, and a growing collection of works on other subjects.

The Library receives regularly about 500 magazines and periodical publications.

The book collection is classified throughout on the Congressional system.

Books can be borrowed by students for a period of seven days, or for a shorter time should the work be in general demand. Books to which the teaching staff have specially referred their students are placed in a "Reserved" class. These are shelved apart from the main collection, and are loaned only for use in the building, and for a limited period of two hours. They may, however, be taken from the Library for over-night loan, or for any period in which the Library is closed. In these cases they are returnable before 9 a.m., or, in the case of students of classes meeting at 8:45 a.m., before 10 a.m.

Unbound periodicals are not loaned. Bound periodicals, and books that are costly, rare, or unsuitable for general circulation, are loaned only under special conditions.

While the Library is primarily for the use of the staff and students of the University, its resources are available to those of the general public engaged in research or special study, and who make personal application to the Librarian for the privilege of its use.

During the session the Library is open on week days from 8:45 a.m. to 9:45 p.m., except on Saturdays, when the hour of closing is 5 p.m. In vacation it is open from 9 a.m. to 4 p.m., except on Saturdays, when the hours are from 9 a.m. to noon.

The University is deeply indebted to all who have made gifts to the Library during the past year. These have been both valuable and numerous. Their number prevents detailed acknowledgment, but recognition should be made of a number of sets of transactions, and complete or partial sets of scientific periodicals, given by societies and friends of the University.

NEW BUILDINGS

LOCATION

The new home of the University is situated on the promontory which forms the western extremity of the Point Grey Peninsula. On three sides it is bounded by the Gulf of Georgia. The site comprises an area of 548 acres, of which approximatley one-half is campus. In all directions appear snow-capped mountains, strikingly rugged and impressive.

BUILDINGS

The buildings, planned to meet the requirements of fifteen hundred students, are of two classes, permanent and semi-permanent. The former were designed by the University architects, Messrs. Sharp and Thompson, the latter by architects of the Department of Public Works of the Provincial Government. The permanent buildings have been erected in the location originally assigned for them; the others in the quadrangle designated as "unassigned" in the original plan. By utilizing the "unassigned" area for the semi-permanent buildings, all the locations intended for future expansion have been left available.

The entire mechanical equipment of these buildings was designed after a close study had been made not only of present requirements, but of the ultimate development of the institution. This consideration accounts for the fact that only a part of the present equipment is permanent. After a careful survey of the whole system, a forced hot water system was found to present advantages that made its adoption advisable. Direct radiation with a system of warmed air supply and extraction for ventilation is used to take care of the heat losses in the buildings. A separate system of ventilation is installed for all sanitary conveniences, and a specially constructed system for fume closets. The various services throughout these buildings, such as hot and cold water, distilled water, gas and steam for laboratory purposes, compressed air, etc., with the necessary apparatus, are all of a modern type. An attempt has been made to reduce

vibration and noise to a minimum by installing all moving apparatus on floating slabs, with a further insulation of cork.

The plan at the back of the Calendar shows the buildings which have been erected and indicates the nature of their construction. It also shows their relation to the other groups of buildings which are to be erected in the future.

PERMANENT BUILDINGS

Of the twelve buildings which have been erected, three are of fire-proof construction, the Science Building, the Library, and the Power House.

Science Building

The Science Building has been designed in the Tudor style, this being a phase of English Gothic which lends itself fairly readily to those adaptations which are necessary in order to meet modern collegiate requirements. Externally, British Columbia granite has been used throughout. Wherever possible plain wall surfaces, consisting of the split faces of granite arranged in random sizes with white joints, have been used. The general grey tone is relieved by the use of a small quantity of field stone of darker shades. All window openings are filled with leaded glass in steel sashes. Internally, the building is finished in brick work and tiles in pleasing tones of brown which harmonize with the oak panelled doors, the total effect in keeping with that of the period it is designed to represent.

This building, which was designed for the sole use of Chemistry ultimately, now accommodates the Departments of Chemistry, Physics, Bacteriology and Nursing and Health. One and one-half floors are devoted to Chemistry; an equivalent assignment of space has been alloted to Physics, and half of one floor has been set aside for Bacteriology, and Nursing and Health. All lecture rooms and laboratories are well lighted, and a system of forced ventilation has been installed throughout the entire building. Distilled water, gas, steam, compressed air, and electrical supply circuits have been provided wherever re-

quired. These services are carried in trenches in the floor, an arrangement which facilitates any necessary repairs.

Ample provision has also been made for offices, balance rooms, preparation rooms, apparatus rooms, supply rooms, photographic rooms, technicians' rooms, and reading-room for students.

Chemistry.—This Department is equipped with one large and one small lecture room, a large laboratory for general chemistry accommodating three hundred and forty students, laboratories for elementary and advanced qualitative and quantitative analysis, an elementary organic laboratory, an advanced organic laboratory and an organic combustion laboratory. A laboratory is available for agricultural chemistry, another for industrial chemistry, and a commodious laboratory for physical chemistry with an adjoining dark room for work in photo-chemistry is found on the third floor. There are also several small laboratories well equipped for research work.

Physics.—The Department of Physics has two large lecture rooms, four large and several smaller laboratories, a constant temperature room and a battery room. Three of the large laboratories are equipped for the study of Elementary Physics, Mechanics, and Heat and Electricity. The fourth is specially designed for the conducting of experiments requiring the use of highly sensitive apparatus. Smaller laboratories are designed for light and X-ray experiments.

Bacteriology.—Provision has been made in this Department for four laboratories. Two of these are for general student use, one is for serological work and one is for advanced research. In addition to laboratory and lecture room accommodation, an office, a preparation room and a sterilization room have been provided.

Nursing and Health.—The three rooms assigned to this Department constitute a teaching unit such as is provided in modern training schools for the instruction of nurses. All the equipment necessary for the demonstration of elementary

nursing procedure is available, and can be used for practice teaching purposes.

Library Building

The central unit of the Library Building is a massive structure of British Columbia granite which harmonizes with the Science Building in its Gothic architectural lines. Owing to the exigencies of the plan, however, the massing is more broken, and thus better effects of light and shade are obtained. Some tracery and stained glass in the upper portion of the building is employed to obtain in a restricted manner the richness of detail characteristic of this style of architecture.

Internally, the same effect has been striven for, wherever such an end was possible with due regard to economy. The Main Entrance Hall has a groined ceiling with arches and wall surface finished in Caen Stone plaster. This treatment is carried up to the Main Concourse floor through the staircase Hall; the lower portion of the Concourse walls is plastered with Caen Stone, the quoins to windows and doors, and corbels to roof trusses being finished in the same material. The roofs of the Concourse and of the two reading rooms adjacent are finished in native woods stained a dark brown, with patterae and shields picked out in bright heraldic colours. Windows throughout the building are of leaded glass. In the Concourse and the inner hall this is of a pale amber shade, with the coats of arms of the Canadian Universities worked into the centre light. On the window above the Loan Desk on the East Side of the Concourse the armorial bearings of Oxford and Cambridge, as the oldest universities of the Empire, are used as flanking emblems to those of the University of British Columbia. The floors of the Main Entrance Hall staircases and of the Concourse are finished with large marbled rubber tiles which harmonize with the general colour scheme, and ensure quietness in the principal parts of the building. Plain oak of simple detail, stained to represent old fumed oak, is used throughout for doors and other wood finish.

The principal reading room has a floor space of 100 ft. by 50 ft. and is 60 ft. in height. Two other reading rooms, each 60 ft. by

30 feet, open off the main reading room. These rooms provide accommodation for 250 students. The sixth and seventh tiers of the stack, not being required at present to house the University book collection, are used as a periodical room, and will accommodate about fifty readers. The Stack, which occupies the entire rear of the building, consists of seven tiers, four of which are fully equipped with steel stacks of the latest design. Here fifty-two semi-private study "carrels" facilitate research for advanced students. The offices of the Librarian and the Library Staff provide ample accommodation for receiving, cataloguing and accessioning. The Faculty common room, the "Browsing" room, and the Frank Burnett museum are also located in this building. The Burnett collection represents the arts, handicraft and weapons of Polynesia. This collection, which has been presented by Mr. Burnett to the University, is the result of numerous voyages made by him to the Central and South Pacific Islands. It constitutes one of the finest collections of this class of material yet accumulated by any private collector.

Power House

The Power House has been placed in the centre of the space which will ultimately be the Engineering Quadrangle, and will therefore eventually be masked by the future permanent buildings towards the Mall. For this reason it does not pretend to follow very closely the style of the other permanent buildings except in mass, being finished in rough case of broken texture, relieved with red quarry tiles as diapers, copings and offsets, with windows grouped as far as possible to give pleasing proportions of voids and solids.

The ultimate development of this plant will be 2500 horse power at normal rating. The present installation consists of three units, each of 250 horse power normal rating, capable of developing 100 per cent. in excess of this. Each unit, so equipped as to operate independently of the others, may act as a service as well as an experimental station. In other words, on any one boiler an experimental test may be conducted while the rest

of the plant is cut in on the service lines. Instruments are provided to record every operation so that close checking and comparisons of the performance of the different types of boilers may be made to a degree.

The B. & W. Unit is equipped with B. & W. Natural Draft Stoker, the Sterling Boiler with forced draft Coxe Travelling Grate. The Kidwell with forced draft Coxe Travelling Grate is also equipped with air pre-heater, by-passed, so that tests may be conducted with or without pre-heated air. Induced draft is used with individual forced draft fans; separate boiler feed lines and pump with Linehart Scale provide boiler feed for tests. A travelling weigh scale records the amount of coal used, while a steam jet ash conveyor elevates the ashes to an overhead bunker.

The efficiency and flexibility of the plant lends itself to economical operation, while the knowledge gained in the use of different appliances will be of interest and value to power plant users.

SEMI-PERMANENT BUILDINGS

In this group there are nine buildings in all,—Administration, Auditorium and Grill room, Arts, Applied Science, Agriculture; three Engineering Buildings—Mechanical, Electrical; Mining, Metallurgy and Hydraulics; and the Forest Products Laboratory Building. These buildings, which are set on concrete foundations, are of frame construction with stucco finish, and are designed for a life of forty years. Their exterior design harmonizes with the permanent buildings so far as materials of construction will permit. With the exception of a part of the Engineering Laboratories, these buildings have been finished internally with plaster and fir trim.

Administration Building

On the ground floor of this building are situated the offices of the President, the Dean of the Faculty of Arts and Science, the Registrar, and the Bursar. On the second floor are two large rooms, one for meetings of the Board of Governors and

the Senate, and the other for meetings of Faculties and Committees.

Auditorium Building

The Auditorium Building is designed in a pleasing treatment of Renaissance architecture and is furnished with the most modern equipment. It has a seating capacity of 1029, a large and admirably equipped stage for the encouragement of dramatic presentations, an orchestra pit and adequate off-stage dressing rooms. Provision has been made for the operating of moving pictures and the stage is equipped with a cyclorama and all necessary electrical illumination devices.

The Grill room is situated in the basement and is designed to accommodate 400 students at one time. There is also a small dining room for the Faculty. The kitchen is furnished with the latest cooking and baking equipment.

The bookstore, post office, medical offices, women's rest room, students' council offices, and numerous committee rooms for subsidiary organizations are also located in this building.

Arts Building

In the Arts Building, which forms the centre of the semi-permanent group, are located the lecture rooms and offices for the following Departments in the Faculty of Arts and Science: Classics, Economics, Sociology and Political Science, Education, English, History, Mathematics, Modern Languages and Philosophy.

The lecture rooms, 16 in number, are well designed and exceptionally well lighted. The largest room accommodates 250 students; the seating capacity of the others ranges from 32 to 64. Four common rooms for the undergraduates in Arts and Science are located in this building, as is also the office of the Dean of Women.

Applied Science Building

This building houses the Departments of Geology, Botany, Zoology, Forestry and the drafting rooms and offices for Civil

Engineering. All the laboratories have been equipped with the essential services. One large lecture room, providing accommodations for 250 students, and 11 smaller lecture rooms with a seating capacity ranging from 25 to 112, are located in this building. These will be used by the different Departments jointly as class requirements may determine. Extensive provision has been made for drafting rooms and for the necessary offices, preparation rooms, storage rooms, and photographic rooms. A geological museum, a reading room and a common room for students have also been provided.

Geology.—In addition to the necessary lecture rooms, the Department of Geology has three large and well equipped laboratories, the Mineralogical, the Petrological and the Geological. There are also two small research laboratories, one for graduate students and one for the staff.

The Department workroom is well equipped for the preparation of specimens. The museum contains valuable collections of illustrative material which supplements the extensive working collections in the laboratories. The reading room is equipped with books, separates, maps, photographs and slides for reference.

Botany.—The Botanical laboratories include a large junior laboratory, a senior laboratory, two student research laboratories and three private research rooms. These laboratories are used for practical work in Botany and General Biology. A Herbarium of over 15,000 sheets and a botanical garden containing over 1000 specimens of native plants furnish an abundance of material for class room and laboratory purposes.

Zoology.—This Department, which includes courses in Entomology, has two large laboratories, a small research laboratory and two private laboratories, all well equipped. There is also a room for class material, which will serve for a time as a repository for museum collections and for specimens to be used for illustration.

Forestry.—While the Department of Forestry has its own laboratory for work in wood technology, its own class room

and offices, it uses the laboratories of other Departments quite extensively, notably those in Biology, Civil Engineering and Forest Products. The Department possesses, in the forest belt which has been preserved on the campus as a natural park, a very valuable outdoor laboratory for forestry students.

Civil Engineering.—Well equipped and well lighted draughting and designing rooms are available for all classes in drawing, mapping, machine design and computation work. The equipment necessary for all types of Civil Engineering work is available. The hydraulic laboratory, which is situated in the Mining, Metallurgy and Hydraulics Building, is well equipped for demonstrations and tests covering the main field of hydraulic principles and machinery; while in the Forest Products Laboratory, which is at the disposal of students in Civil Engineering, excellent facilities are available for extensive tests of timber, cement and steel.

Agriculture Building

This building accommodates the Departments of Agronomy, Animal Husbandry, Dairying, Horticulture and Poultry Husbandry. The office and record rooms for the Farm Survey studies are also located in this building.

The lecture rooms, of which there are four, are exceptionally well lighted. The largest accommodates 112 students, while the seating capacity of the others ranges from 36 to 54.

In addition to lecture and laboratory accommodation, provision has been made for the necessary offices, preparation rooms, storage rooms and also for a photographic dark room, a herd book room, and a students' common room.

Agronomy.—This Department is provided with a combined laboratory and lecture room which is equipped with water, gas and electricity. While this room will be used for studies in crop production, for the judging of specimens of plants and for the determination of soil samples, the main emphasis will be laid on the work conducted in the Department's outdoor laboratory—the Agronomy fields.

Animal Husbandry.—The different classes and types of livestock constitute the main laboratory material of this department. In this material and in the farm survey records, the Department possesses a wealth of data for teaching and illustration in farm management, livestock management, feed and nutrition, and studies in pedigree and breeding.

Dairying.—The new laboratories of the Department of Dairying provide facilities for conducting researches on the bacterial flora of milk, butter and cheese, and the relation of the flora to the production and sale of high quality products. Excellent provision is made for the instruction of students in the work indicated. Cheese-making and butter-making will be conducted in the temporary dairy building; but the new laboratories permit of closer contact of the various activities of the Department.

Horticulture.—In the laboratory provided for this Department, comprehensive studies supplement the practical experience of the students in the propagation, planting, pruning and care of horticultural crops. Materials for these purposes are provided from the orchard, the ornamental trees, shrubs and flowers, and from plants grown in the glass propagating house.

Poultry Husbandry.—In the poultry laboratory in the Agriculture Building, facilities and equipment are provided to assist in the study of poultry nutrition, disease, and other problems related to the industry. On the poultry plant, which is the main laboratory of the Poultry Department, ten pure breeds of commercial importance are tested and bred for egg and meat production. Experiments in management and marketing are conducted with these birds and their products.

Mechanical and Electrical Buildings

The Department of Mechanical and Electrical Engineering is housed in two large buildings. In both will be found the most-up-to-date equipment, enabling students to obtain a thorough experimental knowledge of all phases of the work in these departments. The mechanical laboratory contains a modern 3-ton CO_2 refrigerating plant; a large Corliss engine; a

two-stage air-compressor with inter-cooler; a 50 H.P. Mirrlees Bickerton & Day pure Diesel engine with Froude water brake; a De Laval Steam Turbine and D. C. generator with condenser; a gasoline engine and generator; a Crossley two-stroke oil engine and a National gas engine. A complete equipment exists for testing calorific values of fuel oils and coals, and also for testing exhaust gases of engines. There are also two steam engines, one a single cylinder engine and the other a compound engine. The mechanical students have available also the power-house equipment for testing, which consists of three 250 H.P. boilers—a Kidwell, a Babcock & Wilcox, and a Sterling. In addition, a 250-K.W. compound engine and generator and every variety of pump is available for experimental work.

The Electrical laboratory is entirely modern, and contains a 3-phase synchronous motor, driving a 75-K.W. compound wound generator with static balancer. There is a three-phase rotary converter with reactance control and panels, and a Déri brush-shifting repulsion motor; a three-phase series commutator motor of the Schräge type, several squirrel cage and slip-ring induction motors, a three-phase altemator and D.C. motor; two-level compound D.C. generators on the same base.

There are also series, shunt and compound wound D.C. motors and an induction regulator, a single-phase rotary converter; a Winter-Eichberg single-phase commutator motor; several transformers; a mercury-arc rectifier; an oscillograph; a Campbell inductometer and complete equipment for high frequency bridge-testing. An alternating current potentiometer made by Tinsley, Gall's patent, exists for standardizing work, and also vacuum tube instruments for obtaining characteristics of tubes. In addition, a large amount of equipment is available for carrying out all the junior tests, including potentiometers, standard bridges, iron testing, Epstein iron tester, ballistic galvanometers and other instruments.

Mining, Metallurgy and Hydraulics Building

The Mining and Metallurgical laboratories cover a total area of 5000 square feet. The Ore Dressing laboratory, which

includes a workshop, storage room and flotation room, is well equipped with a variety of small scale machines, including crusher, rolls, screens, jigs, ball mill and tables. The laboratory is fully wired for power and light, and has large water mains and drains, and a two-ton travelling crane. The Metallurgical laboratory includes a fire assay room, with oil, gasoline and gas furnaces; a wet assay room, with large fan-draught hood, and work benches fitted for electric and gas heating; two balance rooms; a photographic dark room; and ample storage space.

The Hydraulics laboratory is well equipped for tests and demonstrations of high and low pressure hydraulic machines and pumps. A 60-horse-power D.C. motor is utilized to drive either a 10-inch single stage centrifugal pump having a capacity of 2400 gallons per minute against a 70-foot head, or to drive a 4-inch two stage pump having a capacity of 525 gallons per minute against a 325-foot head. The water from the large pump can be used to drive a 10-inch vertical reaction turbine, while the flow from the high pressure pump can be used to drive an 18-inch Pelton Wheel, thus providing students with actual working demonstrations of all the ordinary types of machines. Installations include apparatus for weir, nozzle, and orifice measurements, flow in pipes, tests and demonstrations of Venturi, current and service meters. One section of the laboratory is set apart for making the standard tests of cement and sand.

Forest Products Laboratory Buildings

The three buildings included in this group were erected by the University for the use of the Vancouver Forest Products Laboratory of the Dominion Forest Service. They consist of a main building for offices and laboratories, an air-seasoning building, and an experimental dry-kiln building.

Under a joint agreement between the University and the Department of the Interior, the University, besides providing the buildings, furnishes heat, light, and power, without cost to the Dominion Government. The Dominion Forest Service has

undertaken to supply the personnel and to furnish all equipment.

Facilities already established include a large timber testing laboratory, a special building for lumber seasoning, an experimental dry-kiln building equipped with oil-fired steam plant and automatic temperature and humidity controller, a combined photographic and pathological laboratory, a carpenter shop, and suitable offices. Accommodation is also provided for an entomologist of the Federal Department of Agriculture. The testing laboratory is equipped with machines ranging from a 200,000-pound Olsen Universal to the most delicate balances.

GENERAL INFORMATION

The Session

The University Year or Session is divided into two terms—the first, September to December; the second, January to May. For "Admission to the University," see page 41, and for "Registration and Attendance," see page 43.

Courses of Study

For the Session of 1928-29 the University offers instruction in the four years of each of the three Faculties, Arts and Science, Applied Science (including Nursing), and Agriculture, leading to the degrees of Bachelor of Arts, Bachelor of Applied Science and Bachelor of Science in Agriculture. It is also possible to proceed to a Master's degree in each Faculty. Advanced courses of instruction and facilities for research are offered to students who are graduates of any University or College of recognized standing. Admission to these advanced courses, or to the privileges of research, does not in itself imply admission to candidacy for a higher degree.

Academic Dress

The undergraduate's gown is black in colour and of the ordinary stuff material, of ankle length, and with long sleeves and the yoke edged with khaki cord. The graduate's gown is the same, without cord. The Bachelor's hood is of the Cambridge pattern, black bordered with the distinctive colour of the particular Faculty; the Master's hood is the same, lined with the distinctive colour. The colours are, for Arts and Science, the University blue; for Applied Science, red; for Agriculture, maize.

Physical Examination

In order to promote the physical welfare of the student body, every student, on entering the University, will be required to undergo a physical examination, to be conducted by, or under the direction of, the University Medical Examiner. Physical defects and weaknesses, amenable to treatment, may

thus be discovered, and the student is advised to apply to his physician for such remedial measures as his case may require. About 10 to 15 per cent. of the students are re-examined in their second year.

University Health Service

The University Campus is situated within the Point Grey Reserve, which, as unorganized territory, comes under the direct control of the Provincial Government. Shortly after the opening of the present University Buildings in 1925, the Lieutenant-Governor in Council, by the recommendation of the Provincial Health Officer, appointed a Medical Health Officer for the Reserve, including the University Campus. This Health Officer has on the Campus and in the Reserve all the powers of any Health Officer anywhere.

In the fall of 1927, the Provincial Health Officer added to the University Health Service a Public Health Nurse, whose presence permits the continuous operation of a local Health Department on the Campus and Reserve.

In addition, the Public Health Nurse is engaged by the University for the general supervision of the individual health of the students, first aid, etc., and gives a voluntary course of lectures to the students on health subjects. An office for the Public Health Nurse is provided in the Auditorium Building and, by the gift of the Graduating Class of 1927, has been equipped with first aid furniture and supplies.

Students developing any illness or suffering from any injury while on the Campus should apply for first aid to the Public Health Nurse. This is particularly required if the student develops any illness of an infectious nature. Provision is made also for the diagnosis of the infectious cases and their safe removal to suitable quarters.

Students developing any illness or suffering any injury while at home, boarding house, fraternity house, etc., are required to report the same to the Public Health Nurse. The development of any infectious disease in a University student must be reported by the student to the Health Officer of the University without delay.

Dean of Women

During the session the Dean of Women may be consulted by parents and students on matters pertaining to living conditions, vocational guidance, and other questions that directly affect the social and intellectual life of the women students.

Board and Residence

A list of approved boarding-houses which receive men or women students, but not both, may be obtained from the Registrar after September 1st. Men and women students are not permitted to lodge in the same house, unless they are members of the same family, or receive special permission from the Senate. The cost of good board and lodging is from $35 per month upwards; of a room alone, $8 to $12 per month. A grill is operated under the supervision of the University, and lunch, afternoon tea and light supper may be obtained there at very reasonable prices. Refreshments at social functions are also supplied.

General Conduct

The University authorities do not assume responsibilities which naturally rest with parents. This being so it is the policy of the University to rely on the good sense and on the home training of students for the preservation of good moral standards.

ADMISSION TO THE UNIVERSITY

All inquiries relating to admission to the University should be addressed to the Registrar.

1. Except under special circumstances no student under the age of sixteen is admitted to the First Year Courses in the Faculty of Arts and Science, and no student under the age of seventeen to the Second Year Courses in the Faculty of Arts and Science nor to the First Year Courses in the Faculties of Agriculture and Applied Science, including Nursing.

2. Candidates for admission to the courses in the First Year of the Faculty of Arts and Science or the Faculty of Agriculture and to the course in Nursing in Applied Science are required to pass the Junior Matriculation Examination of the Province of British Columbia or to submit certificates showing that they have passed an equivalent examination elsewhere. Special regulations are prescribed for admission to courses in Applied Science, and are given under the heading of "Admission" in the Applied Science Section of the Calendar.

3. Students who have passed the Senior Matriculation Examination are admitted to the courses of the Second Year in the Faculty of Arts and Science. Students who have partial Senior Matriculation standing will be granted credit in First Year Arts in each subject in which they have made 50 per cent or over, or in each paper in which they have made 50 per cent or over in so far as these papers correspond with those of First Year Arts.

4. Certificates or diplomas showing that a candidate has passed the Matriculation Examination of another University will be accepted in lieu of the Junior or Senior Matriculation Examinations if the Faculty concerned considers that the examination has covered the same subjects and required the same standard. If, however, the examination covers some but not all of the necessary subjects the candidate will be required to pass the Matriculation Examination in the subjects not covered.

5. *A candidate who wishes to enter by certificates other than a Matriculation certificate issued in British Columbia*

should submit to the Registrar the original certificates. If he wishes these returned to him, he must present also a copy of each certificate for record at the University. He should under no circumstances come to the University without having first obtained from the Registrar a statement of the value of the certificates he holds, as these may lack one or more essential subjects, or the work done in a subject may not be adequate, or, again, the percentage gained may not be sufficiently high. Moreover, it must be remembered that a certificate may admit to one Faculty and not to another. When an applicant's diploma or certificate does not show the marks obtained in the several subjects of the examination he must arrange to have a statement of his marks sent to the Registrar by the Education Department or University issuing such diploma or certificate. The fee for examination of certificates is $2.00.

6. A student of another University applying for exemption from any subject or subjects which he has already studied is required to submit with his application a Calendar of the University in which he has previously studied, together with a complete statement of the course he has followed and a certificate of the standing gained in the several subjects* The Faculty concerned will determine the standing of such a student in this University. The fee for the examination of certificates is $2.00.

7. No candidate under 18 years of age will be admitted to the University without complete Junior Matriculation; and no candidate over 18 years of age who has deficient Matriculation standing will be admitted without the special permission of the Faculty concerned.

8. The Junior and Senior Matriculation Examinations of the Province of British Columbia are conducted by the High School and University Matriculation Board of the Province. This Board consists of members appointed by the Department of Education and by the University. The requirements for Matriculation may be obtained in the publication, "Requirements for Matriculation," issued by the University, or in the "Courses of Study," issued by the Department of Education.

*For the conditions under which exemption is granted in the Faculty of Arts and Science, see "Courses Leading to the Degree of B. A."

REGISTRATION AND ATTENDANCE

Those who intend to register as students of the University are required to make application to the Registrar, on forms to be obtained at the Registrar's office. This application should be made early in August, or as soon as the results of the Matriculation examinations are known. For First Year students in the Faculties of Arts and Science, and Agriculture, and for other students coming to the University for the first time, the last day for registration is Wednesday, September 19th, and for all other undergraduate students, Friday, September 21st, 1928. (See regulations in reference to "Admission to the University," page 41.)

1. There are four classes of students:—

(a) Graduate students—Students who are pursuing courses of study in a Faculty in which they hold a degree, whether they are proceeding to a Master's degree or not.

(b) Full undergraduates—Students proceeding to a degree in any Faculty who have passed all the examinations precedent to the year in which they are registered.

(c) Conditioned undergraduates—Students proceeding to a degree with incomplete entrance qualifications or with defects in their standing which do not prevent their entering a higher year under the regulations governing "Examinations and Advancement" of the Faculty in which they are registered.

(d) Partial students—Students not belonging to one of the three preceding classes. (*See 7, below.*)

2. All students other than graduate students are required to register at the office of the Registrar on or before the last day for registration, to furnish the information necessary for the University records, to enrol for the particular classes which they wish to attend, and to sign the following declaration:

"I hereby accept and submit myself to the statutes, rules, regulations, and ordinances of The University of British Colum-

bia, and of the Faculty or Faculties in which I am registered, and to any amendments thereto which may be made while I am a student of the University, and I promise to observe the same."

In the information furnished for the University records, students are requested to state what churches they propose to make their place of worship. This information is available for any of the city churches desiring it.

3. After the above dates a fee of $2.00 will be charged for late registration.

4. Students registering for the first time must present the certificates which constitute their qualification for admission to the course of study for which they wish to register. The Registrar is empowered to register all duly qualified students. Doubtful cases will be dealt with by the Faculty concerned.

5. Students doing work in two academic years will register in the lower year and fill out their course cards in such a way as to make clear which courses are required to complete the lower year.

6. Students desiring to make a change in the course for which they have registered must apply to the Registrar on the proper form for a "change of course." Except in special circumstance, no change will be allowed after the fifteenth day of the session. If the application is approved by the Faculty concerned, the Registrar will give the necessary notifications.

7. Partial students are not normally required to pass an examination for admission, but before registering they must produce a certificate showing that they have satisfied the Dean and the Heads of the Departments concerned that they are qualified to pursue with advantage the course of study which they propose to undertake.

8. Students are required to attend at least seven-eighths of the lectures in each course that they take. Lectures will commence on the hour, and admission to a lecture or laboratory

and credit for attendance may be refused by the Instructor for lateness, misconduct, inattention or neglect of duty. Absence consequent on illness or domestic affliction may be excused only by the Dean of the Faculty concerned, and medical certificates or other evidence must be presented immediately on return to University work. A medical certificate must show the nature and the period of the disability. Medical report forms may be obtained from the Dean's office. In cases of deficient attendance students may (with the sanction of the Dean and the Head of the Department concerned) be excluded from the final examination in a course; but unless the unexcused absences exceed one-fourth of the total number of lectures in a course, such students may sit for supplemental examination.

FEES

All cheques must be certified and made payable to "The University of British Columbia."

1. The sessional fees are as follows:

FOR FULL AND CONDITIONED UNDERGRADUATES

In Arts and Science—

First Term, payable on or before Oct. 8th.....$50.00
Second Term, payable on or before Jan. 21st..... 50.00
———$100.00

In Teacher Training Course—

First Term, payable on or before Oct. 8th.....$30.00
Second Term, payable on or before Jan. 21st..... 30.00
———$ 60.00

In Applied Science—

First Term, payable on or before Oct. 8th.....$75.00
Second Term, payable on or before Jan. 21st..... 75.00
———$150.00

In Nursing and Public Health—

First Term, payable on or before Oct. 8th.....$50.00
Second Term, payable on or before Jan. 21st..... 50.00
———$100.00

NOTE.—For Third and Fourth Year students in Nursing the Sessional fee is $1.00, payable, with the Alma Mater fee of $10.00, on or before October 8th.

Students admitted to Nursing B or C and proceeding to the Certificate on a basis of part-time attendance over two or more years, will pay the regular fee for the whole course, but the amount payable each year will be pro-rated to correspond with the proportion of work taken in that year.

In Agriculture—

First Term, payable on or before Oct. 8th.....$50.00
Second Term, payable on or before Jan. 21st..... 50.00
———$100.00

Alma Mater Fee—Payable on or before Oct. 8th.....$ 10.00
Caution Money—Payable on or before Oct. 8th..... 5.00

FOR PARTIAL STUDENTS

Fees per "Unit"—Payable on or before Oct. 8th.....$ 10.00
Alma Mater Fee—Payable on or before Oct. 8th..... 10.00
Caution Money—Payable on or before Oct. 8th..... 5.00

FOR GRADUATES

Registration and Class Fees — Payable on or before Oct. 15th .....$ 25.00

After these dates an additional fee of $2.00 will be exacted of all students in default.

The Alma Mater Fee is a fee exacted from all students for the support of the Alma Mater Society. It was authorized by the Board of Governors at the request of the students themselves.

The Caution Money is a deposit from which deductions will be made to cover breakages, wastage, and use of special materials in laboratories, etc. If the balance to the credit of a student falls below $1.50, a further deposit of $5.00 may be required.

2. Immediately after October 8th and January 21st, the Bursar will notify students who have not paid their fees that steps will be taken to ensure their exclusion from classes while the fees remain unpaid.

3. Students registering after October 8th shall pay their fees at the time of registration, failing which they become subject to the provisions of Regulation 2.

4. Special fees are:—

Regular supplemental examination, per paper .....$ 5.00
Special examination, per paper 7.50
Graduation 20.00

Supplemental examination fees must be paid two weeks before the examination, special examination fees when application for examination is made, and graduation fees two weeks before Congregation.

MEDALS, SCHOLARSHIPS, PRIZES, BURSARIES AND LOANS FOR 1928-29

MEDALS

The Governor-General's Gold Medal

A gold medal, presented by His Excellency the Governor-General of Canada, will be awarded to the student standing at the head of the graduating class in the Faculty of Arts and Science. Honour and pass students may compete for this medal.

The Historical Society Gold Medal

A gold medal, donated by E. W. Keenleyside, Esq., and known as the Historical Society Gold Medal, will be open to the members of the graduating class. The award will be made by the Department of History, on the basis of the student's standing in the courses in History which he has taken during his undergraduate course, and the general interest he has shown in the subject.

SCHOLARSHIPS FOR POST-GRADUATE STUDIES

University Scholarship

A scholarship of $200 may be awarded to a graduate student who shows special aptitude for post-graduate studies. Application should be made to the Registrar not later than the last day of the final examinations.

The Anne Wesbrook Scholarship

This scholarship of $100, given by the Faculty Women's Club of the University, is open to graduates of this University who intend in the following year to pursue post-graduate study in this or any other approved university. Application should be made to the Registrar not later than the last day of the final examinations.

The Captain LeRoy Memorial Scholarship

This scholarship of $250, donated by the Universities Service Club, will be awarded for the academic year 1928-29 to a returned soldier student in attendance at The University of British Columbia. Applications may be made by returned soldier

students who intend doing Second, Third, or Fourth Year work at The University of British Columbia, or post-graduate work at any approved institution. Each application must contain a statement of the academic record, the war record, and the special claims of the applicant, with two supporting references, and must be made to the Registrar not later than the last day of the final examinations.

The award will be made by Senate, upon recommendation of Faculty acting in consultation with the Executive of the Universities Service Club.

The French Government Scholarship

A scholarship of 10,000 francs is donated by the French Government for one year's postgraduate study in French. It is tenable for one year and is contingent upon the voting of the credits for the year by the French Chambers. (This contingency applies to every item of the French budget and, practically, the scholarship may be considered as permanent.)

The award is made by the French Consul for Western Canada, residing in Vancouver, on the recommendation of the Head of the Department of French in the University. Applications should be made to the Registrar not later than the last day of the final examinations.

The Nichol Scholarship

By the generosity of the Hon. Walter Nichol—Lieutenant-Governor of the Province, 1921 to 1926,—five three-year scholarships, each of the annual value of $1,200, have been made available for study in the University of France, or at one of the other institutions of higher education in France. With each scholarship will be given a gold medal, the permanent possession of the successful candidate. These scholarships will be open to graduates of the University of British Columbia who intend to take up teaching as a profession. The fourth scholarship will be awarded in 1928.

The intention of the donor being the development in Canada, and particularly in this Province, of a wider knowledge of the people of France, their ideals, literature, art and science,

and the promotion thereby of a better mutual understanding between French and British in this country, each successful candidate must undertake to return to British Columbia to practise his profession for such time as seems reasonable in the opinion of the Senate of the University.

Each scholarship may be held for three years, provided the holder can show from year to year satisfactory progress in the course of study undertaken. Application must be made to the Registrar not later than the last day of the final examinations.

The Brock Scholarship

A scholarship of $100, donated by Dean R. W. Brock, may be awarded to a graduate student in Applied Science who shows special aptitude for post-graduate studies. Applications should be made to the Registrar not later than the last day of the final examinations.

The 1851 Exhibition Scholarship

Under the revised conditions for the award of the 1851 Exhibition Scholarship in Science, The University of British Columbia is included in the list of universities from which nominations for scholarships allotted to Canada may be made. These scholarships of £250 per annum, are tenable, ordinarily, for two years. They are granted only to British subjects under 26 years of age, who have been *bona fide* students of pure or applied science of not less than three years' standing. Application should be made to the Registrar not later than the last day of the final examinations.

SCHOLARSHIPS FOR UNDERGRADUATES

1. IN ALL FACULTIES

The Rhodes Scholarship

An annual scholarship at one of the colleges of Oxford is assigned by the trustees of the late Mr. Cecil J. Rhodes to the Province of British Columbia. Each scholarship is tenable for three years, and is of the value of £400 a year. In accordance with the wish of Mr. Rhodes, the election of candidates will depend upon: (1) Force of character, devotion to duty, courage,

sympathy, capacity for leadership; (2) Ability and scholastic attainments; (3) Physical vigor, as shown by participation in games or in other ways. A candidate must be a British subject, with at least five years' domicile in Canada, and unmarried. He must have passed his nineteenth but not his twenty-fifth birthday on October 1st of the year for which he is elected. He must be at least in his Sophomore Year in some recognized degree-granting university or college of Canada, and (if elected) complete the work of that year before coming into residence at Oxford. He may compete either in the province in which he has acquired any considerable part of his educational qualification, or in the province in which he has his ordinary private domicile, home, or residence.

Candidates for the 1929 scholarship must have their applications, with all the required material, in the hands of the Secretary of the Selection Committee not later than October 20th, 1928.

The Khaki University and Young Men's Christian Association Memorial Fund Scholarships

The sum of $12,000, given to the University by the administrators of the Khaki University of Canada, provides a fund which has so far been used to assist returned soldiers in actual need of money to complete their courses. Out of the income from this fund, ten scholarships of $75 each are now to be offered each year for a period of five years, beginning with the spring of 1927. They are to be awarded, on the results of examinations in the First, Second, and Third Years in all faculties, to such returned soldiers or dependents of soldiers as have the requisite academic standing; failing such, to the student body at large. All returned soldiers and all children of soldiers of the Great War who have any expectation of attaining scholarship standing in these years should apply to the Registrar on a special form not later than the last day of the final examinations.

The Captain Leroy Memorial Scholarship

(*See Page* 48)

University Scholarships

Two scholarships of $150 each may be awarded to returned soldiers taking the work of the First Year, the award to be based on the work of the year.

2. IN ARTS AND SCIENCE

University Scholarships

Two scholarships in Arts and Science of $150 each will be awarded to students proceeding to the Fourth Year, the award to be based on the work of the Third Year.

Two scholarships in Arts and Science of $150 each will be awarded to students proceeding to the Third Year, the award to be based on the work of the Second Year.

The Shaw Memorial Scholarship*

This scholarship of $137.50, founded by friends of the late James Curtis Shaw, Principal of Vancouver College, and afterwards of McGill University College, Vancouver, will be paid throughout his undergraduate course to any child of the late Principal Shaw who is in regular attendance at the University as a fully matriculated student; when there is no such candidate, it will be awarded upon the results of the examination of the Second Year in Arts and Science to the undergraduate student standing highest in any two of the following three subjects, English, Latin, Greek, and proceeding to the work of the Third Year.

The McGill Graduates' Scholarship*

A scholarship of $137.50, founded by the McGill Graduates' Society of British Columbia, will be awarded to the undergraduate student standing highest in English and French of the Second Year in Arts and Science and proceeding to the work of the Third Year.

The Terminal City Club Memorial Scholarship

This scholarship of $110, founded by the members of the Terminal City Club as a memorial to those members of the

*Originally donated to the Royal Institution, this has been transferred by that body, with the consent of the donors, to the University of British Columbia.

Club who lost their lives in the Great War, will be awarded to the undergraduate student standing highest in English and Economics of the Second Year in Arts and Science and proceeding to the work of the Third Year.

The Scott Memorial Scholarship

This scholarship of $110—the proceeds of an endowment of $2,000—founded by the Imperial Order of the Daughters of the Empire of the City of Vancouver, in memory of Captain Robert Falcon Scott, the Antarctic explorer, who sacrificed his life in the cause of Science, will be awarded for general proficiency in biological subjects to the student who has completed his Second Year in Arts and Science, and who is proceeding in the Third Year to Honour work either in Biology or in a course including Biology.

Royal Institution Scholarship

A scholarship of $150 will be awarded to the student taking first place in the examinations of the first year in Arts and Science.

University Scholarships

Two scholarships of $150 each will be awarded on the examinations of the first year in Arts and Science, one to the student taking second place and the other to the student taking third place in general proficiency.

The P. E. O. Sisterhood Scholarship

A scholarship of $75, given by Vancouver Chapters of the P. E. O. Sisterhood, will be awarded to the woman student standing highest in English in the First Year of the Faculty of Arts and Science.

The Vancouver Women's Canadian Club Scholarship

A scholarship of $110 is offered by the Club to be awarded to the student obtaining first place in the subject, Canadian History.

3. IN APPLIED SCIENCE

University Scholarship

A scholarship of $150.00 will be awarded, for general proficiency in previous work in this University, to a student proceeding to the Third Year of the Course in Nursing and Health and having successfully completed the hospital probationary period. Applications shall be made to the Registrar not later than September 1st.

The Vancouver Women's Canadian Club Scholarship

A scholarship of $100 is offered by the Club to be awarded to the student who attains the highest standing in the first four years' training, academic and practical, of the Nursing and Health course.

The Dunsmuir Scholarship*

A scholarship of $165, founded by the Hon. James Dunsmuir, will be awarded to the undergraduate student standing highest in the Mining Engineering Course of the Third Year in Applied Science and proceeding to the work of the Fourth Year.

University Scholarship

A scholarship of $150 will be awarded to a student proceeding to the Third Year in Applied Science, the award to be based on the work of the Second Year.

Royal Institution Scholarship

A scholarship of $150 will be awarded for general proficiency in the work of the First Year in Applied Science.

4. IN AGRICULTURE

The British Columbia Fruit Growers' Association Scholarship

This scholarship of $100, donated by the British Columbia Fruit Growers' Association, will be awarded to a student, preferably of the Third Year, who is specializing in Horticulture. The award will be based on proficiency not only in horticultural subjects, but in the entire work of the year.

*Originally donated to the Royal Institution, this has been transferred by that body, with the consent of the donors, to the University of British Columbia.

University Scholarship

A scholarship in Agriculture of $150 will be awarded to a student proceeding to the Second Year, the award to be based on the work of the First Year.

The David Thom Scholarship

A scholarship in Agriculture of $100.00 will be awarded to a student proceeding to the Second Year, the award to be based on the work of the First Year.

MATRICULATION SCHOLARSHIPS

University Scholarship

One scholarship of $150 will be awarded upon the results of the Senior Matriculation Examination.

Royal Institution Scholarships

Seven General Proficiency scholarships will be awarded on the result of the Junior Matriculation examinations: (a) $150 to the candidate of highest standing in the Province, and (b) $100 to the candidate of next highest standing in each of the following districts: (1) Victoria District, (2) Vancouver Island (exclusive of Victoria District) and Northern Mainland, (3) Vancouver District, (4) Fraser Delta (exclusive of Vancouver District but including Agassiz), (5) Yale, (6) Kootenays.

These scholarships will be paid only to students in attendance at the University of British Columbia. Under certain conditions they may be reserved for limited periods. A winner who is completing Senior Matriculation in a high school of the same district may have the scholarship reserved for one year, subject to obtaining satisfactory standing in the Senior Matriculation examination. Also a winner who completes the first two years of the Arts course in an affiliated institution may have the scholarship reserved for two years. Sums accruing from unpaid scholarships may be used in the form of bursaries or loans.

PRIZES

1. IN ALL FACULTIES

The University Prize

A book prize of the value of $25, open to all students of the University, will be awarded for an essay on a special literary subject, to be announced at the beginning of the Session by the Department of English.

The Players' Club Prize

A prize of $50, donated by the Players' Club, is offered for an original play suitable for the Club's Christmas performance. The award will be made on the recommendation of the Faculty members of the Advisory Board of the Players' Club.

2. IN ARTS AND SCIENCE

The Gerald Myles Harvey Prize

A book prize of the value of $50, given by Mr. J. Newton Harvey in memory of his son, Gerald Myles Harvey, who died on active service, wil be awarded to the student in Arts and Science who submits the best essay on a subject in Economics or Political Science which concerns British Columbia or Canada as a whole. A list of suggested subjects for 1928-29 may be obtained from the Department of Economics, but competitors may write on any subject approved by the Department and by the donor of the prize, and essays written in the course of University work, if so approved, may be submitted for the prize. Intending competitors must notify the Department of Economics before the 31st of December, 1928, of their intention to compete.

The Historical Society Prize

Through the generosity of R. L. Reid, Esq., K.C., the Historical Society of the University has been able to offer, annually, a prize of $25, open to all students in Arts and Science, for the best essay on an assigned subject.

The Vancouver Women's Conservative Association Prize

This prize of $25, given by the Vancouver Women's Conservative Association, is open to students taking the Mathematics of the First Year in the Faculty of Arts and Science. In awarding it preference will be given to the son or daughter of a deceased soldier, provided satisfactory standing is secured in the subject.

The Letters Club Prize

A prize of $25, presented by R. L. Reid, Esq., K.C., honorary member of the Letters Club, is offered annually for the best essay by an undergraduate student in Arts on an assigned subject in Canadian literature. The award will be made on the recommendation of the Department of English. The subjects for the Session 1928-29 are as follows:

1. Isabella Valancy Crawford.
2. Sir Gilbert Parker.
3. Stephen Leacock.

3. IN APPLIED SCIENCE

The Convocation Prize

A prize of $50, donated by Convocation of The University of British Columbia, will be awarded annually to the student obtaining first place in the Fourth Year of Applied Science.

The Walter Moberly Memorial Prize

A book prize of the value of $25, donated by the Vancouver Branch of the Engineering Institute of Canada in memory of the late Walter Moberly, will be awarded for the best engineering thesis submitted by any Fourth Year student in the Faculty of Applied Science.

The Professional Engineers' Prizes

Five book prizes, each of the value of $25, are offered by the Association of Professional Engineers of British Columbia for competition by those students in the Third Year of the

Faculty of Applied Science who are registered as pupils with the Association. The prizes are awarded for the best summer essays in five branches of engineering.

The Provincial Board of Health Prizes

The Provincial Board of Health of the Province of British Columbia offers the sum of $100 in prizes for competition in the Course in Public Health Nursing.

BURSARIES

The Canadian Club of Vancouver Bursary

Through the generosity of the Canadian Club of Vancouver, a sum of $300 will be available in 1928-29 to assist worthy male matriculants who would not otherwise be able to enter upon the University course. Candidates must be British subjects. They should make application for the award as soon as possible after the announcement of matriculation results, and not later than September 1st.

The American Women's Club Bursary

Through the generosity of the American Women's Club of Vancouver a sum of $110 will be available for 1928-29 to assist a student who has satisfactorily completed the First Year in Arts and Science, and who could not otherwise continue the course in the Second Year. Application should be made to the Registrar not later than September 1st.

The David Thom Scholarship

From the funds of the David Thom Estate a sum of $60.00 is available annually to a student who has satisfactorily completed the work of the First Year in Agriculture and is proceeding to the work of the Second Year.

LOANS

Funds are provided from which loans, not to exceed $100, may be made to undergraduate students who have completed

one year's University work and who are in need of pecuniary assistance. Loans are not granted to graduate students nor to students taking the Teacher Training Course. Applications for loans should be addressed to the President of the University.

General Loan Funds

The General Loan Fund is maintained by annual grants made by the Board of Governors.

The Canadian Institute of Mining and Metallurgy B. C. Division Fund

This is a cumulative fund of $50 per year, given by the Institute to the University as a trust, to be used for loans to students taking the mining course. Applicants for loans must be recommended by the Departments of Geology, Mining and Metallurgy.

The David Thom Scholarship

From the David Thom Estate funds a sum of $500.00 has been set asides for loans to Third and Fourth Year students in Agriculture. A loan from this fund will supplement one from the existing University loan funds.

GENERAL REGULATIONS

1. Scholarships, medals, and prizes will be awarded at the close of the session, and, in case of Matriculation Examinations, after the June examination.

2. If the award of a medal, scholarship, or prize is based on an examination, no award will be made to a candidate who obtains less than 75 per cent. of the possible marks.

3. Candidates are not permitted to hold more than one scholarship each, although they may win more and will be given credit in the published lists if they do. Scholarships thus won but not held will pass to candidates next in order of merit, provided they have made the required marks.

4. Scholarships under the jurisdiction of the University are paid in three instalments—on the 15th of November, the 15th

of January and the 15th of March. Normally this is during the session following their award, and undergraduate winners must continue their courses to the satisfaction of the Faculty concerned. But Faculty may permit a scholarship to be reserved a year, provided the student shows satisfactory reasons for postponing attendance.

5. Winners of scholarships who desire to do so may resign the monetary value, while the appearance of their names in the University list enables them to retain the honour. Any funds thus made available will be used for additional scholarships or student loans.

6. Medals, scholarships, prizes, bursaries and loans are open to winter session students only, unless otherwise stated, and marks obtained in summer session courses are not taken into account in awarding them.

7. The University is in possession of a great deal of information regarding postgraduate scholarships, fellowships and assistantships in other Universities, or as given by various research bodies. Places are available in practically all departments of University work. Students wishing to pursue postgraduate work outside this University are advised to consult the Registrar for information.

THE

FACULTY

OF

ARTS AND SCIENCE

TIME TABLE
FACULTY OF ARTS

KEY TO BUILDINGS: A, Arts; Ag, Agriculture;

MORNINGS

	MONDAY	ROOM	TUESDAY	ROOM	WEDNESDAY	ROOM
9	Biology 2	Ap 101	Botany 2	.....	Biology 2	Ap 101
	Biology 3	Ap 101	Botany 4	Ap 101	Biology 3	Ap 101
	Botany 6 e	Ap 101	Economics 2	A 108	Botany 6 e	Ap 101
	Economics 6	S 300	English 1 b	A 100,	Economics 6	S 300
	English 1 a	A 103,	Secs. 1, 2, 3, 4,	106, 205,	English 1 a	A 103,
	Secs. 7, 8, 9, 10,	106, 205,	5, 6	206, 207,	Secs. 7, 8, 9, 10,	106, 203
	11, 12	203, 206		208	12, 12	205, 206
		207	French 2	A 101,		207
	English 13	A 100	Secs. d, e, f	104, 105	English 13	A 100
	French 2		Geology 5 and 12	Ap 102	French 2	A 101,
	Secs. a, b, c	A 101,	Latin 2	A 103	Secs. a, b, c	104, 105
		104, 105	Latin 5	A 102	French 4 c	A 202
	French 4 c	A 202	Mathematics 1		Geology 3 and 4	Ap 102
	Geology 3 and 4	Ap 102	Sec. 1	A 203	Greek 1	A 102
	Greek 1	A 102	Mathematics 16	Ag 101	Mathematics 10	A 201
	Mathematics 10	A 201	Physics 2 a	S 200	Mathematics 17	A 208
	Mathematics 17	A 208	Zoology 2	Ap 101	Philosophy 1 a	Ap 100
	Philosophy 1 a	Ap 100	Zoology 3	Ap 101	Physics 1 a	S 200
	Physics 1 a	S 200				
10	Botany 5 a	Ap 101	Botany 3	Ap 101	Botany 5 b	.....
	Botany 6 d	Ap 101	Botany 6 c	Ap 101	Botany 6 d	Ap 101
	Chemistry 3	S 417	Chemistry 9	S 417	Chemistry 3	S 417
	Economics 1 a	A 103	Economics 1 c	A 103	Economics 1 a	A 103
	English 1, Sec. 13	A 204	Economics 4	A 100	English 1, Sec. 13	A 204
	English 9	A 100	English 17	A 203	English 9	A 100
	French 3 b	A 104	French 4 a	A 104	French 3 b	A 104
	French 4 b	A 105	Geology 2	.....	French 4 b	A 105
	Geology 1	Ap 100	German 1	A 201	Geology 1	Ap 100
	History 5	A 101	Government 1	A 108	Geology 7	.....
	Mathematics 1	A 106	Greek 2	A 102	History 5	A 101
	Secs. 8, 9, 10, 11,	108, 203,	History 6	A 101	Mathematics 1	A 106
	12, 13	205, 206,	Mathematics 1	A 105,	Secs. 8, 9, 10, 11,	108, 203,
		207	Secs. 2, 3, 4, 5,	106, 205	12, 13	205, 206,
	Philosophy 1 C	A 208	6, 7	206, 207		207
	Philosophy 8			208	Philosophy 1 C	A 208
	Sec. B	S 400	Philosophy 2	A 204	Philosophy 8,	
	Physics 1 b	S 200	Physics 2 b	S 200	Sec. B	S 400
	Physics 3	S 210			Physics 1 b	S 200
					Physics 3	S 210
11	Agricultural		Botany 1	Ap 101	Agricultural	
	Economics	Ag 104	Botany 6 b	Ap 235	Economics	Ag 104
	Biology 1	Ap 100	Chemistry 1 c	S 300	Biology 1	Ap 100
	Chemistry 7	S 417	Chemistry 4	S 417	Chemistry 7	S 417
	Economics 1 b	S 400	Economics 1 d	Ap 100	Economics 1 b	S 400
	English 14	A 203	French 1	A 104,	English 14	A 203
	French 1	A 105,	Secs. e, f, g, h	105, 108,	French 1	A 105,
	Secs. a, b, c, d	108, 204		203	Secs. a, b, c, d	108, 204,
		207	French 3 a	A 100		207
	French 3 c	A 208	French 4 d	A 202	French 3 c	A 208
	French 4 d	A 104	Geology 6	Ap 102	French 4 d	A 104
	Geology 8	Ap 102	Government 2	A 102	Geology 8	Ap 102
	German, Beg. A	A 201	History 3	A 106	German, Beg. A	A 201
	Government 3	S 200	History 9	A 101	Government 3	S 200
	History 2	A 100	Latin 1 b	A 103	History 2	A 100
	History 7	A 101	Philosophy 8,		History 7	A 101
	Latin 1 a	A 103	Sec. A	A 205	Latin 1 a	A 103
	Mathematics 2	A 106	Zoology 4	Ap 101	Mathematics 2	A 106
	Philosophy 3	A 102	Zoology 7	Ap 101	Philosophy 3	A 102
	Physics 4	S 210			Physics 4	S 210
	Zoology 1	Ap 101			Zoology 1	Ap 101

AND SCIENCE

Ap, Applied Science; S, Science.

MORNINGS

THURSDAY	ROOM	FRIDAY	ROOM	SATURDAY	ROOM	
Botany 2	.....	Botany 6 f	Ap 101	Botany 5 b Lab.	.....	
Economics 2	A 108	Botany 7 a	.....	Chemistry 9 Lab.	.....	
English 1 b	A 100,	Economics 6	S 300	Economics 2	A 108	
Secs. 1, 2, 3, 4,	106, 205	English 1 b	A 103,	English 1 a	A 100,	
5, 6	206, 207, 208	Sections 7, 8, 9, 10, 11, 12	106, 203, 205, 206, 207	Secs. 1, 2, 3, 4, 5, 6	106, 205, 206, 207, 208	
French 2	A 101,					
Secs. d, e, f	104, 105	English 13	A 100	French 2	A 101,	
Geology 5 and 12	Ap 102	French 2	A 101,	Secs. d, e, f	104, 105	
Latin 2	A 103	Secs. a, b, c	104, 105	Geology 10	.....	9
Latin 5	A 102	French 4 c	A 202	Latin 2	A 103	
Mathematics 1,		Geology 3 and 4	Ap 102	Latin 5	A 102	
Sec. 1	A 203	Greek 1	A 102	Mathematics 1,		
Mathematics 16	Ag 101	Mathematics 10	A 201	Sec. 1	A 203	
Physics 2 a	S 200	Mathematics 17	A 208	Mathematics 16	Ag 101	
Zoology 2	Ap 101	Philosophy 1 a	Ap 100	Physics 2 a	S 200	
Zoology 3	Ap 101	Physics 1 a	S 200			
Botany 3	Ap 101	Botany 5 a	Ap 101	Botany 5 b Lab.	.....	
Botany 6 c	Ap 101	Chemistry 2	S 300	Chemistry 9 Lab.	.....	
Chemistry 9	S 417	Economics 1 a	A 103	Economics 1 c	A 103	
Economics 1 c	A 103	English 1, Sec. 13	A 204	Economics 4	A 100	
Economics 4	A 100	English 9	A 100	English 17	A 203	
English 17	A 203	French 3 b	A 104	French 4 a	A 104	
French 4 a	A 104	French 4 b	A 105	Geology 10	.....	
Geology 2	.....	Geology 7	.....	German 1	A 201	
German 1	A 201	History 5	A 101	Government 1	A 108	
Government 1	A 108	Mathematics 1	A 106	Greek 2	A 102	10
Greek 2	A 102	Secs. 8, 9, 10, 11, 12, 13	108, 203, 205, 206, 207	History 6	A 101	
History 6	A 101			Mathematics 1	A 105,	
Mathematics 1	A 105,			Secs. 2, 3, 4, 5, 6, 7	106, 205, 206, 207, 208	
Secs. 2, 3, 4, 5, 6, 7	106, 205, 206, 207, 208	Philosophy 1 C	A 208			
		Philosophy 8, Sec. B	S 400			
Philosophy 2	A 204	Physics 1 b	S 200	Philosophy 2	A 204	
Physics 2 b	S 200			Physics 2 b	S 200	
Botany 1	Ap 101	Agricultural Economics	Ag 104	Botany 5 b Lab.	.....	
Chemistry 1 c	S 300	Economics 1 b	S 400	Chemistry 1 c	S 300	
Chemistry 4	S 417	English 14	A 203	Chemistry 9 Lab.	.....	
Economics 1 d	Ap 100	French 1	A 105,	Economics 1 d	Ap 100	
French 1	A 104,	Secs. a, b, c, d	108, 204, 207	French 1	A 104,	
Secs. e, f, g, h	105, 108, 203			Secs. e, f, g, h	105, 108, 203	
French 3 a	A 100	French 3 c	A 208	French 3 a	A 100	
French 4 d	A 202	French 4 d	A 104	French 4 d	A 202	11
Geology 6	Ap 102	Geology 8	Ap 102	Geology 10	.....	
Government 2	A 102	German, Beg. A	A 201	Government 2	A 102	
History 3	A 106	Government 3	S 200	History 3	A 106	
History 9	A 101	History 2	A 100	History 9	A 101	
Latin 1 b	A 103	History 7	A 101	Latin 1 b	A 103	
Philosophy 8, Sec. A	A 205	Latin 1 a	A 103	Philosophy 8, Sec. A	A 205	
Zoology 4	Ap 101	Mathematics 2	A 106			
Zoology 7	Ap 101	Philosophy 3	A 102			
		Zoology 6	Ap 101			
		Zoology 5	Ap 101			

AFTERNOONS

TIME TABLE

	Monday	Room	Tuesday	Room	Wednesday	Room
1	Botany 3 Lab.	.....	Bacteriology 1	.....	Biology 1 Lab. 3.	.....
	Botany 5 Lab.	.....	Botany 6 b and e Lab.	.....	Botany 3 Lab.	.....
	Chemistry 1 a	S 300	English 5	A 201	Botany 6 c Lab.	.....
	Economics 5	A 208	English 7	A 101	Chemistry 1 a	S 300
	English 2 b	A 100, Ap 100, S 400	Mathematics 1 Secs. 1, 2, 3, 4, 5, 6, 7	A 105, 106, 203, 205, 206, 207, 208	Economics 5	A 208
					English 2 a	A 100
	French 1	A 104,			French 1	A 104,
	Secs. i, j, k, l	105, 108, 203	Philosophy 6	A 204	Secs. i, j, k, l	105, 108, 203
	French 4 c	A 204	Zoology 2 Lab.	.....	French 4 c	A 204
	History 4	A 106	Zoology 3 Lab.	.....	Geology 7 Lab.	.....
	Latin 3	A 102			History 4	A 106
	Philosophy 9	A 205			Latin 3	A 102
	Sociology	S 200			Philosophy 9	A 205
	Zoology 5 Lab.	.....			Sociology	S 200
	Zoology 6 Lab.	.....			Zoology 5 Lab.	.....
					Zoology 6 Lab.	.....
2	Botany 3 Lab.	.....	Bacteriology 1	.....	Biology 3 Lab. 3.	.....
	Botany 5 Lab.	.....	Biology 1 Lab. 1	.....	Botany 1 Lab.	.....
	Chemistry 1 b	S 300	Botany 2	.....	Botany 3 Lab.	.....
	Chemistry 7 Lab.	.....	Botany 4	.....	Botany 6 c Lab.	.....
	English 10	A 206	Botany 6 b and e Lab.	.....	Chemistry 1 b	S 300
	English 16	A 104	Chemistry 1 Lab. 2	.....	English 10	A 206
	French 1	A 105,	English 1 b	A 103,	English 16	A 104
	Secs. m, n, o	203, 204	Secs. 7, 8, 9, 10, 11, 12, 13	105, 106, 205, 206, 207, 208	French 1	A 105,
	Geography 1	Ap 100			Secs. m, n, o	203, 204
	History 1	A 100			Geology 7 Lab.	.....
	History 8	A 101			Geography 1	Ap 100
	Philosophy 1 b	S 210			History 1	A 100
	Physics 4 Lab.	.....	English 2 c	A 100	History 8	A 101
	Sociology	A 103	Geology 1 Lab.	.....	Philosophy 1 b	S 210
	Zoology 5 Lab.	.....	Mathematics 4	A 208	Sociology	A 103
	Zoology 6 Lab.	.....	Physics 3 Lab.	.....	Zoology 5 Lab.	.....
			Zoology 2 Lab.	.....	Zoology 6 Lab.	.....
			Zoology 3 Lab.	.....		
3	Bacteriology 1	.....	Biology 1 Lab. 1	.....	Botany 1 Lab.	.....
	Botany 5 Lab.	.....	Botany 2 Lab.	.....		
	Chemistry 1 Lab. 1	.....	Botany 4 Lab.	.....		
	Chemistry 2 Lab. a	.....	Chemistry 1 Lab. 2	.....		
	Chemistry 7 Lab.	.....	Chemistry 2 Lab. b	.....		
	English 12	A 201	English 15	A 101		
	Geology 5	Ap 102	Latin 7	A 102		
	Latin 7	A 102	Physics 3 Lab.	.....		
	Physics 4 Lab.	.....	Zoology 2 Lab.	.....		
	Zoology 5 Lab.	.....	Zoology 3 Lab.	.....		
	Zoology 6 Lab.	.....				
4	Bacteriology	.....	Biology 1 Lab. 2	.....		
	Botany 5 Lab.	.....	Botany 2 Lab.	.....		
	Chemistry 1 Lab. 1	.....	Botany 4 Lab.	.....		
	Chemistry 2 Lab. a	.....	Chemistry 1 Lab. 2	.....		
	Chemistry 7 Lab.	.....	Chemistry 2 Lab. b	.....		
	Physics 4 Lab.	.....	Physics 3 Lab.	.....		
	Zoology 5 Lab.	.....	Zoology 2 Lab.	.....		
	Zoology 6 Lab.	.....	Zoology 3 Lab.	.....		
5	Bacteriology	S 400	Biology 1 Lab. 2	.....		
	Chemistry 1 Lab. 1	.....	Botany 2 Lab.	.....		
	Chemistry 2 Lab. a	.....	Botany 4 Lab.	.....		
			Chemistry 2 Lab. b	.....		

—Continued

AFTERNOONS

Thursday	Room	Friday	Room			
Botany 6 c and e Lab.	.....	Botany 6 d Lab.	.....			
English 8	A 201	Chemistry 1 a	S 300			
English 7	A 101	Economics 5	A 208			
Geology 1 Lab.	.....	English 2 a	A 100			
Mathematics 1	A 108	French 1	A 104,			
Secs. 8, 9, 10, 11, 12, 13	106, 203, 205, 206, 207	Secs. i, j, k, l	105, 108, 203			
Philosophy 6	A 204	French 4 c	A 204			
Zoology 1 Lab.	.....	Geology 2 Lab.	.....			1
		History 4	A 106			
		Latin 3	A 102			
		Philosophy 9	A 205			
		Sociology	S 200			
		Zoology 4 Lab.	.....			
		Zoology 7 Lab.	.....			
Botany 6 c and e Lab.	.....	Bacteriology 1	.....			
Chemistry 8 Lab. b	.....	Biology 1 Lab. 5.	.....			
English 1 a	.....	Botany 6 d Lab.	.....			
Secs. 1, 2, 8, 4, 5, 6	A 100, 106, 205, 206, 207, 208	Chemistry 1 b	S 300			
		Chemistry 3 Lab. a	.....			
		English 10	A 206			
		English 16	A 104			
Geology 1 Lab.	.....	French 1	A 105,			
Mathematics 4	A 208	Secs. m, n, o	203, 204			2
Zoology 1 Lab.	.....	Geography 1	Ap 100			
		Geology 2 Lab.	.....			
		History 1	A 100			
		History 8	A 101			
		Philosophy 1 b	S 210			
		Sociology	A 103			
		Zoology 4 Lab.	.....			
		Zoology 7 Lab.	.....			
Biology 1 Lab. 4	.....	Bacteriology 1	.....			
Botany 4 Lab.	.....	Biology 1 Lab. 5	.....			
Botany 7 Lab.	.....	Botany 6 d Lab.	.....			
Chemistry 1 Lab. 3	.....	Chemistry 1 Lab. 4	.....			
Chemistry 2 Lab. b	.....	Chemistry 2 Lab. a	.....			
Chemistry 3 Lab. b	.....	Chemistry 3 Lab. a	.....			3
English 15	A 101	English 12	A 201			
Latin 7	A 102	Zoology 4 Lab.	.....			
Geology 1 Lab.	.....	Zoology 7 Lab.	.....			
Zoology 1 Lab.	.....					
Biology 1 Lab. 4	.....	Biology 1 Lab. 6.	.....			
Botany 4 Lab.	.....	Botany 6 d Lab.	.....			
Botany 7 Lab.	.....	Chemistry 1 Lab. 4	.....			
Chemistry 1 Lab. 3	.....	Chemistry 2 Lab. a	.....			
Chemistry 2 Lab. b	.....	Chemistry 3 Lab. a	.....			4
Chemistry 3 Lab. b	.....	Zoology 4 Lab.	.....			
Zoology 1 Lab.	.....	Zoology 7 Lab.	.....			
Chemistry 1 Lab. 3	.....	Biology 1 Lab. 6.	.....			
Chemistry 2 Lab. b	.....	Chemistry 1 Lab. 4	.....			5
		Chemistry 2 Lab. a	.....			

Faculty of Arts and Science Supplemental Examinations

SEPTEMBER, 1928

Date	Hour	First Year	Second Year	Third Year
Wednesday, September 12th	9 A.M.	History 1, 2, 3	History 1, 2, 3	To be arranged
	2 P.M.	English Literature	English Literature	
Thursday, September 13th	9 A.M.	Latin	Latin	
	2 P.M.	Chemistry 1	Chemistry 1, 2	
Friday, September 14th	9 A.M.	French	French	
	2 P.M.	Geometry	Geometry	
		Greek	Greek	
Saturday, September 15th	9 A.M.	Physics 1	Physics 1, 2, 3	
			Philosophy 1	
Monday, September 17th	9 A.M.	Trigonometry	Botany 1	
			Zoology 1	
	2 P.M.	Algebra	Algebra	
Tuesday, September 18th	9 A.M.	English Composition	English Composition	
	2 P.M.	German	Biology 1	
		Biology 1	German	
Wednesday, September 19th	9 A.M.	Economics 1	Economics 1, 2	
	2 P.M.	Geography	Geography	

FACULTY OF ARTS AND SCIENCE

The degrees offered in this Faculty are Bachelor of Arts (B.A.) and Master of Arts (M.A.).

COURSES LEADING TO THE DEGREE OF B.A.

The degree of B.A. is granted with Honours or as a Pass degree. A Pass degree will be granted on completion of courses amounting to 60 units chosen in conformity with Calendar regulations. No distinction is made between Pass and Honour students in the First and Second Years, except as regards pre-requisites for later work, but in the Third and Fourth Years there are special requirements for Honour students.

A double course is offered in Arts and Science and Applied Science leading to the degrees of B.A. and B.A.Sc. (*See "Double Course."*)

Credit will not be given for more than 15 units in the First or Second Year of the Winter Session; nor for more than 18 units in the Third or Fourth Year.

Credits obtained at the Summer Session (*see University Summer Session*) may be obtained with Winter Session credits to complete the 60 units required for the degree of B.A.; but not more than 30 units of credit may be obtained in the two academic years subsequent to Junior Matriculation nor more than 15 in the academic year subsequent to Senior Matriculation. The degree of B.A. will not be granted within three years from Senior Matriculation nor within four years from Junior Matriculation.

The maximum credit for Summer Session work in any one Calendar year is 6 units; and the maximum credit for work other than that of the regular Summer and Winter Sessions is 3 units per academic year, and 15 units in all subsequent to Senior Matriculation or First Year Arts.

No credit will be granted for work done at other universities in the same academic year in which work has been attempted at this university, whether in the Summer Session or in the

Winter Session or otherwise. Extra-mural work done at other universities prior to registration at this university may be accepted, if approved by the Faculty, but may not exceed 3 units in respect of any one academic year or 15 units in all subsequent to Senior Matriculation. If a student is granted credit for extra-mural work taken elsewhere the number of units which he may take at this university without attendance at a Winter or Summer Session will be correspondingly reduced.

Candidates for the degree of B.A. are advised to attend at least one Winter Session, preferably that of the Fourth Year. A student seeking the degree of B.A. without attending a Winter Session in his Fourth Year will be required to write, in addition to the examinations in each course, one paper in each of the two departments in which his major work has been done. This paper will be on the whole of the student's work in the department during his Third and Fourth Years.

Courses are described in terms of units. A unit normally consists of one lecture hour (or one continuous laboratory period of not less than two or more than three hours) per week throughout the session, or two lecture hours (or equivalent laboratory periods) throughout a single term.

NOTE.—Students in any of the affiliated Theological Colleges who file with the Registrar a written statement expressing their intention of graduating in Theology will be allowed to offer, in each year of their Arts course, in place of optional subjects set down in the Calendar for the Year and course in which they are registered, Religious Knowledge options, to the extent of three units taken from the following list: Hebrew, Biblical Literature, New Testament Greek, Church History, Christian Ethics and Apologetics.

FIRST AND SECOND YEARS

1. The requirements of the first two years consist of 30 units, 15 of which must be taken in each year. Courses must be chosen in conformity with the requirements that follow. Details of courses are given under the various departments.

Each student must take:	Units
(*a*) English 1 in the First Year and English 2 in the Second Year	6
*(*b*) The first two courses in a language offered for Matriculation, one course in each year	6
(*c*) Mathematics 1, in the First Year	3
(*d*) Economics 1, or History 1 or 2 or 3, or Philosophy 1	3
(*e*) Biology 1, or Chemistry 1, or Geology 1, or Physics 1, or Physics 2	3
(*f*) Three courses—not already chosen—selected from the following:— Biology 1, Botany 1, Chemistry 1, Chemistry 2, Economics 1, Economics 2, French 1, French 2, Geography 1, Geology 1, Geology 2, †Beginners' German, German 1, German 2, †Beginners' Greek, Greek 1, Greek 2, History 1, History 2, History 3, Latin 1, Latin 2, Mathematics 2, Mathematics 3, Mathematics 4, Philosophy 1, Physics 1 or Physics 2, Physics 3, Zoology 1	9

NOTE.—Botany 1, Zoology 1, Geology 1 and 2 and History 3 are not open to First Year students. Economics 1, and Philosophy 1 are open to First Year students only if the permission of the Heads of these departments is obtained. History 2 is open to First Year students only if they

*See Regulation "2."
†See Regulations "3" and "4."

are preparing for entrance to the Normal School. Geology 1, normally a Third Year subject, may be taken in the Second Year and must be so taken by students intending to take the Honour course in Geology.

2. Students, who have not matriculated in Greek, may take Beginners' Greek in their First Year as a matriculation subject and follow it up with Greek 1 and Greek 2 to satisfy the language requirements under 1 (b).

3. No student in his First Year may elect more than one beginners' course in language, and no beginners' course in language will count towards a degree unless followed by a second year's work in that language.

4. Except in the case of beginners' courses, no course in language may be taken by a student who has not offered that language at Matriculation. A beginners' course in language may not be taken for credit by a student who has obtained credit for that language at Matriculation.

5. A student taking three languages in the first two years may defer the course selected under 1 (e) to the Third or Fourth Year, and a student taking four science courses may defer the course selected under 1 (d) to the Third or Fourth Year.

NOTE:—The following special conditions affecting admission to Applied Science are given for the information of students intending to enter that Faculty:

(a) Nursing and Health courses require Junior Matriculation or equivalent (as for Arts).

(b) All other courses require:

(i) Junior Matriculation or equivalent,

(ii) Also a First Year Arts Course or equivalent, which shall include the following subjects: Chemistry 1; Mathematics 1, (Algebra, Geometry and Trigonometry); Physics 1, or 2; English 1; Latin 1, or French 1, or German B.

The passing grade is 50 per cent. for Chemistry, Physics and each of the Mathematics subjects; but in the others a pass grade of 40 per cent. will be accepted, provided an average of 50 per cent. has been obtained in the total.

Biology 1 may be taken as an optional extra subject, and, if passed with a grade of at least 50 per cent., need not be taken in Applied Science. Economics 1 taken in Arts is accepted in lieu of Economics in Applied Science. A reading kuowledge of French and German is desirable for students in Engineering.

No student may enter with any outstanding supplemental in Junior Matriculation or in any of the Chemistry, Mathematics or Physics subjects listed above; or with supplementals in other subjects to the extent of more than three units.

Students who have failed to complete the above requirements may apply for permission to take the September Supplemental Examinations in Arts.

To ensure the conformity of their courses to Calendar regulations, all students in their Second Year are advised to submit to the Dean of the Faculty, on or before March 31st of each year, a scheme of the courses they propose to take during their last two years.

THIRD AND FOURTH YEARS

The requirements of the Third and Fourth Years consists of 30 units, of which students must take, in their Third Year, not less than 15 units.

PASS CURRICULUM

1. A minimum of 15 units must be taken in two Major subjects, not less than 6 units in either, and a minimum of 6 units in some other subject or subjects. Work in the First or Second Year is required in each of the Major subjects, except in the case of Bacteriology. Both Major subjects must be chosen from one of the following groups:

(*a*) Chemistry, Bacteriology, Botany, Geology, Physics, Zoology.

(*b*) Chemistry, Physics, Mathematics.

(*c*) Economics, Philosophy, Mathematics.

(d) English, Greek, Latin, French, German, History, Economics, Philosophy.

2. Details of courses available in the Third and Fourth Years are given under the various departments.

*First and Second Year courses may be taken in the Third or Fourth Year, but only with the consent of the Department concerned and of the Department in which the candidate is doing his major work, and no such course (with the exception of Third and Fourth Year subjects which are open to Second Year students) will be counted for more than 2 units in the Third or Fourth Year. But the Department in which such a course is taken may supplement it by a reading course or special course counting one unit.

No credit will be given for a language course normally taken in the First Year unless it is taken in the Third Year and continued in the Fourth Year. Some courses, however, are intended for Honour students only.

3. During the Fourth Year one course of private reading, to count not more than 3 units, may be taken with the consent of the department concerned. A student will, for the purpose of this rule, be deemed to be in his Fourth Year if he has completed his First and Second Years and 15 units in Third and Fourth Year courses. Credit for a course of private reading is part of the maximum of 15 units which may be taken in addition to the regular work of Winter and Summer Sessions and no other additional work may be taken in the same academic year.

HONOURS

1. Students whose proposed scheme of work involves Honour courses must obtain the consent of the departments concerned and of the Dean before entering on these courses; and this consent will normally be granted only to those students who have a clear academic record at the end of their Second Year with at least Second Class standing in the subject or subjects of special-

*This regulation applies to students in Pass courses only, and an exception is made in the case of Greek 1 and German 1.

ization. (Cards of application for admission to Honour courses may be obtained at the Registrar's office.)

2. Certain departments offer Honour courses either alone or in combination with other departments. For Honours in a single department, at least 18 of the requisite 30 units must be taken in the department concerned, and at least 6 outside it. For Honours in combined courses, at least 12 units are required in each of two subjects. Particulars of these courses are given below.

3. All candidates for Honours may, at the option of the department or departments concerned, be required to present a graduating essay embodying the results of some investigation that they have made independently. Credit for the graduating essay will be not less than 3 or more than 6 units.

4. Candidates for Honours are required, at the end of their Fourth Year, to take a general examination, oral or written, or both, as the department or departments concerned shall decide. This examination is designed to test the student's knowledge of his chosen subject or subjects as a whole and is in addition to the ordinary class examinations of the Third and Fourth Years.

5. Honours are of two grades—First Class and Second Class. Students who, in the opinion of the department concerned, have not attained a sufficiently high ranking may be awarded a pass degree. If a combined Honour course is taken, First Class Honours will be given only if both the departments concerned agree; and an Honour degree will be withheld if either department refuses a sufficiently high ranking.

6. The following Honour courses are regularly offered, and other Honour courses may be arranged with the department or departments concerned.

HONOUR COURSES IN SINGLE DEPARTMENTS

Biology (Botany Option)

Prerequisites:—Biology 1, Chemistry 1, and Botany 1. Physics 1 and Zoology 1 are required before completion of the course and should be taken as early as possible. Students are advised to take Chemistry 2 and 3.

Required Courses:—Botany 3, 4, 5 (*a*), and 6 (*c*).

Optional Courses:—Biology 2 and 3; courses in Botany not specifically required; and courses in Zoology. Optional courses should be selected in consultation with the department.

Biology (Zoology Option)

Prerequisites:—Biology 1, Zoology 1, Chemistry 1.

Physics 1 and Botany 1 are required before completion of the course and should be taken as early as possible. Students are advised to take Chemistry 2 and 3.

Required Courses:—Zoology 2, 3, 5, 6.

Optional Courses:—Zoology 4, 7, 8; courses in Botany; Geology 6. These optional courses should be selected in consultation with the Head of the department.

Chemistry

Prerequisites:—Chemistry 1; Physics 1 or 2, and Mathematics 2.

Course:—Candidates are required to complete the following courses: Chemistry 2, 3, 4, 5, 7, 9 and 10.

Classics

Course:—Any three of Greek 3, 5, 6, 7, and any three of Latin 3, 4, 5, 6.

As proof of ability to write Greek and Latin prose, candidates must attain not less than Second Class standing in Greek 8 and Latin 8. During the candidate's Fourth Year, papers will be set on sight translation; and the candidate is advised to pursue a course of private reading under the supervision of the department.

There will also be a general paper on Antiquities, Literature and History.

Economics

Prerequisite:—A reading knowledge of French or German.

Course:—Economics 2 if not already taken, any 15 further units in the department, and a graduating essay which will count 3 units. (Tutorial instruction will be arranged in connection with the essay.)

Students must pass an oral examination and, if required, address a general audience on a designated subject.

Work in this department should be supplemented by a course in Ethics and by the foundational courses in History.

English Language and Literature

Prerequisite:—A reading knowledge of French or German.

Course:—English 19 (involving an examination on the life, times, and complete works of some major English author), 20, 21 (*a*), 21 (*b*), 22, 24 (the seminar, which must be attended in both years, though credit will be given only for the work of the final year), and a graduating essay which will count 3 units.

Candidates will be required to take a final Honours examination, written or oral, or both, on the History of English Literature. In the award of Honours special importance will be attached to the graduating essay and to the final Honours Examination.

If the candidate's work outside the department does not include a course in English History, he must take an examination in that subject.

Geology

Prerequisites:—Geology 1. If possible Geology 2 should be taken. Chemistry 1 and Physics 1 should be taken in the First Year. Zoology 1, to which Biology 1 is prerequisite, should be taken in the Third Year in preparation for Geology 6.

Course:—18 units to be chosen from Geology 3, 4, 5, 6, 7, 8, 10, 12.

History

Course:—Any 18 units, of which the graduating essay will count 3 units. The seminar (which carries no credit) must be attended in either the Third or the Fourth Year. A reading knowledge of French is required.

French

Course:—French 3 (*a*), 3 (*b*), 3 (*c*) in the Third Year.
French 4 (*a*), 4 (*b*), 4 (*c*) in the Fourth Year.
A graduating essay (in French) which will count 3 units.

Mathematics

Prerequisites:—Mathematics 2, Physics 1 or 2.

Course:—Any 18 units in Mathematics, and Physics 3 and 4. Mathematics 3 or 4, but not both, may be taken among the requisite 18 units. A final Honours Examination is required.

Physics

Prerequisites:—Mathematics 2, Physics 1 or 2.

Course:—Mathematics 10, 16, 17. Physics 3 and 4, and 12 additional units.

COMBINED HONOUR COURSES

(a) Biology (Botany and Zoology) and Bacteriology

Prerequisites:—Chemistry 1 and 2; Biology 1; Botany 1, or Zoology 1.

Course:—Bacteriology 1, 2 and 5; the required courses for either the Botany option or the Zoology option of the Honour course in Biology.

(b) Biology (Botany and Zoology) and Geology

Prerequisites:—Chemistry 1; Biology 1; Geology 1.

Course:—Geology 2, 3 and 6; the required courses for either the Botany option or the Zoology option of the Honour course in Biology.

(c) Chemistry and Biology (Botany and Zoology)

Prerequisites:—Chemistry 1 and 2; Physics 1 or 2; Biology 1.

Course:—Chemistry 3, 4, 5, 7 and 9; the required courses for either the Botany option or the Zoology option of the Honour course in Biology.

(d) Chemistry and Physics

Prerequisites:—Chemistry 1; Physics 1 or 2, and Mathematics 2.

Course:—Chemistry 2, 3, 4, 5 and 7, and Physics 3, 4, 7 or 9, and 8 or 10. Candidates are advised to take Mathematics 10.

(e) Chemistry and Geology

Prerequisites:—Chemistry 1; Physics 1 or 2, and Geology 1.

Course:—Chemistry 2, 3, 4, 5 and 7, and at least 12 units in Geology.

(f) Chemistry and Mathematics

Prerequisites:—Chemistry 1; Physics 1; Mathematics 1 and 2.

Course:—Chemistry 2, 3, 4, 5, 7, and at least 12 units in Mathematics, including Mathematics 10.

(g) Mathematics and Physics

Prerequisites:—Mathematics 1 and 2; Physics 1 or 2.

Course:—Mathematics, at least 12 units, including Mathematics 10, 16 and 17.

Physics, at least 12 units, including Physics 3 if not already taken, and Physics 4.

(h) Any two of:

Economics, English, French, History, Latin, Philosophy.

Economics

Prerequisite:—A reading knowledge of French or German.

Course:—Any 12 units, including Economics 2, if not already taken.

English

Prerequisite:—A reading knowledge of French or German.

Course:—English 20 and 24, and any three of the English courses of the first division. The seminar must be attended during both of the final years, but credits which count for the B.A. degree will be given only for the work of the Fourth Year. A final Honours Examination, written or oral, or both, is required on the History of English Literature since 1500.

French

Course:—If the graduating essay is written on a French subject, 3 (*a*) and 3 (*c*), 4 (*a*) and 4 (*c*); otherwise either these courses or 3 (*a*) and 3 (*b*), 4 (*a*) and 4 (*b*).

Courses 3 (*b*) and 4 (*b*) are intended primarily for Honour students and should be taken whenever possible, even if they are not required to make up the minimum number of units.

History

Prerequisite:—A reading knowledge of French.

Course:—History 4 or 5 and any 9 additional units, of which the graduating essay, if written in History, will count 3 units.

The seminar (which carries no credits) must be attended in either the Third or Fourth Year.

Latin

Course:—Latin 8 and any four of 3, 4, 5, 6, 7. In the final year candidates must pass an examination (*a*) in sight translation, and (*b*) in Latin Literature, History and Antiquities. Private reading under the direction of the department is recommended.

Philosophy

Course:—Any 12 units besides Philosophy 1, six units in each year.

COURSES LEADING TO THE DEGREE OF M.A.

1. Candidates for the M.A. degree must hold the B.A. degree from this University, or its equivalent.

2. A graduate of another university applying for permission to enter as a graduate student is required to submit with his application an official statement of his graduation together with a certificate of the standing gained in the several subjects of his course. The Faculty will determine the standing of such a student in this University. The fee for examination of certificates is $2.00.

3. Candidates with approved degrees and academic records who proceed to the Master's degree shall be required:

To spend one year in resident graduate study; or

(i) To do two or more years of private work under the supervision of the University, such work to be equivalent to one year of graduate study; or

(ii) To do one year of private work under University supervision and one term of resident graduate study, the total of such work to be equivalent to one year of resident graduate study.

4. One major and one minor shall be required.

5. Two typewritten copies of each thesis, on standard-sized thesis paper, shall be submitted. (See special circular of "Instructions for the Preparation of Masters' Theses.")

6. Application for admission as a graduate student shall be made to the Registrar by October 15th.

7. The following requirements apply to all Departments:

Prerequisites:

Minor:—For a minor, at least six units of work regularly offered in the Third and Fourth years shall be prerequisite.
For details or requirements, see regulations of the several Departments.

Major:—For a major, at least eight units of work regularly offered in the Third and Fourth years shall be prerequisite.
For details of requirements, see regulations of the several Departments.

Students who have not fulfilled the requirements outlined above during their undergraduate course may fulfil the same by devoting more than one academic year's study to the M.A. work.

M. A. Courses:

Minor:—Five or six units of regular Third or Fourth year work, or equivalents in reading courses. Examina-

tions to be written, or oral, or both at the discretion of the Department concerned.
At least second class standing is required in the subjects of the minor.

Major:—Nine or ten units of regular Third or Fourth year work, or equivalents in reading courses, of which units three to six shall be counted for the thesis.
All candidates must submit to a general examination on the major field. This examination may be written, or oral, or both, at the discretion of the Department concerned.
At least second class standing is required in the work of the major.

Languages:—No candidate will receive the degree of M.A. who has not satisfied the Head of the Department with which he is majoring of his ability to read technical articles either in French or in German.

Students doing tutorial work shall not be allowed to come up for final examination in less than two academic years after registration as M.A. students.

The following special requirements are prescribed by different departments:

Biology (Botany Option)

Prerequisites:

Minor:—Biology 1, and six additional units in Botany and Zoology.

Major:—Biology 1, Botany 1, and eight additional units including Zoology 1.

M. A. Course:

Minor:—A minimum of five units chosen in consultation with the Department.

Major:—Thesis, at least five units, and other courses to complete required units.

Biology (Zoology Option)

Prerequisites:

Minor:—Biology 1, and six additional units in Botany and Zoology.

Major:—Biology 1, Zoology 1, and eight additional units, including Botany 1.

M.A. Course:

Minor:—A minimum of five units chosen in consultation with the Department.

Major:—Thesis, at least five units, and other courses to complete the required number of units.

Economics

Prerequisites:

Minor:—The B.A. degree involving credit for at least fifteen units of work in subjects in the Department, or an equivalent.

Major:—The B.A. degree with Honours in Economics; or in Economics in combination with some other subject; or an equivalent.

M.A. Course:

All candidates for the Master's degree in this Department must attend the Honour Seminar.

English

Prerequisites:

Minor:—At least nine units of credit for English courses elective in the Third and Fourth years of the undergraduate curriculum.

Major:—At least fifteen units of credit for courses elective in the Third and Fourth years.

M.A. Course:

Minor:—Six units of credit in advanced courses in English not already taken.

Major:—(a) Twelve units of credit in advanced courses not already taken, one of which courses must be English 21a, or its equivalent, if this has not been previously offered for credit.

(b) A graduating essay which will count as an advanced course involving three units of credit.

(c) Oral examinations on the history of English Literature.

(d) A reading knowledge of either French or German. A student who offers both languages will be allowed three units of credit towards the M.A. degree.

French

Detailed Study:

(a) O.F.—*Aucassin and Nicolette.*

(b) *XVIth Century*—Montaigne, *Essais* (Hatier). *Chefs-d'oeuvre poétiques du XVI^e siècle* (Hatier).

Less Detailed:

(c) *XVIIth Century and after*—The evolution of the French Novel, particularly the novels treated in Le Breton's *Roman au XVII^e siècle—Roman au XVIII^e siècle,* and the chief Romantic Novels.

(d) *XVIIIth Century*—Beaumarchais, *Barbier de Seville.* Rousseau, *La Nouvelle Héloise—Emile.* Diderot, *Le Neveu de Rameau.* Voltaire, *Les Lettres philosophiques.*

(e) *XIXth Century*—Auzas, *La poésie au 19^e siècle.* (Oxford). Alfred de Musset, *Théâtre.* (Oxford). Rostand, *Cyrano de Bergerac.* (Fasquelle).

(f) A general knowledge of French literary history from XVIth Century to end of XIXth. This not to be detailed, but to treat of main movements.

(g) A thesis in French on a subject to be approved by the Head of the Department.

NOTE:—It is expected that the candidate will have read and will be able to discuss three plays of Molière, three of Corneille, three of Racine, and something of Boileau, Bossuet, Chateaubriand, La Fontaine, Lamartine, Victor Hugo, Balzac, Flaubert, Anatole France.

Some help will be given by lectures, explanations of texts, and advice in reading, but the Department cannot undertake to cover the whole or any considerable part of the syllabus.

History

Prerequisites:

Minor:—Two courses (six units) to be chosen from History 4 to 9 inclusive.

Major:—Three courses (nine units) to be chosen from History 4 to 9 inclusive.

M.A. Course:

Minor:—Two courses (6 units) to be chosen from History 4 to 9 inclusive; or the equivalent in reading courses. All candidates for a minor in History must attend the Honour Seminar.

Major:—Two courses (six units) to be chosen from History 4 to 9 inclusive. A thesis embodying original work to which 3 units of credit is given. All candidates for a major in History must attend the Honour Seminar. Examinations shall be written and oral. Candidates for a major will be examined orally on their thesis and their major field. An average of 75 per cent. is required to qualify in the work of a major.

Mathematics

Prerequisites:

Minor:—Mathematics 10 and at least two other Honour Courses.

Major:—Candidates must have completed the Honour Course in Mathematics, or its equivalent.

M.A. Course:

Minor:—Mathematics 16 and an additional three units to be chosen from the Honour Courses.

Major:—Any four of the graduate courses and a thesis.

EXAMINATIONS AND ADVANCEMENT

1. Examinations in all subjects, obligatory for all students, are held in December and in April. Applications for special consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period. In cases where illness is the plea for absence from examinations, a medical certificate must be presented on the appropriate form which may be obtained from the Dean's Office.

2. The passing mark will be 50 per cent. in each subject, except in the case of the First and Second Years when the work of either year is taken as a whole in one session, in which case an aggregate of 50 per cent. will be required and not less than 40 per cent. in each subject. In Beginners' Greek and Beginners' German, however, the passing mark is 50 per cent. In any course which involves both laboratory work and written examinations, students may be debarred from examinations if they fail to present satisfactory results in laboratory work, and they will be required to pass in both parts of the course.

3. Successful candidates will be graded as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 80 per cent.; Passed, 50 to 65 per cent.

4. If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed, but a student obtaining less than 30 per cent. in a subject will not be granted a supplemental examination in that subject, except by special permission of the Faculty. Notice will be sent to all students to whom such examinations have been granted.

5. Supplemental Examinations will be held in September in respect of Winter Session examinations, and in June or July in respect of Summer Session examinations. They will not be granted at any other time except by special permission of the Faculty, and on payment of a fee of $7.50 per paper. To pass a supplemental examination a candidate must obtain at least 50 per cent. A candidate with a supplemental examination outstanding in any subject which is on the Summer Session curriculum may clear his record by attending the Summer Session course in the subject and passing the required examinations.

6. If a student fails in two Supplemental Examinations (whether on the regular date or by way of special examination) in respect of the same Summer Session course, no further Supplemental Examination will be granted to that student in respect of that course.

7. Applications for supplemental examinations, accompanied by the necessary fees (See schedule of Fees) must be in the hands of the Registrar at least two weeks before the date set for the examinations.

8. No student may enter a higher year with supplemental examinations still outstanding in respect of more than 3 units of the preceding year, nor with any supplemental examination outstanding in respect of the work of an earlier year or of Matriculation unless special permission to do so is granted by Faculty. Such permission will be granted only when Faculty is satisfied that the failure to remove the outstanding supplemental examinations had an adequate cause.

9. A student may not continue in a later year any subject in which he has a supplemental examination outstanding from an earlier year, except in the case of compulsory subjects in the Second Year.

10. A student who is not allowed to proceed to a higher year may not register as a partial student in respect of the subjects of that higher year. But a student who is required to repeat

his year will be exempt from attending lectures and passing examinations in subjects in which he has already made at least 50 per cent. In this case he may take, in addition to the subjects of the year which he is repeating, certain subjects of the following year.

11. A student who fails twice in the work of the same year may, upon the recommendation of the Faculty, be required by the Senate to withdraw from the University.

12. Any student whose academic record, as determined by the tests and examinations of the first term of the First or Second Year, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session. Such a student will not be readmitted to the University as long as any supplemental examinations are outstanding.

13. Term essays and examination papers will be refused a passing mark if they are noticeably deficient in English, and, in this event, students will be required to pass a special examination in English to be set by the Department of English.

DEPARTMENTS IN ARTS AND SCIENCE

Department of Bacteriology

Professor: Hibbert Winslow Hill.
Instructor: Freda L. Wilson.
Assistant: Helen M. Mathews.

1. *General Bacteriology:*—A course consisting of lectures, demonstrations, and laboratory work.

The history of bacteriology, the place of bacteria in nature, the classification of bacterial forms, methods of culture and isolation, and various bactericidal substances and conditions will be studied. The relationship of bacteria to agriculture, household science, and public health will be carefully considered.

Text-book:—Buchanan, *Agricultural and Industrial Bacteriology,* Appleton.

Students proceeding to Bacteriology 2 need procure Jordan only (see Bacteriology 2).

Prerequisites:—Chemistry 1, and Biology 1.

Seven hours a week. First Term. 2 units.

2. *Special Bacteriology:*—A course consisting of lectures, demonstrations, and laboratory work.

The more common pathogenic bacteria will be studied, together with the reaction of the animal body against invasion by these bacteria. The course will include studies in immunity and the various diagnostic methods in use in public health laboratories.

Text-book:—Jordan, *General Bacteriology,* Latest Edition, Saunders.

Prerequisite:—Bacteriology 1.

Seven hours a week. Second Term. 2 units.

3. As in Dairying 3 (under Faculty of Agriculture.)

1½ units.

4. As in Dairying 5 (under Faculty of Agriculture.)

1½ units.

5. *Advanced Bacteriology:*—A reading and laboratory course, including immunology. Tutorial instruction of one hour per week; laboratory and demonstration hours to be arranged with the class.

Text-books:—Kolmer, *Infection and Immunity.* Jordan, *General Bacteriology,* Latest Editions, Saunders.

Prerequisites:—Bacteriology 1 and 2. 3 units.

6. *Soil Bacteriology:*—A laboratory and lecture course, in which the bacteria of soils are studied qualitatively and quantitatively, with special reference to soil fertility.

Text-book:—Löhnis and Fred, *Text-book of Agricultural Bacteriology,* Latest Edition, McGraw-Hill.

Prerequisite:—Bacteriology 1.

Five hours a week. First term. 2 units.

7. As in Dairying 7 (under Faculty of Agriculture).

3 units.

Department of Botany

Professor: A. H. Hutchinson.
Associate Professor: Frank Dickson.
Assistant Professor: John Davidson.
Assistant: Jean Davidson.
Assistant: R. W. Pillsbury.
Assistant: Dorothy Newton.

Biology

1. *Introductory Biology.*—The course is introductory to more advanced work in Botany or Zoology; also to courses closely related to Biological Science, such as Agriculture, Forestry, Medicine.

The fundamental principles of Biology; the interrelationships of plants and animals; life processes; the cell and division of labour; life-histories; relation to environment.

The course is prerequisite to all courses in Botany and Zoology.

Text-book: — Smallwood, *Text-book of Biology,* Lea & Febiger, 1920.

Two lectures and two hours laboratory per week. 3 units.

2. *Principles of Genetics:*—The fundamentals of Genetics illustrated by the race histories of certain plants and animals; the physical basis of heredity; variations; mutations; acquired characters; Mendel's law with suggested applications.

Text-book:—Castle, *Genetics and Eugenics,* Harvard Press.

Prerequisite:—Biology 1.

Two lectures per week. First Term. 1 unit.

3. *General Physiology:*—A study of animal and plant life processes. Open to students of Third and Fourth Years having prerequisite Biology, Chemistry and Physics; the Department should be consulted.

Text-book:—Bayliss, *Principles of General Physiology,* Longmans, Green.

Two lectures and three hours laboratory per week. Reference reading. Second Term. 3 units.

Botany

1. *General Botany:*—A course including a general survey of the several fields of Botany and introductory to more specialized courses in Botany.

This course is prerequisite to all other courses in Botany, except the Evening Course. Partial credit for this course (2 units) may be obtained through the Evening Course.

Text-book:—Coulter, Barnes & Cowles, *Text-book of Botany,* Vol. I, University of Chicago Press.

Prerequisite:—Biology 1.

Two lectures and two hours laboratory per week. 3 units.

2. *Morphology:*—A comparative study of plant structures. The relationship of plant groups. Comparative life-histories. Emphasis is placed upon the increasing complexity of plant structures, from the lower to the higher forms, involving a progressive differentiation accompanied by an interdependence of parts.

Text-book:—Coulter, Barnes & Cowles, *Text-book of Botany,* Vol. I, University of Chicago Press.

Prerequisite:—Botany 1.

Two lectures and four hours laboratory per week. First Term. 2 units.

3. *Plant Physiology.*

Text-book:—V. I. Palladin, *Plant Physiology,* English Edition (Translation of 6th Russian Edition), 1918, Blakiston.

Prerequisite:—Botany 1.

Two lectures and four hours laboratory work per week. First Term. 2 units.

4. *Histology:*—A study of the structure and development of plants; methods of killing, fixing, embedding, sectioning, staining, mounting, drawing, reconstructing. Use of microscope, camera lucida; photo-micrographic apparatus.

Text-books:—Eames and McDaniels, *Introduction to Plant Anatomy,* McGraw-Hill. Chamberlain, *Methods in Plant Histology,* University of Chicago Press.

Prerequisite:—Botany 1.

Seven hours per week. Second Term. 2 units

5. *Systematic Botany.*

5 (*a*) *Economic Flora:*—An introduction to the classification of plants through a study of selected families of economic plants of British Columbia; useful for food, fodder, medicine and industrial arts; harmful to crops and stock. Weeds, and poisonous plants. Methods of control.

Prerequisite:—Botany 1.

Texts:—Jepson, *Economic Plants of California,* University of California; Thomson and Sifton, *Poisonous Plants and Weed Seeds,* University of Toronto Press.

Two lectures and two hours laboratory per week. First Term. 1½ units.

5 (*b*) *Dendrology:*—A study of the forest trees of Canada, the common shrubs of British Columbia, the important trees of the United States which are not native to Canada. Emphasis on the species of economic importance. Identification, distribution, relative importance, construction of keys.

Prerequisite:—Botany 1.

Text-books:—Morton & Lewis, *Native Trees of Canada,* Dominion Forestry Branch, Ottawa; Sudworth, *Forest Trees of the Pacific Slope,* Superintendent of Documents, Washington, D.C. Davidson and Abercrombie, *Conifers, Junipers and Yew,* T. F. Unwin.

One lecture and one period of two or three hours' laboratory or field work per week. 2 units.

5 (*c*) *Descriptive Taxonomy:*—An advanced course dealing with the collection, preparation and classification of "flowering plants." Methods of field, herbarium and laboratory work. Plant description, the use of floras, preparation of keys, identification of species. Systems of classification. Nomenclature.

Prerequisites:—Botany 1 and 5 (a).

Texts:—Hitchcock, *Descriptive Systematic Botany,* Wiley & Sons, N. Y.; Henry, *Flora of Southern British Columbia,* Gage & Co., Toronto.

One lecture and four hours laboratory per week. Second Term. 1½ units.

6 (*a*) *General Plant Pathology:*—Identification and life histories of pathogens causing disease of some common economic plants; means of combating them.

Text-book:—Heald, *Manual of Plant Diseases,* McGraw-Hill.

Prerequisite:—Botany 1.

One lecture and two hours laboratory per week. Second Term. 1 unit.

6 (*b*) *Forest Pathology:*—Nature, identification and control of the more important tree-destroying fungi and other plant parasites of forests.

Text-book:—Rankin, *Manual of Tree Diseases,* Macmillan.

One lecture and two hours laboratory per week during one-half of the Second Term. ½ unit.

6 (*c*) *Plant Pathology (Elementary):*—A course similar to 6 (*a*), but including more details concerning the diseases studied.

Text-book:—Heald, *Manual of Plant Diseases,* McGraw-Hill.

Prerequisite:—Botany 1.

Two lectures and four hours laboratory per week. Second Term. 2 units.

6 (*d*) *Plant Pathology (Advanced):*—A course designed for Honour or Graduate students. Technique; isolation and culture work; inoculations; details concerning the various stages in the progress of plant diseases; a detailed study of control measures.

Prerequisite:—Botany 6 (*a*) or 6 (*c*).

One lecture and four hours laboratory per week. 3 units.

6 (*e*) *Mycology:*—A course designed to give the student a general knowledge of the fungi from a taxonomic point of view.

Text-books:—Stevens, *Plant Disease Fungi,* Macmillan.

Prerequisite:—Botany 1.

Two lectures and four hours laboratory per week. Credit will be given for a collection of fungi made during the summer preceding the course. First Term. 2 units.

6 (*f*) *History of Plant Pathology:*—A lecture course dealing with the history of the science of Plant Pathology from ancient times to the present.

Text-book:—Whetzel, *An Outline of the History of Phytopathology,* Saunders.

Prerequisite:—Botany 6 (*a*) or 6 (*c*).

One lecture per week. Second Term. ½ unit.

7. *Plant Ecology.*

7 (*a*) *Forest Ecology and Geography:*—The inter-relations of forest trees and their environment; the biological characteristics of important forest trees; forest associations; types and regions; physiography.

Text-book:—M. E. Hardy, *The Geography of Plants,* Oxford University Press.

Prerequisite:—Botany 1.

One lecture and one period of field and practical work per week. First Term. 1 unit.

Evening and Short Courses in Botany

A Course in General Botany, comprising approximately fifty lectures, is open to all interested in the study of plant life of the Province. No entrance examination and no previous knowledge of the subject is required.

The course is designed to assist teachers, gardeners, foresters, and other lovers of outdoor life in the Province. As far as possible, illustrative material will be selected from the flora of British Columbia.

The classes meet every Tuesday evening during the University session (Sept.-May) from 7.30 to 9.30 p.m. Field or laboratory work, under direction, is regarded as a regular part of the course.

No examination is required except in the case of University students desiring credit for this course. This course may be

substituted for the lecture part of Botany 1. Other students desiring to ascertain their standing in the class may apply for a written test.

A detailed statement of requirements, and work covered in this course, is issued as a separate circular. Copies may be had on request.

Department of Chemistry

Professor: R. H. Clark.
Professor of Analytical Chemistry: E. H. Archibald.
Associate Professor: W. F. Seyer.
Associate Professor: M. J. Marshall.
Assistant Professor: J. Allen Harris.
Instructor: John Allardyce.
Instructor: D. F. Stedman.
Assistant: A. F. Gallaugher.
Assistant: R. H. Ball.
Assistant: H. R. Lyle Streight.
Assistant: A. Ernest Morell.
Assistant: E. H. Nunn.

1. *General Chemistry.*—This course is arranged to give a full exposition of the general principles involved in modern Chemistry and comprises a systematic study of the properties of the more important metallic and non-metallic elements and their compounds, and the application of Chemistry in technology.

Text-book:—Byers, *Inorganic Chemistry,* Scribners.

Three lectures and three hours laboratory per week. 3 units.

2. *Qualitative and Quantitative Analysis.*

(*a*) *Qualitative Analysis.* — One lecture and six hours laboratory per week throughout the First Term. (During the first six weeks of the term an additional lecture may be substituted for a part of the laboratory work.)

(*b*) *Quantitative Analysis.*—This course embraces the more important methods of gravimetric and volumetric analysis.

Text-book:—Cumming & Kay, *Quantitative Analysis,* Gurney & Jackson.

Prerequisite:—Chemistry 1.

One lecture and six hours laboratory per week. Second Term. 3 units.

Course (*b*) must be preceded by Course (*a*).

3. *Organic Chemistry.*—This introduction to the study of the compounds of carbon will include the methods of preparation and a description of the more important groups of compounds in both the fatty and the aromatic series.

Chemistry 3 will only be given to those students taking Chemistry 2, or those who have had the equivalent of Chemistry 2.

Books recommended:—Holleman-Walker, *Text-book of Organic Chemistry,* Wiley; Gatterman, *The Practical Methods of Organic Chemistry,* Macmillan.

Two lectures and three hours laboratory per week. 3 units.

4. *Theoretical Chemistry.*—An introductory course on the development of modern Chemistry, including osmotic phenomena, the ionization theory, the law of mass action, and the phase rule.

Text-book:—James Walker, *Introduction to Physical Chemistry,* Macmillan.

Prerequisite:—Chemistry 2.

Two lectures and three hours laboratory per week. Second Term. 1½ units.

5. *Advanced Qualitative and Quantitative Analysis.*

(*a*) *Qualitative Analysis.*—The work of this course will include the detection and separation of the less common metals, particularly those that are important industrially, together with the analysis of somewhat complex substances occurring in nature.

One lecture and six hours laboratory per week. First Term.

(*b*) *Quantitative Analysis.*—The determinations made will include the more difficult estimations in the analysis of rocks, as well as certain constituents of steel and alloys. The principles on which analytical chemistry is based will receive a more minute consideration than was possible in the elementary course.

Prerequisite:—Chemistry 2.

One lecture and six hours laboratory per week. Second Term. 3 units.

6. *Industrial Chemistry.*—Those industries, which are dependent on the facts and principles of Chemistry, will be considered in as much detail as time will permit. The lectures will be supplemented by visits to manufacturing establishments in the neighbourhood, and it is hoped that some lectures will be given by specialists in their respective fields.

Prerequisites:—Chemistry 2 and 3.

Two lectures per week. 2 units.

7. *Physical Chemistry.*—The lectures, which are a continuation of those given in 4, include the kinetic theory of gases, thermo-chemistry, the application of the principles of thermodynamics to chemistry, osmotic phenomena, applications of the dissociation theory, colloidal solutions, and a study of the physical properties of gases, liquids, and solids and of their chemical constitutions.

Text-books: — Findlay, *Physico-Chemical Measurements,* Longmans.

For reference:—Ramsay's Series of Books on Physical Chemistry, Longmans. Getman, *Theoretical Chemistry,* Wiley.

Prerequisites:—Chemistry 2, 3 and 4.

Two lectures and three hours laboratory per week. 3 units.

8. *Electro-Chemistry.* — Solutions are studied from the standpoint of the osmotic and the dissociation theories. The laws of electrolysis, electroplating, electromotive force, primary and secondary cells are considered in some detail.

For reference:—Le Blanc, *Elements of Electro-Chemistry,* Macmillan; Creighton-Fink, *Theoretical Electro-Chemistry,* Vol. I, John Wiley & Sons; Allmand, *Applied Electro-Chemistry,* Longmans, Green.

Prerequisite:—Chemistry 4.

Three lectures and three hours laboratory per week. First Term. 2 units.

9. *Advanced Organic Chemistry.*—Important organic reactions will be discussed. The Carbohydrates, Proteins, Enzyme Action, Terpenes and Alkaloids will be studied in more or less detail. In the laboratory some complex compounds will be prepared and quantitative determinations of carbon, hydrogen, nitrogen, sulphur and the halogens made with the view of identifying organic compounds.

For reference:—Cohen, *Organic Chemistry,* Arnold.

Prerequisites:—Chemistry 2 and 3.

Two lectures and three hours laboratory per week. 3 units.

10. *History of Chemistry.*—Particular attention will be paid to the development of chemical theory.

For reference:—Von Meyer-McGowan, *History of Chemistry,* Macmillan.

Prerequisites:—Chemistry 2, 3, and 4.

Two hours a week. Second Term. 1 unit.

11. *Physical Organic Chemistry.*—Stereochemical theories will be discussed in greater detail than in Chemistry 9, and chemical and physico-chemical methods employed in determining the constitution of organic compounds will be studied. The electronic conception of valency as applied to organic compounds will be considered, and an outline of the work done in Electro-Organic chemistry will be given.

The lectures may be taken without the laboratory work.

Prerequisites:—Chemistry 7 and 9.

Lectures: 2 units. Laboratory, three hours per week.

1 unit.

3 units.

12. *Colloid Chemistry.*—The Chemistry of colloids and the application of colloidal chemistry to industry.

For reference:—Bogue, *Colloidal Behaviour,* Vol. I and II, McGraw-Hill; Freundlich, *Colloid Chemistry,* Methuen; Reports on Colloid Chemistry by British Association for Advancement of Science.

Prerequisites:—Chemistry 3 and 4.

Two hours a week. First Term. 1 unit.

14. *Organic Agricultural Chemistry.*—An introduction to the compounds of carbon, with special applications to problems in agriculture. The laboratory work will be adapted to the needs of the individual student.

Prerequisite:—Chemistry 2.

Two lectures and three hours laboratory per week. 3 units.

15. *Dairy Chemistry.*—The chemistry of the carbohydrates, fats, and proteins will be discussed in outline, and the chemical processes involved in enzyme action and fermentation will receive consideration.

Text-book:—Chamberlain, *Agricultural Chemistry,* Macmillan.

Prerequisites:—Chemistry 2 and 3.

One lecture and three hours laboratory per week. 2 units.

17. *Chemical Thermodynamics.*—Derivation of fundamental equations and application to the gas laws, theory of solutions, chemical equilibrium, electrochemistry and capillarity. Study of the quantum theory and the Nernst heat theorem.

Text-book:—Lewis & Randall, *Principles of Thermodynamics,* McGraw-Hill. Reference:—Sackur, *Thermochemistry and Thermodynamics,* Macmillan.

Prerequisite:—Chemistry 7.

Two lectures per week. Second Term. 1 unit.

18. *Advanced Inorganic Chemistry.*—A more detailed treatment of the chemistry of the metals than is possible in Chemistry 1, together with the chemistry of the Rare Elements.

Prerequisite—Chemistry 2 and 4.

One lecture per week. 3 units.

Text-book:—Lewis & Randall, *Principles of Thermodynamics,* McGraw-Hill. Reference:—Sackur, *Thermochemistry and Thermodynamics,* Macmillan.

19. *Clinical Laboratory Chemistry.*—This course is a general introduction to the chemical problems met with by the technician in the modern clinical laboratory. The underlying

chemical facts and principles of the various tests in common use will be considered, with a general discussion of their physiological significances.

Prerequisites:—Chemistry 2 and 3.

Two lectures and one period of three hours laboratory work per week. 3 units.

Department of Classics

Professor: Lemuel Robertson.
Professor of Greek: O. J. Todd.
Associate Professor: H. T. Logan.
Instructor: Geoffrey B. Riddehough.
Assistant: H. R. Trumpour.
Assistant: Day Walker.
Assistant: Winifred E. Boyes.

Greek

Beginners' Greek.—White, *First Greek Book,* Chap. I-XLVIII; Copp, Clark.

Four hours a week. 3 units.

1. *Lectures.*—White, *First Greek Book,* Chap. XLIX-LXXX. Xenophon, *Anabasis I and IV,* Goodwin and White, Ginn.

History.—Shuckburgh, *History of Greece,* Chap. I-V, Unwin.

Four hours a week. Mr. Logan. 3 units.

2. *Lectures.*—Plato, *Apology,* Dyer-Seymour, Ginn; Aeschylus, *Prometheus Bound,* Wecklein-Allen, Ginn.

Composition—Arnold's Greek Prose Composition, Abbott, Longmans. Selected passages will occasionally be set for Unseen Translation.

History.—Shuckburgh, *History of Greece,* Chap. VI-X, Unwin.

Four hours a week. Mr. Todd, Mr. Logan. 3 units.

3. *Lectures.*—Thucydides, *History, Book VII,* Marchant, Macmillan; Sophocles, *Antigone,* Jebb and Shuckburgh, Cambridge; Euripides, *Heracles,* Gray and Hutchinson, Cambridge.

Literature.—Wright, *A Short History of Greek Literature,* American Book Company.

Three hours a week. Mr. Logan, Mr. Todd. 3 units.
(Given in 1928-29 and alternate years.)

5. *Lectures.*—Homer, *Iliad* (Selections), Monro, Iliad, 2 Vols., Oxford; Demosthenes, *Third Olynthiac, First and Third Philippics,* Butcher, Oxford (Vol. I.).

Literature.—Wright, *A Short History of Greek Literature,* American Book Company.

Three hours a week. 3 units.
(Given in 1929-30 and alternate years.)

6. *Lectures.*—Aristophanes, *The Birds,* Hall and Geldart, Oxford; Herodotus, *History,* Hude, Oxford (the equivalent of one book will be read; Lysias, *Orations* (Selections), Hude, Oxford. (Open only to those who have taken or are taking Greek 3 or 5.)

Three hours a week. Mr. Todd, Mr. Robertson. 3 units.
(Given in 1928-29 and alternate years.)

7. *Lectures.*—Aristotle, *Ars Poetica,* Bywater, Oxford; Plato, *The Republic* (Selections), Burnet, Oxford. (Open only to those who have taken or are taking Greek 3 or 5.)

Three hours a week. 3 units.
(Given in 1929-30 and alternate years.)

8. *Composition.*—Obligatory for Honour students; to be taken in both Third and Fourth Years.

One lecture a week (for Third Year students); individual conferences. Mr. Todd. 1 unit.

9. *Greek History to* 14 *A.D.*—The course will begin with a brief survey of contributary civilizations of pre-Hellenic times and will include a study of social and political life in the Greek world during the period. Knowledge of Greek is not prerequisite.

Three hours a week. 3 units
(Given in 1929-30 and alternate years.)

10. *Greek Literature in English Translation.*—A survey of Greek literary history from Homer to Lucian, with reading and interpretation of selected works from the most important authors.

Knowledge of Greek is not prerequisite.

Members of the class will provide themselves with the following books: Aeschylus, translated by Campbell (Oxford); Sophocles, translated by Campbell (Oxford); Euripides, *Medea* and *Alcestis,* translated by Murray (Allen and Unwin); Aristophanes, translated by Frere, Vol. I (Dutton).

Two hours a week. 2 units.

(Given in 1929-30 and alternate years.)

For those who wish to extend the work to 3 units additional reading will be provided.

Latin

1. *Lectures.*—Cicero, *De Senectute,* Shuckburgh-Egbert, Macmillan, N. Y.; Ovid, *Elegiac Selections,* Smith, Bell.

Composition.—Bradley, *Arnold's Latin Prose Composition,* Longmans, to exercise 19.

History.—Robertson and Robertson, *The Story of Greece and Rome,* Dent.

Three hours a week. 3 units.

Mr. Robertson, Mr. Todd.

A fourth hour a week will be devoted to lectures on the Roman History prescribed. Attendance at these lectures is voluntary and no formal credit is given.

2. *Lectures.*—Virgil, *Aeneid, Bk. VI,* Page, Macmillan; Cicero, *Pro Archia,* Nall, Macmillan; *Horace Odes II,* Page, Macmillan.

History.—Boak, *A History of Rome to 565 A.D.,* Macmillan, chapters 14 to 20.

Three hours a week. Mr. Robertson, Mr. Logan. 3 units.

A fourth hour a week will be devoted to lectures on the Roman History prescribed. Attendance at these lectures is voluntary and no formal credit is given.

3. *Lectures.*—Terence, *Phormio,* Sloman, Oxford; Virgil, *Bucolics and Georgics,* Page, Macmillan.

Literature:—Duff, *Writers of Rome,* Oxford.

Three hours a week. Mr. Todd, Mr. Logan. 3 units.

(Given in 1928-29 and alternate years.)

4. *Lectures.*—Horace, *Epistles,* Wilkins, Macmillan; Cicero, *Selected Letters,* Pritchard & Bernard, Oxford.

Literature: Duff, *Writers of Rome,* Oxford.

Three hours a week. 3 units.

(Given in 1929-30 and alternate years.)

5. *Lectures.*—Juvenal, *Satires,* Duff, Cambridge; Seneca, *Select Letters,* Summers, Macmillan. (Open only to those who have taken or are taking, Latin 3 or 4.)

Three hours a week. Mr. Robertson. 3 units.

(Given in 1928-29 and alternate years.)

6. *Lectures.*—Tacitus, *Histories I, II,* Godley, Macmillan; Garrod, *Oxford Book of Latin Verse* (Selections), Oxford. (Open only to those who have taken or are taking Latin 3 or 4.)

Three hours a week. 3 units.

(Given in 1929-30 and alternate years.)

7. *Lectures.*—Roman History from 133 B.C. to 180 A.D.

Text-books: *A Short History of the Roman Republic,* Heitland, Cambridge; *A History of the Roman Empire,* Bury, Murray.

A knowledge of Latin is not a prerequisite for this course.

Three hours a week. Mr. Logan. 3 units.

(Given in 1928-29 and alternate years.)

8. *Composition.*—Obligatory for Honour students; to be taken in both Third and Fourth Years.

One lecture a week (for Third Year students); individual conferences. Mr. Todd. 1 unit.

Department of Economics, Sociology and Political Science

Professor: Theodore H. Boggs.
Associate Professor: H. F. Angus.
Associate Professor: S. E. Beckett.
Assistant: Doris E. Lazenby.

Economics

1. *Principles of Economics.*—An introductory study of general economic theory, including a survey of the principles of value, prices, money and banking, international trade, tariffs, monopoly, taxation, labour and wages, socialism, the control of railways and trusts, etc.

Fairchild, Furniss, Buck, *Elementary Economics,* Macmillan; *The Canada Year Book,* 1927.

Economics 1 is the prerequisite for all other courses in the department, but may be taken concurrently with Economics 2, or Government 1. This rule may be waived in the case of students of the Department of Nursing who may find it impossible to take both Economics 1 and Sociology 1.

Three hours a week. 3 units.

2. *History of Economic Life and Economic Thought.*—A brief outline of Economic Thought, and of Economic and Social conditions in England previous to 1776. A survey of the more important phases of European Organization from the time of the Middle Ages, with special reference to the Industrial Revolution, the Progress of Agriculture, and resultant social conditions. The development of modern Economic Thought, with a study of the influence of Smith, Malthus, Ricardo, Mill and others, and the place of the Deductive and Historical Methods.

Toynbee, *The Industrial Revolution,* Longmans. Marshall and Lyon, *Our Economic Organization,* Macmillan; and assigned readings.

Three hours a week. Mr. Beckett. 3 units.

3. *Labour Problems and Social Reform.*—A study of the rise of the factory system and capitalistic production, and of the more important phases of trade unionism in England, Canada,

and the United States. A critical analysis of various solutions of the labour problem attempted and proposed; profit-sharing, co-operation, arbitration and conciliation, scientific management, labour legislation and socialism.

Furniss, *Labor Problems,* Houghton Mifflin. Carpenter, *Guild Socialism,* Appleton. Simkhovitch, *Marxism versus Socialism,* Williams & Norgate; and assigned readings.

Three hours a week. Mr. Boggs. 3 units.

(Given in 1929-30 and alternate years.)

4. *Money and Banking.*—The origin and development of money. Banking principles and operations, laws of coinage, credit, price movements, foreign exchange. Banking policy in the leading countries, with particular reference to Canada.

Holdsworth, *Money and Banking,* Appleton. Foster and Catchings, *Money,* Houghton Mifflin. Dunbar, *Theory and History of Banking,* Putnam, 1917. Phillips, *Readings in Money and Banking,* Macmillan; and assigned readings.

Three hours a week. Mr. Boggs. 3 units.

5. *Government Finance.*—An outline course dealing with the principles and methods of taxation, and administration of public funds. Topics examined include: growth of taxation methods; theories of justice in taxation; classification, increase, economic effects, and control of expenditures; property, business, personal, commodity, and inheritance taxes, with reference to Canada, Britain and other countries; the single tax; double taxation; shifting, incidence and economic effects of taxation; flotation, administration, conversion and redemption of government loans.

Lutz, *Public Finance,* Appleton, 1924; and assigned readings.

Three hours a week. Mr. Beckett. 3 units.

(Given in 1928-29 and alternate years.)

6. *International Trade and Tariff Policy.*—A survey of the theory of international trade and the foreign exchanges; the balance of trade, foreign investments and other fundamental factors; the problem of Reparations and of War Debts; the protective tariff and commercial imperialism; the commercial policy of the leading countries, with considerable attention to Canada.

Griffin, *Principles of Foreign Trade,* Macmillan. Fraser, *Foreign Trade and World Politics,* A. A. Knopf. Taussig, *Selected Readings in International Trade and Tariff Problems,* Ginn; and assigned readings.

Three hours a week. Mr. Boggs. 3 units.

(Given in 1928-29 and alternate years.)

7. *Corporation Economics.*—Historical development of the different forms of industrial organization, including the partnership, joint-stock company, and the corporation, and the later developments, such as the pool, trust, combination, and holding company. Methods of promotion and financing, over-capitalization, stock market activities, the public policy toward corporations, etc.

Readings to be assigned.

Three hours a week. Mr. Angus. 3 units.

(Given in 1929-30 and alternate years.)

8. *Provincial and Local Finance.*—A brief summary of fundamental principles of taxation. Sources of revenue, and tax systems of federal, and provincial and municipal governments, especially of British Columbia. War Finance and its influences on local finance. Chief problems of provincial and municipal finance and administration. Separation of sources of provincial and municipal revenues. Methods of municipal supervision and control. Government debts.

Assigned readings.

Three hours a week. Mr. Beckett. 3 units.

(Given in 1929-30 and alternate years.)

Agricultural Economics

1. *Agricultural Economics.*—The principles of Economics as applied to Agriculture; historical background, the agricultural problem; and some special topics, such as the agricultural surplus, production in relation to population growth, the farm income, and the share of Agriculture in the national income.

Taylor, *Agricultural Economics,* Macmillan.

References and assigned readings from Gray, Carver, Nourse, and others.

Three lectures per week. Mr. Clement. 3 units.

2. *Marketing.*—The principles of Marketing as applied to the individual farm and to Agriculture as a whole. The general principles of Marketing, the marketing of agricultural products as compared to wholesale and retail distribution of manufactured goods, the contributions of national Farmer Movements, co-operative marketing as illustrated by the marketing of wheat, fruit and milk in Canada.

Brown, *Marketing,* Harper and Brothers; Mackintosh, *Agricultural Co-operation in Western Canada,* Ryerson Press, Toronto; references and assigned readings from Macklin, Hibbard, Boyle, Benton, and others.

Three lectures per week. Mr. Clement. 3 units.

Government

1. *Constitutional Government.*—This course deals with the nature, origin, and aims of the State; and with the organization of government in the British Empire, the United States of America, France, and Germany.

Readings to be assigned.

Three hours a week. Mr. Angus. 3 units.

2. *Introduction to the Study of Law.*—(*a*) A rapid survey of Legal History. (*b*) Outlines of Jurisprudence.

Readings to be assigned.

Three hours a week. Mr. Angus. 3 units.

3. *Imperial Problems.*—A course on problems of government within the British Empire, to be given in alternate years with Economics 7.

Readings to be assigned.

Government 1 is a prerequisite of this course, but may be taken concurrently with it.

Three hours a week. Mr. Angus. 3 units.

(Given in 1928-29 and alternate years.)

Sociology

1. *Principles of Sociology.*—An introductory study of early man and his relation to his environment; of races of men and their distribution; of the early forms and development of industrial organization, marriage and the family, arts and sciences, religious systems, government, classes, rights, etc. A review also of certain of the social problems of modern society growing out of destitution, crime, overcrowding, etc. A critical survey of schemes for betterment.

Blackmar & Gillin, *Outlines of Sociology,* Macmillan. Beach, *An Introduction to Sociology and Social Problems,* Houghton-Mifflin Company.

Three hours a week. Mr. Beckett. 3 units.

2. *Social Origins and Development.*—The different views relating to the origin and evolution of human society; the geographic factor and economic methods in their bearing upon social life; primitive mental attitudes; the development of ethical, etc., ideas among primitive peoples; primitive institutons, tools, art, and their modern forms; the growth of cardinal social ideas through the ancient and classical period to the present time.

(Not given in 1928-29.)

Department of Education

Professor: G. M. Weir.
Associate Professor: Jennie Benson Wyman.
Special Lecturer: H. T. J. Coleman.
Lecturers in High School Methods: the following Heads of Departments: R. H. Clark, H. Ashton, D. Buchanan, T. C. Hebb, L. Robertson, W. N. Sage (Acting Head), G. G. Sedgewick, also W. K. Beech and C. H. Scott of the Vancouver School staff.
Lecturers in Elementary School Methods: A. Anstey, A. R. Lord, F. W. Dyke, C. H. Scott, R. Straight, Miss E. J. Trembath.
Lecturer in Junior High School Organization and Administration: H. B. King.

Courses in Education

Teacher Training Course

1. Registration

Documentary evidence of graduation in Arts or Science from a recognized university must be submitted to the University Registrar by all candidates other than graduates of The University of British Columbia. All correspondence in connection with the Teacher Training course should be addressed to the University Registrar, from whom registration cards may be procured.

2. Certificates and Standing

At the close of the University session, successful candidates in the Teacher Training Course will be recommended to the Provincial Department of Education for the Academic Certificate, and to the Faculty of Arts and Science for the University Diploma in Education. Successful candidates will be graded as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 80 per cent.; Passed, 50 to 65 per cent.

All students registered in the Teacher Training Course at the University are entitled to the privileges accorded to students in the various Faculties, and are also subject to the regulations of the University regarding discipline and attendance at lectures.

First or Second Class standing in History and Principles of Education and in Educational Psychology of the Teacher

Training Course is accepted as equivalent to a Minor for an M.A. degree, subject in each case to the consent of the Head of the Department in which the student wishes to take his Major.

3. PREPARATORY COURSES IN ARTS AND SCIENCE

After 1928 candidates will not be admitted to courses in High School Methods unless they shall have obtained at least six (6) units of credit in the corresponding courses normally offered in the third and fourth years. After 1930 the above prerequisite will be nine (9) units. Special cases will be considered on their merits by the Head of the Department concerned and the Professor of Education.

4. COURSES OFFERED

A. Throughout the University Session.

(1) *Educational Psychology:*

Text: Gates, *Psychology for Students of Education,* Macmillan.

References: Pillsbury, *Education as a Psychologist Sees It,* Macmillan; Thomson, *Instinct, Intelligence and Character,* Longman; Burnham, *The Normal Mind,* Appleton.

Prerequisite: Philosophy 1, or its equivalent—obligatory from 1929.

(2) *School Administration and Law:*

Texts: Sears, *Classroom Organization and Control* (Revised Edition), Houghton Mifflin. *Manual of School Law,* British Columbia.

References: Cubberley, *Public School Administration,* Houghton, Mifflin; Cubberley, *The Principal and His School,* Houghton, Mifflin; Perry, *The Management of a City School,* Macmillan (Revised Edition); Davis, *Junior High School Education,* World Book Company; Johnson, *Administration and Supervision of the High School,* Ginn & Co.; *Report of the School Survey Commission,* British Columbia; Fifth Year book of the Department of Superintendence; Assigned readings.

(3) *History and Principles of Education:*

(*a*) Educational leaders and movements with special reference to the period since 1800.

(*b*) Educational systems:—Canada with special reference to British Columbia; England; France; Germany; the United States.

Texts: Cubberley, *A Brief History of Education,* Houghton Mifflin. Chapman and Counts, *Principles of Education,* Houghton Mifflin.

References: Williams and Rice, *Principles of Secondary Education,* Ginn & Co.; Birchenough, *History of Elementary Education in England and Wales,* University Tutorial Press; Sandiford, *Comparative Education,* J. M. Dent; Balfour, *Educational Systems of Great Britain and Ireland,* Oxford; Farrington, *Public Primary School System of France,* Columbia University; Kandel, *The Reform of Secondary Education in France,* Columbia University; Alexander, *The Prussian Elementary Schools,* Macmillan; Kandel, *Twenty-five Years of American Education,* Macmillan; Cubberley, *Readings in the History of Education,* Houghton Mifflin.

(4) *Interpretation and Construction of Educational Tests and Measurements.*

Text: Hines, *A Guide to Educational Measurements,* Houghton Mifflin.

References: Pintner, *Intelligence Testing,* Holt; Monroe, DeVoss and Kelly, *Educational Measurements,* Houghton Mifflin; Williams, *Graphic Methods in Education,* Houghton Mifflin; Otis, *Statistical Measurement,* World Book Co.; Ruch, *Improvement of the Written Examination,*

Scott Foresman & Co.; Ruch and Stoddard, *Tests and Measurements in High School Instruction,* World Book Co.

The above courses are obligatory for all students.

B. During the Fall Term.

From the three courses listed below candidates will select at least six hours of work a week.

(1) *Psychology of the Elementary School Subjects.*

Texts: Reed, *Psychology of Elementary School Subjects,* Ginn & Co.; Stone, *Silent and Oral Reading,* Houghton Mifflin.

References: Freeman, *Psychology of the Common Branches,* Houghton Mifflin; Stormzand, *Progressive Methods of Teaching,* Houghton Mifflin; Charters, *Teaching the Common Branches,* Houghton Mifflin.

Assigned readings from the Year Books and Educational Journals.

(2) *Methods in Elementary School Subjects:*

Assigned Readings.

(3) *Junior High School Organization and Administration:* Assigned Readings.

C. During the Spring Term.

(1) *Methods in High School Subjects:*

Text: Judd, *Psychology of Secondary Education,* Ginn & Co.

References: Douglass, *Modern Methods in High School Teaching,* Houghton Mifflin Co.

Assigned Readings.

Methods Courses in the following high school subjects are offered: English, History, Latin, French, Mathematics, Physics, Chemistry. Two courses are obligatory (for teaching and examination purposes), while one course may be attended as an auditor. Nine hours a week.

5. COURSES IN EDUCATION FOR THIRD AND FOURTH YEAR UNDERGRADUATES IN ARTS

Undergraduates who intend to register in the Teacher Training Course are advised to take six units in Education for credit towards the B.A. degree.

1. *Introduction to the Study of Education.*—This course is intended to serve as an introduction to the formal study of education. The following topics, among others, will be discussed:

Significant phases of educational development in Eastern Canada and British Columbia; Section 93, B. N. A. Act—legal and social implications; present-day educational problems; recent educational developments, such as scientific school supervision, use of tests and measurements, problems of curriculum reconstruction, principles of educational finance; a general study of the philosophy of the educational process—the knowledge-as-power conception, the disciplinary conception, etc., the learning process, the teaching process, etc.; problems in educational sociology—social relations of the school, problems of rural education, rural-school types and problems of reorganization, adult vocational and extension education; educational and vocational guidance; comparative survey of outstanding educational developments in Europe and America in the last half century. An attempt will be made to familiarize the student with current tendencies in educational theory and practice and critically to examine the sociological, economic, and philosophic background of these tendencies.

Text: Cubberley, *Introduction to the Study of Education,* Houghton Mifflin.

References: Judd, *Introduction to the Scientific Study of Education,* Ginn & Co.; Smith, *Principles of Educational Sociology,* Houghton Mifflin. Readings from the *Yearbooks, School Surveys and Educational Journals.* 3 units.

2. *Elementary Educational Psychology.*—An introductory survey of the field of psychology as applied to education. A study of the literature on the learning process, formal discipline, transfer of training, work and fatigue and of individual differences in relation to heredity and environment.

Texts and references to be assigned. 3 units.

The following conditions apply to courses in Education:

(a) Not more than six units in Education may be taken for credit towards the B.A. degree.

(b) An undergraduate with special qualifications may (on the recommendation of the Faculty) be allowed to substitute an advanced course in Education (of similar content) for one of the courses mentioned above.

(c) Until the work of the first and second years has been completed, courses in Education are not open (for credit) to undergraduates.

6. OBSERVATION ASSIGNMENTS AND PRACTICE TEACHING

1. Fall Term: At least forty (40) hours in the elementary schools of the Province. Obligatory for all students.

2. Spring Term: At least sixty (60) hours in the high schools of the Province. Obligatory for all students.

Department of English

Professor: G. G. Sedgewick.
Associate Professor: W. L. MacDonald.
Associate Professor: F. G. C. Wood.
Associate Professor: Thorleif Larsen.
Associate Professor: F. C. Walker.
Assistant Professor: M. L. Bollert.
Assistant Professor: Frank H. Wilcox.
Assistant Professor: Philip A. Child.
Special Lecturer: Charles G. D. Roberts
Assistant: Dorothy Blakey.
Assistant: M. Dorothy Mawdsley.
Assistant: Edmund Morrison.

FIRST YEAR

1. (*a*) *Literature.* — Elementary study of a number of literary forms to be chosen from the short story, the play, the novel, the essay, the simpler sorts of poetry.

Texts for 1928-29: Hastings, Clough and Mason, *Short Stories,* Houghton Mifflin. Euripides, *Bacchae,* in Gilbert Murray's paraphrase. Shakespeare, *Julius Caesar.* Sheridan, *The School for Scandal,* Everyman. Ibsen, *The Doll's House,* Everyman. *The Golden Book of Modern English Poetry,* Dent.

Two hours a week.

(*b*) *Composition.* — Elementary forms and principles of composition.

Two hours a week. 3 units.

The work in composition consists of (i) themes and class exercises, and (ii) of written examinations. Students will be required to make a passing mark in each of these two parts of the work.

SECOND YEAR

2. (*a*) *Literature.* — Studies in the history of English Literature.

Lectures and texts illustrative of the chief authors and movements from Tottel's Miscellany to Shelley. Neilson and Thorndike, *A History of English Literature,* Macmillan.

Two hours a week.

(*b*) *Composition.*—Narrative and descriptive themes; the writing of reports.

One hour a week. 3 units.

(*c*) *Literature.*—Readings from Nineteenth Century poetry since 1830.

For this course, which is intended for prospective Honour students in English and for others especially interested in the study of Literature, no formal credit is given.

One hour a week.

THIRD AND FOURTH YEARS

The curriculum in English for students of the Third and Fourth Years is arranged in three divisions. The first includes a central body of general courses which will be offered, as far as possible, every year, and to each of which are assigned 3 units of credit. In the second division are listed courses carrying 2 units of credit and usually given in alternate years. And the third consists of courses designed especially for Honour and Graduate students, and open to others only by special permission.

DIVISION I

9. *Shakespeare.*—This course may be taken for credit in two successive years. In 1928-29, 9 (b) will be given as follows:

i. A detailed study of the text of *A Midsummer-Night's Dream, Henry V, Othello, Antony and Cleopatra.*

ii. Lectures on Shakespeare's development, on his use of sources, and on his relation to the stage and the dramatic practice of his time.

Students will provide themselves with annotated editions of the four plays named above, and with *The Facts about Shakespeare,* by Neilson and Thorndike, Macmillan. They are advised to get the *Cambridge Shakespeare,* ed. Neilson, or the *Oxford Shakespeare,* ed. Craig.

Three hours a week. Mr. Sedgewick. 3 units.

9 (*a*). (Given in 1929-30 and alternate years.)

10. *The Drama to 1642.*—The course begins with a study of the Theban plays of Sophocles and of Aristotle's Theory of Tragedy. The main subject of the course, however, is Elizabethan Drama: (1) its beginnings in the Miracle and Morality Plays and in the Interludes; (2) its development in Shakespeare's predecessors—Lyly, Peele, Greene, Kyd, and Marlowe; (3) its culmination in Shakespeare; (4) and its decline in Jonson, Beaumont and Fletcher, Middleton, Webster, Massinger, Shirley, and Ford.

Texts:—Lewis Campbell, *Sophocles in English Verse,* World's Classics, Oxford. *Everyman and Other Interludes,* Dent. *Chief Elizabethan Dramatists,* ed. Neilson. *Shakespeare,* ed. Craig, Oxford, or the *Cambridge Shakespeare,* ed. Neilson.

Three hours a week. Mr. Larsen. 3 units.

13. *The English Novel from Richardson to the Present Time.*—The development of English fiction will be traced from Richardson, Fielding, Smollett, and Sterne through Goldsmith, Mrs. Radcliffe, Jane Austen, Scott, C. Brontë, Dickens, Thackeray,

and George Eliot to Trollope, Meredith, Stevenson, and a few representative novelists now living.

A fair knowledge of the works of Jane Austen, Scott, Dickens, Thackeray, and George Eliot is a prerequisite for those taking this course.

Three hours a week. Mr. Wood. 3 units.

14. *Eighteenth Century Literature.*—This course aims to give a view, as comprehensive as possible, of the main currents of English thought and literature during the period 1660-1800. From year to year various periods will be stressed and the work of various writers emphasized. Generally speaking, the course is mainly concerned with the work of such men as Dryden, Pope, Swift, Addison, Steele, Johnson, Goldsmith, Burke and Burns.

Three hours a week. Mr. MacDonald. 3 units.

16. *Romantic Poetry,* 1780 *to* 1830.—Studies in the beginnings and progress of Romanticism, based chiefly on the work of Wordsworth, Coleridge, Byron, Keats, Shelley, Scott.

Texts: The Oxford editions of the first five poets named.

For reference: Elton, *A Survey of English Literature,* 1780-1830.

Three hours a week. Mr. Walker. 3 units.

17. *Victorian Poetry.*—This course is concerned chiefly with the work of Tennyson, Browning, and Arnold. A few weeks at the close of the term will be devoted to a survey of the development of later poetry down to the work of Hardy.

Texts: Browning, *Complete Poetical Works,* Cambridge Edition. Arnold, *Poems,* Oxford Edition. Tennyson, *Poems,* Globe Edition. Page, *British Poets of the Nineteenth Century,* Sanborn.

For reference: Elton, *A Survey of English Literature,* 1830-1880.

Three hours a week. Mr. Wilcox. 3 units.

19 (*a*). *Private Reading.*—Students who are candidates for an Honours degree in English may elect a course of private reading in their Junior Year. 3 units.

19 (*b*). *Private Reading.*—Students of the Senior Year may pursue, with the consent and under the direction of the Department, a course of private reading. In such courses examinations will be set, but no class instruction will be given.

3 units.

DIVISION II

5. *The Elements of Poetics.*—Studies in the criticism and appreciation of poetry; the poetic frame of mind; the emotional element in poetry; poetic content and the nature of poetic truth; poetic form and its varieties; metrics; contemporary developments in poetry; literary criticism, its nature and function; and an outline of aesthetic theory from Aristotle to Croce. Exercises in criticism and metrical composition.

Winchester, *Principles of Literary Criticism.*

Two hours a week. Mr. Larsen. 2 units.

(Given in 1928-29 and alternate years.)

6. *Narrative Writing.*—A study of narrative composition: (*a*) critical reading of a considerable number of modern short stories and of two or three modern novels; (*b*) frequent critical and narrative themes.

Only a limited number of students will be admitted to this course.

Two hours a week. 2 units.

(Given in 1928-29.)

7. *Technique of the Drama.*—A practical study of dramatic form and structure based on the analysis of modern plays, with special reference to the one-act play as an art form. *Playmaking,* by Wm. Archer, and *Representative One-act Plays by British and Irish Authors,* Little, Brown, are the texts used in this course.

Two hours a week. Mr. Wood. 2 units.

(Given in 1929-30 and alternate years.)

8. *English Poetry, exclusive of the Drama, from the death of Chaucer to 1649*—(1) The Renaissance; (2) the Fifteenth

Century; (3) the Scottish Chaucerians; (4) John Skelton and the poets of the Transition; (5) the Elizabethan Lyric; (6) the Sonneteers; (7) Spenser and the Spenserians; (8) the Jacobean Poets; (9) the Caroline Poets; (10) the Theory of Poetry throughout the period.

Texts:—Ward, *The English Poets,* Vol. I. *Spenser,* ed Smith and de Sélincourt, Oxford.

Two hours a week. Mr. Larsen. 2 units.

(Given in 1929-30 and alternate years.)

11. *English Drama since* 1600.—A survey of English drama from the time of Ben Jonson to the present. Later Elizabethan drama, representative plays of the Restoration, the works of Goldsmith, Sheridan, and of early Nineteenth Century writers will be considered. There will follow a study of some dramatists of recent years, including Wilde, Shaw, Galsworthy, Pinero, Jones, Stephen Phillips, Barrie, and the Irish School.

Two hours a week. Mr. Wood. 2 units.

(Given in 1928-29 and alternate years.)

12. *Narrative Poetry.*—Discussion of the types,—epic, ballad, and romance,—with readings, in suitable translations or modern versions where desirable; modern ballads and metrical romances represented by the work of Scott, Tennyson, Morris, Masefield and others.

Two hours a week. Mr. MacDonald. 2 units.

(Given in 1929-30 and alternate years.)

15. *American Literature.*—A survey of the principal writers of this continent during the Nineteenth Century.

Texts: Broadus, *A Book of Canadian Prose and Verse,* Oxford. Foerster, *American Prose and Poetry,* Houghton, Mifflin.

Two hours a week. Mr. Wilcox. 2 units.

(Given in 1928-29.)

18. *Social, literary, religious and scientific movements of the Victorian period:* Carlyle, Ruskin, Macaulay, Newman, Darwin, Mill, Arnold, Butler, Stevenson.

Two hours a week. Mr. MacDonald. 2 units.
(Given in 1928-29.)

DIVISION III

20. *Chaucer and Middle English.* — (*a*) Middle English grammar with the reading of representative texts. (*b*) The Canterbury Tales.

Texts: A Middle English reader and the Oxford Chaucer, ed. Skeat.

Three hours a week. Mr. Sedgewick. 3 units.
(Given in 1928-29 and alternate years.)

21a. *Anglo-Saxon*—Moore & Knott, *The Elements of Old English,* George Wahr. Bright, *Anglo-Saxon Reader,* Henry Holt.

Two hours a week. Mr. Walker. 2 units.

21b. *Anglo-Saxon.*—Beowulf.

Two hours a week after Christmas. Mr. Walker. 1 unit.

22. *Studies in Linguistic History.* — Origins, growth, and development of the English language. A brief introduction to Germanic philology; the Indo-European language group; Grimm's Law; the Anglo-Saxon period; Norman, French, and Latin influences; study of the gradual evolution of forms, sounds, and meanings.

Two hours a week before Christmas. Mr. Walker. 1 unit.

24. *Seminar.*—In this class advanced students will get practice in some of the simpler methods of criticism and investigation. The subject for 1928-29 will probably be some problems in the history of literary criticism.

Two hours a week. Mr. Larsen. 2 units.

Department of Geology and Geography

Professor: R. W. Brock.
Professor of Physical and Structural Geology: S. J. Schofield.
Professor of Palaeontology and Stratigraphy: M. Y. Williams.
Associate Professor of Mineralogy and Petrology: T. C. Phemister.
Assistant: J. A. E. Kania.

1. *General Geology.*—This course serves as an introduction to the science of Geology. The following subjects are treated in the lectures and laboratory:

(*a*) *Physical Geology,* including weathering, the work of the wind, ground water, streams, glaciers and the ocean, the structure of the earth, earthquakes, volcanoes and igneous intrusions, metamorphism, mountains and plateaus, and ore-deposits.

Two lectures per week, First Term. Mr. Schofield.

(*b*) *Laboratory Exercises in Physical Geology,* including the study and identification of the most common minerals and rocks, the interpretation of topographical and geological maps, and the study of structures by the use of models.

Two hours laboratory per week, First Term. Mr. Schofield.

(*c*) *Historical Geology,* including the earth before the Cambrian, the Palaeozoic, the Mesozoic, the Cenozoic and Quarternary eras.

Two lectures per week, Second Term. Mr. Williams.

(*d*) *Laboratory Exercises in Historical Geology,* consisting of the general study of fossils, their characteristics and associations, their evolution and migration as illustrated by their occurrence in the strata. The principles of Palaeogeography will be taken up and illustrated by the study of palaeogeography of North America.

Two hours laboratory per week, Second Term. Mr. Williams.

Field Work will replace laboratory occasionally, and will take the form of excursions to localities, in the immediate neighborhood of Vancouver, which illustrate the subject matter of the lectures.

Prerequisite: Matriculation Chemistry or Physics, or Chemistry 1 or Physics 1, taken either before or concurrently.

Text-book: Pirsson and Schuchert, *Introductory Geology*, Wiley.

Reference Books: Geikie, *Text-book of Geology*. Merrill, Rocks, *Rock-Weathering and Soils*. Coleman and Parks, *Elementary Geology*. Shimer, *Introduction to the Study of Fossils*. Davis, *Geographical Essays*. Hugh Miller's works.

Students will be required to make a passing mark in each of the above subdivisions. 3 units.

2. (*a*) *General Mineralogy.*—A brief survey of the field of Mineralogy.

Lectures take the form of a concise treatment of (1) Crystallography, (2) Physical Mineralogy, and (3) Descriptive Mineralogy of 40 of the most common mineral species, with special reference to Canadian occurrences.

Laboratory Work consists of the study of the common crystal forms and of 40 prescribed minerals, accompanied by a brief outline of the principles and methods of Determinative Mineralogy and Blowpipe Analysis.

Text-book: Dana, *Text-book of Mineralogy*, revised by Ford, Wiley.

Prerequisite: Chemistry 1.

Two lectures and two hours laboratory per week, First Term. Mr. Phemister. 1½ units.

2. (*b*) *Descriptive and Determinative Mineralogy.* — This course supplements 2(*a*) and consists of a more complete survey of Crystallography, Physical and Chemical Mineralogy, with a critical study of about 50 of the less common minerals, special emphasis being laid on their crystallography, origin, association and alteration.

Text-book: Dana, *Text-book of Mineralogy*, revised by Ford, Wiley.

Prerequisite: Geology 2(*a*).

Two lectures and two hours laboratory per week, Second Term. Mr. Phemister. 1½ units.

3. *Historical Geology.*—Continental evolution and development of life with special reference to North America.

Text-book: Schuchert, *Historical Geology,* 2nd Ed., Wiley.

Prerequisite: Geology 1.

Three hours per week, First Term. Mr. Williams.

1½ units.

4. *Structural and Physiographical Geology.*—The following subjects are treated in the lectures: Fractures, faults, flowage, structures common to both fracture and flow, mountains, major units of structure, forces of deformation, the origin and development of land forms with special reference to the physiography of British Columbia.

Text-book: Leith, *Structural Geology,* 2nd Ed., Holt.

Prerequisite: Geology 1.

Three hours per week, Second Term. Mr. Schofield.

1½ units.

5. (*a*) *History of Geology.*—A brief history of the study of the earth and the development of the geological sciences. Mr. Brock.

(*b*) *Geology of Canada.*—The salient features of the geology and economic minerals of Canada. Mr. Williams, Mr. Schofield, Mr. Brock.

(*c*) *Regional Geology.*—The main geological features of the continents and oceanic segments of the earth's crust, and their influences upon life. Mr. Brock.

Prerequisite: Geology 1.

Three lectures and one hour laboratory per week. 3 units.

6. *Palaeontology.*—A study of invertebrate and vertebrate fossils, their classification, identification and distribution both geological and geographical.

Reference books: Grabau and Shimer, *North American Index Fossils.* Zittel-Eastman, *Text-book of Palaeontology.*

Prerequisite: Geology 1.

Two lectures and two hours laboratory per week.

Mr. Williams. 3 units.

7. *Petrology.*—This course consists of systematic studies of (i) optical mineralogy and (ii) petrography, with an introduction to petrogenesis.

The laboratory work deals with the determination of rocks, first under the microscope, and then in hand specimen.

Text-books: Pirsson, *Rocks and Rock Minerals,* Wiley. Johannsen, *Essentials for the Microscopical Determination of Rock-forming Minerals and Rocks,* University of Chicago Press. Dana, *Text-book of Mineralogy,* revised by Ford, Wiley.

Reference works: Johannsen, *Manual of Petrographic Methods.* Rosenbusch, *Microscopical Physiography of the Rock-making Minerals,* translated by Iddings. Rosenbusch, *Elemente der Gesteinslehre.* Harker, *Petrology for Students.* Grubenmann, *Die Kristallinen Schiefer.*

Prerequisites: Geology 1 and 2.

Two lectures and two laboratory periods of 2 hours per week. Mr. Phemister. 4 units.

8. *Economic Geology.*—A study of the occurrence, genesis, and structure of the principal metallic and non-metallic mineral deposits with type illustrations; and a description of the ore deposits of the British Empire, special stress being placed on those in Canada.

Text-book: Emmons, *General Economic Geology,* McGraw-Hill.

Reference books: Lindgren, *Mineral Deposits.* Ries, *Economic Geology.*

Prerequisite: Geology 1. Geology 7 must precede or accompany this course.

Four hours per week. Mr. Brock, Mr. Williams, Mr. Schofield, Mr. Phemister. 4 units.

9. *Mineralography.*—Principally a laboratory course dealing with the study and recognition of the opaque minerals by means of the reflecting microscope.

The work consists of practice in the cutting, grinding and polishing of ore specimens, accompanied by training in microchemical methods of mineral determination.

During the second term each student is assigned a suite of ores from some mining district for a critical examination and report.

Text-book: Davy and Farnham, *Microscopic Examination of the Ore Minerals,* McGraw-Hill.

Prerequisite: Geology 7 and 8 must precede or accompany this course.

Two hours laboratory per week. Mr. Phemister. 1 unit.

10. *Field Geology.*—The methods taught are the fundamental ones used by professional geologists and by the officers of the Geological Survey of Canada. The course is essentially practical, and is designed to teach methods of observing, recording and correlating geological facts in the field. The students construct geological maps of selected areas in the vicinity of Vancouver which require the use of the various methods and instruments employed in field geology.

Reference books: Lahee, *Field Geology.* Hayes, *Handbook for Field Geologists.* Spurr, *Geology Applied to Mining.*

Prerequisite: Geology 1. Geology 4, if not already taken, must be taken concurrently.

Three hours per week. Mr. Schofield. 1½ units.

12. *Meteorology and Climatology.*—A course covering in a general way the whole field, with practice in using instruments, constructing and using weather charts, and weather predicting.

Two lectures and one laboratory period of two hours per week. Second Term. Mr. Schofield. 1½ units.

14. *Crystallography.*—This course consists of a systematic study of the morphology of crystals, with an introduction to mathematical crystallography.

The practical work deals with the measurement of crystals and, in the case of students in chemistry, a certain number of the crystals measured will be grown in the laboratory.

Students are advised to consult with the instructor before registering for this course.

Text-book: Tutton, *Crystallography and Practical Crystal Measurement,* Macmillan.

Two lectures and six hours laboratory work per week. Mr. Phemister. 5 units.

Geography

1. *Principles of Geography.* — A general course dealing especially with the effects of the physical features of the earth upon life, and the ways in which various forms of life respond to their physical environment. The following topics are studied: earth relations; earth features; climate and climatic factors; oceans; materials of the land and their uses; changes of the earth's surface; coasts, plains, plateaus, mountains, inland waters, and their relations to life; human geography.

Text-book: Salisbury, Barrows and Tower, *Elements of Geography,* Holt.

Three lectures per week. Mr. Brock and Mr. Schofield. 3 units.

10. *Introduction to Geography.*—A brief introduction to the study of modern Geography, outlining the history and content of the subject, physical geography and human geography.

One lecture a week. Mr. Brock and Mr. Schofield. 1 unit.

Department of History

Professor: ————
Associate Professor: W. N. Sage.
Assistant Professor: F. H. Soward.
Special Lecturer: Francis Painter.
Assistant: Kaye Lamb.
Assistant: Walter Lanning.

Students who intend to specialize in History are advised to associate with it from the first some allied subject, such as Economics. Economics 1, 2, 3, Government 1 and Sociology 1 will be found especially helpful.

A reading knowledge of French and German will be found extremely valuable in Third and Fourth Year courses, while in certain classes of more advanced work Latin is indispensable.

Hereafter, French at least will be required for Honour work.

A list of books for reading and reference may be obtained from the professor in charge of each course.

FIRST AND SECOND YEARS

1. *Main Currents in Modern World History.*—This course is intended primarily for First Year students and covers the period in World History between the French Revolution and the present day. It will include a discussion of such topics as the Balance of Power in the Eighteenth Century, the French Revolution, the Napoleonic Era, the Industrial Revolution, the Growth of Democracy in the Nineteenth Century, the Eastern Question, Nationality as a Factor in the Nineteenth Century, the Expansion of Europe, the Armed Peace (1870-1914), the Awakening of the Far East (1868-1914), the World War, the Russian Revolution, the League of Nations, Problems of the Pacific.

Text-book: Schapiro, *Modern and Contemporary European History,* Houghton Mifflin Co. (revised edition), or Carleton Hayes, *Political and Social History of Modern Europe,* Vol. II, 1815-1924. Macmillan.

Three hours a week. Mr. Soward. 3 units.

2. *Canadian History.* — This course opens with a brief analysis of the reasons for European colonization of America and a sketch of the colonial effort of Spain, France and Great Britain. In the French régime, exploration, the development of government, the conflict of church and state, and the struggle with Great Britain for the West are studied. In the British period, the relations of the French and English and the evolution of Canadian self-government are given special attention.

On the colonization of America and the history of New France, students are especially advised to consult: Ramsay Muir, *Expansion of Europe;* Abbott, *Expansion of Europe;* the

works of Francis Parkman; Munro, *Crusaders of New France;* Fiske, *New France and New England;* Eastman, *Church and State in Early Canada;* Lucas, *History of Canada,* Vol. I, *New France;* Wrong, *Conquest of New France* and *Rise and Fall of New France.*

On the British Period: Skelton, *The Canadian Dominion, Life and Letters of Sir Wilfrid Laurier;* Trotter, *Canadian History,* a Syllabus; Egerton, *History of Canada, Part II,* 1763-1921; Kennedy, *The Constitution of Canada, Documents of the Canadian Constitution,* 1759-1915; Bracq, *Evolution of French Canada;* Morison, *British Supremacy and Canadian Self-government;* Trotter, *Federation of Canada;* Wallace, *Sir John Macdonald;* Dafoe, *Laurier.*

An essay counting 10% of the year's work must be submitted early in the autumn term.

Subject, *The Causes of European Expansion; Champlain and Frontenac;* a comparison and contrast.

Three hours a week. 3 units.

3. *English History.* — The history of England from the Norman Conquest to the Revolution of 1688. This course is intended primarily for Second Year students who mean to specialize in history. It aims at interpreting the constitutional, political, economic, and religious development of England and Wales during the period prescribed. Attention will also be paid to the history of Scotland and Ireland and the origin of Overseas Britain. The sequel to this course is History 8.

Text-book: Muir, *A Short History of the British Commonwealth,* Vol. I.

A preliminary essay counting 10 per cent. of the year's work must be handed in as soon as possible after the opening of the autumn term. Subject: *The Geographic Background of British History,* or *Feudalism in England,* or *The Rise of the English Towns.*

Three hours a week. Mr. Sage. 3 units.

THIRD AND FOURTH YEARS

History 4, 5 and 6 are intended especially for Third Year students, History 7 and 8 for Fourth Year. History 4 (or 5) must be taken by all candidates for Honours.

All Honour students (whether in History alone or in a Combination Course) must take the History Seminar in their Third and Fourth Years. The Seminar is intended as training in intensive work and carries no credits. If the Graduating Essay be written in History, it will carry a value of 3 units.

4. *Mediaeval History.*—A sketch of Mediaeval History from the Council of Nicaea to the Fall of Constantinople, 325-1453 A.D. The following subjects will be treated: the triumph of Christianity; the breakdown of the Western Roman Empire; the Barbarian Invasions; the earlier monastic movements; Mohammed and Islam; the rise of the Papacy; the Franks and Charlemagne; the struggle between Empire and Papacy; the Normans in Europe; the Crusades; the Mediaeval Towns; the later monastic movements; the rise of the universities; Frederick II; the later Mediaeval Empire; the National Kingdoms in France, Spain, England and Scotland; the Turks and the collapse of the Byzantine Empire.

Text-book: Thorndike, *A History of Mediaeval Europe,* Houghton Mifflin.

Additional text-books for Honour students: Oman, *The Dark Ages.* Tout, *Empire and Papacy.* Lodge, *The Close of the Middle Ages.* Bryce, *The Holy Roman Empire.*

A preliminary essay, counting 15 per cent. of the year's work, must be handed in as soon as possible after the opening of the autumn term. Subject: *The Causes of the Downfall of the Western Roman Empire,* or *Theodoric the Ostragath,* or *The Rise of the Frankish Empire.*

Three hours a week. Mr. Sage. 3 units.

5. *Renaissance and Reformation.*—Mediaeval civilization in the time of Dante; the forerunners of the Renaissance; the Renaissance in Italy (illustrated with slides); the Protestant

Reformation and the Catholic Reaction; in conclusion, a short account of the subsequent history of religious thought down to our own times.

An introductory essay, counting 15 per cent. of the year's work, must be handed in early in the autumn term. Subject: *Dante the Humanist,* or *The Rise of the Critical Spirit* 1200-1520, or *The Beginning of National Literature.*

Text-books: W. H. Hudson, *The Story of the Renaissance.* Fisher, *The Reformation.* McGiffert, *Martin Luther.*

Additional reading, especially for Honour students: Sichel, *The Renaissance.* Taylor, *Some Aspects of the Renaissance.* Symonds, *A Short History of the Renaissance in Italy.* Symonds, *The Renaissance in Italy.* Burckhardt, *The Renaissance in Italy,* André Michel, *Histoire de l'Art* (III, IV). Christopher Hare, *Life and Letters in the Italian Renaissance.* Preserved Smith, *Erasmus.* Emerton, *Erasmus.* Allen, *The Age of Erasmus.*

Three hours a week. 3 units.

6. *The Age of Louis XIV, the Pre-Revolution, the Revolution and Napoleon.*

The break-up of the medieval system, the evolution of modern intellectual and material conditions, and the effect of the revolutionary spirit.

An introductory essay, counting 15 per cent. of the year's work, must be handed in early in the autumn term. Subject: *The Foreign Policy of Louis XIV; Gallicanism in the Eighteenth Century.*

Text-books: Lowell, *The Eve of the French Revolution.* Shailer Matthews, *The French Revolution.* Johnston, *Napoleon.*

Additional reading required of Honour students: Taine, *L'ancien régime* (abridged), Heath. Aulard, *The French Revolution.* Lacour-Gayet, *Napoleon,* or Rose, *Napoleon.* Fisher, *Bonapartism.* Tilley, *Modern France.* Abbott, *Expansion of Europe.*

Three hours a week. 3 units.

7. *Europe,* 1815-1919.—The political, social and economic history of the chief countries of continental Europe, with especial attention to international relations. Intended for Fourth Year students.

An introductory essay, counting 15 per cent. of the year's work, must be handed in early in the autumn term. Subject: *Geographic Factors in the European History of the 19th Century,* or *The Growth of Democracy,* 1815-1914.

Text-book: Hazen, *Europe Since* 1815, Henry Holt.

Additional reading required of Honour students: Gooch, *History of Modern Europe,* 1878-1919. Fueter, *World History,* 1815-1920. Moon, *Imperialism and World Politics.* Knight, Barnes and Flugel, *Economic History of Europe in Modern Times.*

Reading and reference: *Cambridge Modern History.* Lavisse et Rambaud, *Histoire Générale.* Moon, *Syllabus of International Relations.* Buell, *International Relations.* Tilley, *Modern France.* Mowat, *A History of European Diplomacy,* 1815-1914. Rambaud, *Histoire de la Civilization Francaise.* Grant Robertson, *Bismarck.* Thayer, *Cavour.* Fairgrieve, *Geography and World Power.* Wright, *Historical Geography of Europe.* Marvin, *Century of Hope and The Unity Series.* Gooch, *Germany.* Makeef, *Russia.* Huddleston, *France.* Toynbee, *Turkey.* Toynbee, *The Balkans.* Fay, *The Origins of the World War.*

Three hours a week. Mr. Soward. 3 units.

8. *Great Britain Since* 1688. *The British Empire* — This course aims at an interpretation of the constitutional, political, economic and religious development of the British Isles since the Revolution of 1688. Attention will also be paid to the growth of the British Empire during the eighteenth, nineteenth and twentieth centuries. This course is the sequel to History 3.

Text-book: Muir, *Short History of the British Commonwealth,* Vol. II.

Additional reading required of Honour students: Grant Robertson, *England under the Hanoverians.* Slater, *The Making*

of Modern England. Trevelyan, *British History in the Nineteenth Century.*

For reading and reference: *Cambridge History of British Foreign Policy.* Poole and Hunt, *The Political History of England* (Vols. VIII-XII). *Cambridge Modern History* (Vols. V-XII). Toynbee, *The Industrial Revolution.* Egerton, *A Short History of British Colonial Policy.* Basil Williams, *Life of Chatham.* Morley, *Life of Gladstone.* Moneypenny and Buckle, *Life of Disraeli.* Howard Robinson, *The Development of the British Empire. The History of Great Britain.*

A preliminary essay, counting 15 per cent. of the year's work, must be handed in early in the autumn. Subject: *William Pitt the Great Commoner,* or *The Irish Question in the Eighteenth Century,* or *The Social Effects of the Industrial Revolution.*

Three hours a week. Mr. Sage. 3 units.

9. History of the United States of America.—This course begins with a sketch of the American colonies at the outbreak of the Revolution and traces the history of the United States from the commencement of the War of Independence to the close of the World War.

Text-book: Pease, *The United States,* Harbourt Brace & Co. Texts for additional reading required for Honour students: Keenleyside, *American-Canadian Relations.* Malin, *Interpretations of Recent American History,* Century. Faulkner, *American Economic History,* Hayers.

An essay, counting 15 per cent. of the year's work, must be handed in early in the autumn. Subject: *Hamilton and Jefferson, A Comparison and Contrast,* or *The Growth of Nationalism in the United States,* 1776-1826.

Mr. Soward. 3 units.

Honour Seminar, 1928-29. (*a*) *"Historical Method,"* Mr. Soward. (*b*) *"The History of British Columbia,"* Mr. Sage.

Department of Mathematics

Professor: Daniel Buchanan.
Professor: F. S. Nowlan.
Associate Professor: G. E. Robinson.
Associate Professor: E. E. Jordan.
Associate Professor: L. Richardson.
Assistant Professor: B. S. Hartley.
Assistant: May L. Barclay.
Assistant: C. Islay Johnston.
Assistant: A. P. Mellish.
Assistant: H. D. Smith.
Assistant: C. G. Patten.

Courses 2, 3, and 4 are open to students who have completed Course 1.

PASS COURSES

1. (*a*) *Algebra.* — An elementary course, including ratio, proportion, variation, interest and annuities, theory of quadratic equations, simple series, permutations, combinations, the binomial theorem, logarithms.

Wilson and Warren, *Intermediate Algebra,* Chapters I to XV, Oxford.

Four hours a week. First Term.

(*b*) *Analytical Geometry.*—Fundamental concepts, loci, the straight line and circle. Buchanan and Nowlan, *Analytical Geometry.*

Two hours a week. Second Term.

(*c*) *Trigonometry.* — An elementary course involving the use of logarithms.

Playne and Fawdry, *Practical Trigonometry,* Copp Clark.

Wentworth and Hill, *Tables* (Ginn).

Two hours a week. Second Term. 3 units.

2. (*a*) *Analytical Geometry.*—A review of the straight line and circle, and a study of the other conics.

Fawdry, *Co-ordinate Geometry,* Bell.

Two hours a week. First Term. Mr. Buchanan.

(*b*) *Algebra.*—The binomial theorem, induction, remainder theorem, Horner's method of approximating roots, exponential logarithmic and other series, undetermined coefficients, partial fractions, convergence and divergence.

Wilson and Warren, *Intermediate Algebra* (Larger Edition), Oxford.

Two hours a week. Second Term. Mr. Buchanan.

(*c*) *Calculus.*—An introductory course in differential and integral calculus, with various applications.

Woods and Bailey, *Elementary Calculus,* Ginn.

One hour a week. Mr. Buchanan. 3 units

3. *The Mathematical Theory of Investments.*—This course deals with the theory of interest, annuities, debentures, valuation of bonds, sinking funds, depreciation, probability and its application to life insurance.

Rietz, Crathorne and Rietz, *Mathematics of Finance,* Holt.

Three hours a week. Mr. Robinson. 3 units.

(Given in 1929-30 and alternate years.)

4. *Descriptive Astronomy.*—The object of this course is to acquaint the student with the various heavenly bodies and their motions. It is intended primarily for Pass students, and only a knowledge of elementary mathematics is essential. The subject-matter treated includes: The shape and motions of the earth, systems of coordinates, the constellations, planetary motion, gravitation, tides, time, the stars and nebulae, theories of evolution of the solar system.

Moulton, *Introduction to Astronomy,* Macmillan.

Two hours a week. Mr. Buchanan. 2 units.

Students desiring credit for an additional unit in connection with this course may register for Mathematics 18. They will be required to write essays on prescribed subjects dealing with various phases of Astronomy. 1 unit.

(Given in 1928-29 and alternate years.)

HONOUR COURSES

10. *Calculus.*—The elementary theory and applications of the subject.

Granville, *Differential and Integral Calculus,* Ginn.

Three hours a week. Mr. Nowlan. 3 units.

11. *Plane and Spherical Trigonometry.*—The work in plane trigonometry will deal with the following: Identities and trigonometrical equations, the solution of triangles with various applications, circumscribed, inscribed and escribed circles, De Moivre's theorem, expansions of sin $n\theta$, etc., hyperbolic and inverse functions. The work in spherical trigonometry will cover the solution of triangles with various applications to astronomy and geodesy.

Loney, *Plane Trigonometry,* Parts I and II.

Dupuis and Matheson, *Spherical Trigonometry and Astronomy,* Uglow.

Two hours a week. Mr. Hartley.

12. *Synthetic Plane and Solid Geometry.*—The course in plane geometry is intended to cover such topics as the principle of duality, cross ratio geometry, etc. In solid geometry the principal properties of solid figures are studied, as well as the theory of projection in space, with various applications to the conic sections.

Dupuis, *Elementary Synthetic Geometry,* Macmillan.

Wilson, *Solid Geometry and Conic Sections,* Macmillan.

Two hours a week. Mr. Robinson. 2 units.

(Given in 1928-29 and alternate years.)

13. *Plane and Solid Analytical Geometry.*—A general study of the conics and systems of conics, and elementary work in three dimensions. 2 units.

(Given in 1929-30 and alternate years.)

14. *Theory of Equations and Determinants.* — A course covering the main theory and use of these subjects.

Burnside and Panton, *Theory of Equations,* Vol. I, Dublin. Weld, *Theory of Determinants.*

Two hours a week. Mr. Jordan. 2 units.

(Given in 1928-29 and alternate years.)

15. *Higher Algebra.* — Selected topics in higher algebra, including infinite series, continued fractions, the theory of numbers, probability.

Hall and Knight, *Higher Algebra,* Macmillan. Chrystal, *Text-book of Algebra,* Part II.

Two hours a week. 2 units.

(Given in 1929-30 and alternate years.)

16. *Calculus and Differential Equations.*—A continuation of the previous course in calculus, treating partial differentiation, expansions of functions of many variables, singular points, reduction formulae, successive integration, elliptic integrals, and Fourier series.

Ordinary and partial differential equations, with various applications to geometry, mechanics, physics and chemistry.

Granville, *Differential and Integral Calculus,* Ginn. Murray, *Differential Equations,* Longmans.

Three hours a week. Mr. Buchanan. 3 units.

17. *Applied Mathematics.* — A course dealing with the applications of mathematics to dynamics of a particle and of a rigid body, and to the two body problem in celestial mechanics.

Loney, *Theoretical Mechanics.*

Three hours a week. Mr. Richardson. 3 units.

18. *History of Mathematics.*—A reading course covering the historical development of the elementary branches of mathematics from the earliest times to the present.

Ball, *History of Mathematics.* Cajori, *History of Elementary Mathematics.* Mr. Buchanan. 1 unit.

GRADUATE COURSES

20. *Vector Analysis.*—Weatherburn, *Vector Analysis.*

21. *Theory of Functions of a Real Variable.* — Goursat-Hedrick, *Mathematical Analysis,* Vol. I.

22. *Theory of Functions of a Complex Variable.*—Townsend, *Functions of a Complex Variable.*

23. *Differential Geometry.*—Eisenhart, *Differential Geometry.*

24. *Projective Geometry.*—Veblen and Young, *Projective Geometry,* Vol. I.

25. *Celestial Mechanics.*—Moulton, *An Introduction to Celestial Mechanics.*

26. *Advanced Differential Equations.* — Moulton, *Periodic Orbits.*

27. *Theory of Numbers and Algebraic Numbers.* — Reid, *Elements of the Theory of Algebraic Numbers.*

28. *Hyper-complex Numbers*—Dickson, *Algebras and Their Arithmetics.*

29. *Modern Algebraic Theories.* — Dickson, *Modern Algebraic Theories.*

Department of Modern Languages

Professor: H. Ashton.
Associate Professor: A. F. B. Clark.
Associate Professor: Isabel MacInnes.
Associate Professor: Henri Chodat.
Assistant Professor: Janet T. Greig.
Assistant: E. E. Delavault.
Assistant: G. Barry.
Assistant: M. Portsmouth.
Assistant: W. Tipping.
Assistant: Y. Doriot.
Assistant in German: S. J. Battle.

With the consent of the Professor in charge of the course, a student taking a Pass Degree may be admitted to any course in the Third and Fourth Years in addition to, but not in lieu of, 3(*a*) and 4(*a*). Students from other universities who have already taken the work of 3(*a*) or 4(*a*), may be given special permission by the Head of the Department to substitute other courses.

French

1. (*a*) Molière, *Les Précieuses Ridicules,* Longmans, Toronto. Berthon, *Grammaire Française.* Clément and Macirone, *Voici la France,* Heath. Kastner and Marks, *French Composition,* Pt. 1. 3 units.

1. (*b*) Prescribed texts as for 1(*a*).

Revision of the essentials of French grammar and syntax applied to the correct writing of French. There will be an oral examination based on the texts read. 3 units.

NOTE:—Students who choose French will be informed which course 1(*a*) or 1(*b*) they must take. The decision will be made after a consideration of the marks in French obtained at the Matriculation examination. Students in 1(*b*) will normally take not more than two years French, as they will not be sufficiently prepared to profit by the Third and Fourth Year courses. If, however, they make rapid progress in the First Year they may be transferred to the higher course in the Second Year when they have satisfied the examiners of their fitness for more advanced work. Students who have not passed the Matriculation examination in French (or its equivalent) are not allowed to take either of the First Year courses in this subject.

1. (*c*) Lectures in French on Literature for students who intend to take French throughout the four years. One hour a week; no credit, no examination.

Summer Reading:—See the announcement after the Fourth Year courses.

2. (*a*) La Fontaine, *One Hundred Fables,* Ginn. Molière, *Les Femmes Savantes,* Didier. France, *Le Livre de Mon Ami,* Oxford.

Conversation in French on the above. Written résumés.

Composition from Kastner and Marks, *French Composition,* Pt. 1. 3 units.

There will be oral tests.

2. (*b*) Texts as above. 3 units.

2. (*c*) Lectures in French on Literature for students who

intend to take French throughout the four years. One hour a week; no credits, no examination.

Summer Reading: See the announcement after the Fourth Year Courses.

3. (*a*) *The Literature of the Age of Louis XIV.*—Lectures on the history and social conditions of the period, and on the development of the literature. Careful reading and discussion of the following texts: Racine, *Andromaque,* Didier. Molière, *Le Misanthrope,* Didier; *Le Tartuffe,* Heath. *An Anthology of Seventeenth Century French Readings,* Princeton University Press.

Conversation and written résumés based on the above.

This course is obligatory for all students taking Third Year French. 3 units.

3. (*b*) *The Literature of the Eighteenth Century.*—Lectures on the history and social conditions of the period, with special emphasis on the *philosophe* movement, and the beginnings of romanticism. The inter-relations of French and English thought and literature will be touched upon. Careful reading and discussion of the following texts: *Selections from Voltaire* (Havens), Century Co. Rousseau, *Morceaux choisis* (Mornet), Didier. Diderot, *Extraits* (Fallex), Delagrave. Beaumarchais, *Le Barbier de Séville,* Macmillan. 3 units.

3. (*c*) French Composition and translation from English into French. Kastner and Marks, *French Composition,* Pt. 2. 3 units.

Summer Reading: See the announcement after the Fourth Year Courses.

4. (*a*) *The Romantic Drama.*—Musset, *Quatre Comédies,* Oxford. Hugo, *Hernani,* Oxford. Rostand, *Cyrano de Bergerac.* 3 units.

4. (*b*) *Literature and Society in the XVIIth Century.*—Mme de La Fayette, *La Princesse de Clèves* (Cambridge); La Bruyère, *Les Caractères* (Cambridge); Mme de Sévigné, *Lettres* (Manchester); Molière, *Les Précieuses Ridicules* (Longman), *Les Femmes Savantes* (Hatier), *L'Avare* (Hatier), *Le Bourgeois Gentilhomme* (Hatier). 3 units.

4. (*c*) *Bibliography, Composition and Oral French.*—Book required: Kastner and Marks, *French Composition,* Pt. 3.

3 units.

4. (*d*) *Eighteenth Century Drama.*—Lesage, *Turcaret,* Cambridge; Marivaux, *Le jeu de l'amour et du hasard,* Hatier, Paris (Les classiques pour tous); Regnard, *Le joueur,* Hatier, Paris; Sedaine, *Le Philosophe sans le savoir,* Hachette, London.

3 units.

NOTES—Courses 3 (*a*) (*b*) (*c*) and 4 (*a*) (*b*) (*c*) (*d*) call for much work out of class. They should be chosen only by students able and willing to work alone. Students intending to take 4(*a*) or 4(b) should apply to the Head of the Department *before the end of the present academic year* for instructions for summer reading.

Summer Reading

Upon entering the courses for the years stated below the student must satisfy the instructor that he has read the books mentioned below.

Second Year:

1. Bernardin de St Pierre, *Paul et Virginie.*
2. Balzac, *Eugénie Grandet.*
3. Saintine, *Picciola; or* Vigny, *Poésies Choisies.*

Third Year:

1. Chateaubriand, *Atala.*
2. Le Sage, *Gil Blas.*
3. Vigny, *Servitude et grandeur militaires.*
4. Banville, *Gringoire;* or Musset,, *Poésies Choisies.*

Fourth Year:

1. Molière, *L'Avare.*
2. Molière, *Le Bourgeois Gentilhomme.*
3. Molière, *Les Femmes Savantes.*
4. Racine, *Andromaque.*
5. Racine, *Les Plaideurs.*
6. Musset, *Fantasio.*
7. Musset, *Un Caprice.*

The above have all been chosen from the series *Les Classiques pour tous* so as to lighten the cost of buying books for vacation reading. At the present rate of exchange they can be bought at the University Bookstore for ten or fifteen cents each. As these books can be carried in the pocket and read at odd moments *no excuse* will be accepted for failure to do summer reading.

German

A. *Beginners' Course. Composition, Grammar, Conversation.*—Texts: *(a)* Zinnecker, *Deutsch für Anfänger,* Heath. *(b)* Haertel, *German Reader for Beginners.* 3 units.

B. *Beginners' Course (Scientific) Composition, Grammar, Conversation.*—Texts: *(a)* Zinnecker, *Deutsch für Anfänger,* Heath. (b) Gore, *German Science Reader,* Heath. 3 units.

1. Completion and Revision of Zinnecker. Composition and conversation based on texts read. Von Wildenbruch, *Das edle Blut,* Scribner. Moser, *Der Bibliothekar,* Ginn. Bruns, *Book of German Lyrics,* Heath.

Science Section with alternate reading. 3 units.

2. (*a*) Whitney and Stroebe, *Easy German Composition,* Holt. Composition and conversation based on texts read.

Heine, *Die Harzreise,* Allyn & Bacon. Lessing, *Minna von Barnhelm,* Heath. Bruns, *Book of German Lyrics,* Heath. 3 units.

2. (*b*) A general survey of German literature.

Prerequisite for German 3. Lectures in English and open to students of other literatures.

3. *The Classical Period.*

Texts: Lessing, *Emilia Galotti,* Heath. Goethe, *Faust I,* Heath. Schiller, *Die Jungfrau von Orleans,* Holt.

Composition based on above texts and Whitney and Stroebe, *German Composition,* Holt. 3 units.

4. (*a*) *Nineteenth Century Drama.* 3 units.

4. (*b*) *Nineteenth Century Fiction.* 3 units.

These courses, which include the reading of a number of standard works, will be given alternately.

5. *A reading course in the short story.* 3 units.

Department of Philosophy

Professor: H. T. J. Coleman.
Associate Professor: James Henderson.
Associate Professor of Psychology and Education: Jennie Benson Wyman.

1. (*a*) *Elementary Psychology.*

Text-book: Warren, *Elements of Human Psychology,* Houghton Mifflin Co.

References: Woodworth, *Psychology, A Study of Mental Life.* Stout, *A Manual of Psychology.* Titchener, *A Text-book in Psychology; A Beginner's Psychology.* James, *Psychology* (Briefer Course). Pillsbury, *Essentials of Psychology.*

Two hours a week. 2 units.

(*b*) *Elementary Logic.*

Text-book: Mellone, *Introductory Text-book of Logic,* Blackwood (latest edition).

One hour a week. 1 unit.

(*c*) A fourth hour per week will be devoted to lectures introductory to the main problems of Philosophy, and a special study of Descartes' *Discourse on Method* and Berkeley's *Treatise Concerning the Principles of Human Knowledge.* Attendance at this hour is voluntary and no formal credit is given. Students contemplating Honours are, however, advised to take this course.

2. *Ethics.*

Text-book: Everett, *Moral Values,* Holt.

A special study will be made of selected portions of Aristotle's *Ethics,* Mill's *Utilitarianism,* and Kant's *Metaphysic of Morals.*

Three hours a week. 3 units.

3. *History of Greek Philosophy from Thales to Plato* (inclusive).

Text-books: Bakewell, *Source Book in Ancient Philosophy,* Charles Scribner's Sons, and Burnet, *Greek Philosophy* (Part 1),

Macmillan. In connection with this course a special study will be made of Plato's *Republic, Phaedo,* and *Philebus.*

Three hours a week. 3 units.

(Given in 1928-29 and alternate years.)

4. *The History of Philosophy from the Renaissance to the Present time.*

Text-book: Alexander, *A Short History of Philosophy,* Macmillan.

Works of Reference: Rand, *Modern Classical Philosophers,* and the various Histories of Philosophy.

Three hours a week. 3 units.

(Given in 1929-30 and alternate years.)

5. *The Philosophy of Kant,* with special study of the *Critique of Pure Reason.*

Two hours a week. 2 units.

(Given in 1929-30 and alternate years.)

6. *Philosophic Movements since the time of Kant.* Post-Kantian Idealism, Pragmatism, Modern Realism, Bergson and others.

Two hours a week. 2 units.

(Given in 1928-29 and alternate years.)

7. *Introduction to Education.* A course of lectures and discussions dealing with educational movements since the beginning of the 19th century, and with the theories of life and of mind which are implicit in these movements.

Texts: Spencer, *Education,* Everyman Edition. Dewey, *Democracy and Education,* Macmillan.

References: Butler, *The Meaning of Education.* Moore, *What is Education?* Adams (ed.), *The New Teaching.* Holmes, *What is and What might be.* Articles in Cyclopedia of Education, Macmillan.

Philosophy 1 is recommended as preparatory to this course.

Three hours a week. 3 units.

8. *Social Psychology.* — A study of those particular phases of mental life and development which are fundamental in social organization and activity.

Texts: McDougall, *Social Psychology, The Group Mind,* Methuen, London. Ginsberg, *Psychology of Society,* Methuen, London. Collateral reading will be prescribed from the following: Hobhouse, *Mind in Evolution, Morals in Evolution.* Sutherland, *Origin and Growth of the Moral Instinct.* Cooley, *Human Nature and the Social Order.* Wallas, *Human Nature in Politics; The Great Society.* Ross, *Social Psychology.* Trotter, *Instincts of the Herd in Peace and War.* Bernard, *Introduction to Social Psychology.*

Philosophy 1 is recommended as preparatory to this course. Three hours a week. 3 units.

9. (1) A study of the concept of intelligence. Current theories of the nature and growth of intelligence. Its practical bearing in modern life. Principles and applications of the measurement of intelligence. History of the movement. The nature and causes of mental defects and peculiarities.

References: Spearman, *The Nature of Intelligence and the Principles of Cognition,* Macmillan; Woodrow, *Brightness and Dullness in Children,* Lippincott; Peterson, *Early Conceptions and Tests of Intelligence,* World Book Co.; Gesell, *The Mental Growth of the Pre-School Child,* Macmillan; Freeman, *Mental Tests,* Houghton Mifflin; Pintner, *Intelligence Testing,* Henry Holt.

(2) Principles of Experimental Procedure. Method of Measurement. Practical training in the methods of individual and group examinations. Treatment of subnormal, normal and gifted children.

Text: Terman, *Measurement of Intelligence,* Houghton Mifflin Co.

References: Terman, *Stanford Revision of Binet Simon Scale,* Warwick and York; Wells, *Mental Tests in Clinical Practice,* World Book Co.; Bisch, *Clinical Practice,* Williams and Wilkins; Mateer, *The Unstabe Child,* Appleton; Hollingworth,

Gifted Children, Macmillan; Wallin, *Clinical and Abnormal Psychology,* Houghton Mifflin; Cyril Burt, *The Young Delinquent,* Appleton.

Students will note that Courses 3 and 4, and Courses 5 and 6 are given in alternate years. This arrangement is designed to meet the needs of students who desire to pursue the study of philosophy beyond the elementary stage.

Department of Physics

Professor: T. C. Hebb.
Associate Professor: A. E. Hennings.
Associate Professor: J. G. Davidson.
Assistant Professor: G. M. Shrum.
Assistant: H. W. Fowler.

1. *Introduction to Physics.*—A general study of the principles of mechanics, properties of matter, heat, light, sound, and electricity, both in the lecture-room and in the laboratory. The course has two objects: (1) To give the minimum acquaintance with physical science requisite for a liberal education to those whose studies will be mainly literary; (2) to be introductory to the courses in Chemistry, Engineering, and Advanced Physics. Students must reach the required standard in both theoretical and practical work. Open only to students who have not matriculated in Physics.

Text-book: Millikan, Gale and Pyle, *Elements of Physics.*

Three lectures and two hours laboratory per week. 3 units.

2. *College Physics.*—This course consists of a general course in Physics suitable for those students who have obtained standing in Junior Matriculation Physics or its equivalent. It will cover mechanics, properties of matter, heat, light, sound and electricity in a fuller manner than would be possible in an introductory course.

Text-book: Stewart, *Physics, a Text-book for Colleges.*

Prerequisite: High School Physics.

Three lectures and two hours laboratory per week. 3 units.

3. *Mechanics, Molecular Physics and Heat.*—A study of the statics and dynamics of both a particle and a rigid body, the laws of gases and vapors, temperature, hygrometry, capillarity, expansion, and calorimetry.

Text-book: Millikan, *Mechanics, Molecular Physics and Heat.*

Prerequisite: Physics 1 or 2.

Two lectures and three hours laboratory per week. 3 units

4. *Electricity, Sound, and Light.* — A study of the fundamentals of magnetism, electricity, sound, and light.

Text-book: Millikan and Mills, *Electricity, Sound and Light.*

Prerequisite: Physics 1 or 2.

Two lectures and three hours laboratory per week. 3 units.

5. *Dynamics of a Particle and of a Rigid Body.*—A rigorous mathematical study of this subject.

Prerequisites: Physics 3 and Mathematics 10.

Two lectures per week. 2 units.

6. *Advanced Electricity and Magnetism.* — In this course, especial attention is given to the theoretical phases of Electricity and Magnetism.

Text-book: Starling, *Electricity and Magnetism.*

Prerequisites: Physics 3 and 4 and Mathematics 10.

Two lectures per week. 2 units.

7. *Kinetic Theory of Gases.*—A course of lectures giving an exposition of the classical deductions and an outline of recent experimental advances of the subject.

Text-book: Loeb, *Kinetic Theory of Gases.*

Two lectures per week. 2 units.

8. *Theoretical and Experimental Optics.*—A course of lectures accompanied by laboratory work consisting of accurate measurements in diffraction, dispersion, interference, and polarization.

Books for reference: Houstoun, *Treatise on Light.* Mann, *Advanced Optics.* Wood, *Physical Optics.* Preston, *Theory of Light.* Drude, *Theory of Optics,* and Edser, *Light for Students.*

Prerequisites: Physics 3 and 4, and Mathematics 10.

Two lectures and three hours laboratory per week. 3 units.

9. *Recent Advances in Physics.*—A course of lectures dealing with the electrical properties of gases, the electron theory, and radioactivity.

Books for reference: Thomson, *Conduction of Electricity through Gases.* Rutherford, *Radio-active Substances and Their Radiations.* Millikan, *Electron.* Thomson, *Positive Rays.* Hughes, *Photo-electricity,* and Kaye, *X-Rays.*

Prerequisites: Courses 3 and 4, and Differential and Integral Calculus.

Two lectures per week. 2 units.

10. *Advanced Experimental Physics.* — In this course the candidate for Honours is expected to perform one or more classical experiments and to do some special work.

Carefully prepared reports, abstracts, and bibliographies will constitute an essential part of the course.

Six hours laboratory per week. 3 to 6 units

11. *Thermodynamics.*—A course of lectures elucidating the fundamental principles of the subject.

Text-book: Birtwhistle, *The Principles of Thermodynamics.*

One lecture per week. 1 unit.

Department of Zoology

Professor: C. McLean Fraser.
Assistant Professor: G. J. Spencer.
Instructor: Gertrude M. Smith.
Assistant: Mildred H. Campbell.

NOTE—Biology 1 is prerequisite to all courses in Zoology.

1. *General Morphology.*—General morphology of animals. Comparative anatomy. The relationships of animal groups. Comparative life-histories.

Text-books: Parker and Haswell, *Manual of Zoology,* Macmillan. (American Edition, 1916.)

This course is prerequisite to other courses in Zoology.

Two lectures and two hours laboratory per week. 3 units.

2. *Comparative Anatomy of Vertebrates.*—A detailed comparative study of a member of each of the classes of Vertebrates.

Two lectures and four hours laboratory per week. First Term. 2 units.

3. *Comparative Anatomy of Invertebrates.* — A detailed comparative study of a member of each of the main classes of Invertebrates.

Two lectures and four hours laboratory per week. Second Term. 2 units.

4. *Morphology of Insects.*—General Entomology.

Two lectures and four hours laboratory per week. First Term. 2 units.

5. *Histology.*—Study of the structure and development of animal tissues. Methods in histology.

Ten hours per week. Second Term. 3 units.

6. *Embryology.*—A general survey of the principles of vertebrate embryology. Preparation and examination of embryological sections.

Ten hours per week. First Term. 3 units.

7. *Economic Entomology.*—A study of the insect pests of animals and plants; means of combating them.

Lecture and laboratory work, six hours per week. Second Term. 2 units.

8. *Private Reading.* — A course of reading on Biological theories. In this course examinations will be set, but no class instruction will be given. 2 units.

THE FACULTY OF APPLIED SCIENCE

FACULTY OF APPLIED SCIENCE

FOREWORD

The object of the courses in Applied Science is to train students in exact and fertile thinking, and to give them a sound knowledge of natural laws and of the means of utilizing natural forces and natural products for the benefit of man and the advancement of civilization. Experience shows that such a training is the best yet devised for a large and increasing proportion of the administrative, supervisory and technical positions.

The object, then, is to turn out, not finished engineers or industrial leaders—these are the product of years of development in the school of experience—, but young men with a special capacity and training for attaining these goals, and thus for helping to develop the industries of the province. Consequently the undergraduate course is made broad and general rather than narrow and highly specialized.

Furthermore, such a course is not only better suited to the British Columbia conditions that the graduate will encounter in his after life, but also better for later specialization, for it furnishes a more solid foundation, a better background, a broader outlook and a more stimulating atmosphere, all necessary if the specialist is to achieve the maximum results of which he is capable.

The student is offered a full undergraduate course and an additional year of graduate study. The preliminary year required in Arts is intended to increase the student's general knowledge and to broaden his outlook. It is hoped that enough interest will be aroused to encourage the student to continue some study of the humanities as a hobby or recreation.

The first two years in Applied Science proper are spent in a general course that includes Mathematics and all the basic sciences. This gives not only a broad training, but enables the student to discover the work for which he has special liking or

aptitude and to select more intelligently the subjects in which to specialize during the two final years at college. During the latter periods students acquire more detailed knowledge and get practice in applying scientific knowledge, in solving problems, in doing things; and there is also training in Economics, Law and Industrial Management.

During the long period between sessions, the student is required to engage in some industrial or professional work that will afford practical experience not obtainable in the laboratory or field classes, but that is a necessary supplement to academic study.

An engineering degree in the Applied Science Course of the University is accepted by the Association of Professional Engineers of the Province of British Columbia in lieu of four of the six years practical experience required by the Engineering Act of the Province for registration to practise engineering.

FACILITIES FOR WORK

For laboratory and other facilities see Pages 25-37.

ADMISSION

The general requirements for admission to the University are given on pages 41, 42. The following are special conditions affecting admission to Applied Science:

1. Nursing and Health courses require Junior Matriculation or equivalent (as for Arts).

2. All other courses require:

(a) Junior Matriculation or equivalent.

(b) Also a First Year Arts course or equivalent,* which shall include the following subjects: Chemistry 1; Mathematics 1 (Algebra, Geometry and Trigonometry); Physics 1, or 2; English 1; Latin 1, or French 1, or German B.

*Students preparing for admission to Applied Science are recommended to take their First Year in Arts and Science rather than Senior Matriculation, but if such students proceed by way of Senior Matriculation they must take Chemistry and Physics, and are required to make 50 per cent. in each of these two subjects and also in Algebra, Geometry and Trigonometry.

The passing grade is fifty per cent. for Chemistry, Physics and each of the Mathematics subjects; but in the others a pass of forty per cent. will be accepted, provided an average of fifty per cent. has been obtained in the total.

Biology 1 may be taken as an optional extra subject, and, if passed with a grade of at least fifty per cent., need not be taken in Applied Science. Economics 1 taken in Arts is accepted in lieu of Economics in Applied Science. A reading knowledge of French and German is desirable for students in Engineering.

3. No student may enter with any outstanding supplemental in Junior Matriculation or in any of the Chemistry, Mathematics or Physics subjects listed above; or with supplementals in other subjects to the extent of more than three units*.

Students who have failed to complete the above requirements may apply for permission to take the September supplemental examinations in Arts.

DEGREES

The degrees offered students in this Faculty are:
Bachelor of Applied Science (B.A.Sc.). (See below.)
Master of Applied Science (M.A.Sc.). (See Page 178.)

COURSES LEADING TO THE DEGREE OF B.A.Sc.

The degree of Bachelor of Applied Science is granted on the completion of the work in one of the courses† given below:

I. Chemical Engineering.
II. Chemistry.
III. Civil Engineering.
IV. Electrical Engineering.
V. Forest Engineering.

*A unit normally consists of one lecture hour, or one continuous laboratory period of not less than two or more than three hours, per week throughout the session; or two lecture hours or equivalent laboratory periods throughout a single term.

†The curriculum described in the following pages may be changed from time to time as deemed advisable by the Faculty.

VI. Geological Engineering.
VII. Mechanical Engineering.
VIII. Metallurgical Engineering.
IX. Mining Engineering.
X. Nursing and Health.

A double course in Arts and Science and in Applied Science is offered, leading to the degree of B.A., and B.A.Sc. (See Page 178.)

NOTE:—A series of noon-hour talks is given during the session by the Faculty and prominent outsiders on the subjects: choice of a profession; occupations for which an Applied Science course forms a suitable preparation; life and work in different engineering professions and industries. The purpose of these talks is to assist students to select the course best suited to their tastes and aptitudes, and their probable life-work.

PRACTICAL WORK OUTSIDE THE UNIVERSITY

In order to master professional subjects it is very important that the work done at the University should be supplemented by practical experience in related work outside. Therefore students are expected to spend their summers in employment that will give such experience. But summer employment will not be accepted as an excuse for failure to write off supplemental examinations at the regular date specified in the Calendar or for failure to enter University on the opening date, except when the summer employment affords experience necessary for the course the student in specializing in, as Geological Survey field work for geological students, and the student furnishes a statement from his employer showing that circumstances made it impossible for the student to get back to the University at the proper time. Under these circumstances the student may, upon the approval of the Dean, register without penalty after the specified date of admission. Before a degree will be granted, a candidate is required to satisfy the Department concerned that he has done at least four months' practical work related to his

chosen profession. Third and Fourth Year Essays (see Page 154) should be based, as far as possible, upon the summer work.

Practical work such as Shop-work, Freehand Drawing, Mechanical Drawing, Surveying, etc., done outside the University, may be accepted in lieu of laboratory or field work (but not in lieu of lectures) in these subjects, on the recommendation of the Head of the Department and approval of the Dean. Students seeking exemption as above must make written application to the Dean accompanied by certificates indicating the character of the work done and the time devoted to it.

GENERAL OUTLINE OF UNIVERSITY COURSES

The work of the First and Second Years is the same in all courses, except those in Nursing and Health.

FIRST YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Math. 1 Trigonometry	211	..	..	2	..
Math. 2 Solid Geometry	211	2	..	..	..
Math. 3 Algebra	211	2	..	2	..
Math. 4 Calculus	212	2	..	2	..
C.E. 1 Descriptive Geom.	189	..	3	..	3
M.E. 1 Drawing 1	212	..	6	..	6
Physics 1 Mechanics	229	3	3	..	..
Physics 2 Heat	229	..	..	3	3
Chem. 2a Qual. Analysis	186	1	3	1	3
M.E. 2a Shop Practice	213	1	2	1	2
Biology 1* Introductory	182	1	2	1	2
C.E. 2 Surveying	189	Field Work			
C.E. 30 Engineering Prob. 1	199	..	4	..	4

*Biology 1, Arts, passed with a grade of at least 50 per cent. will be accepted in lieu of this course.

SECOND YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Math. 6 Calculus	212	3	..	3	..
Math. 7 Anal. Geom.	212	2	..	2	..
Chem. 2b Quan. Analysis	186	1	3	1	3
C.E. 4 Graphics	190	..	2	..	2
M.E. 6a Elem. Theory	214	2	..	2	..
Physics 3 Electricity	229	2	3	2	3
Physics 4 Mechanics	229	2	..	2	..
C.E. 5 Mapping	190	..	3	..	3
C.E. 6 Surveying	190	2	..	2	..
Geology 1 General	206	2	2	2	2
†C.E. 7 Surveying	191	Field Work			
C.E. 31 Engineering Prob. 2	200	..	3	..	3

†Students entering Civil, Forest, Geological, Metallurgical, and Mining Engineering are required to take Civil Engineering 7 (see Page 191) immediately after the spring examinations.

THIRD AND FOURTH YEARS

Essays

Essays are required of all students entering the Third and Fourth Years, and must conform to the following:—

1. The essay shall consist of not less than 2,000 words.

2. It must be a technical description of the engineering aspects of the work on which the student was engaged during the summer, or of any scientific or engineering work with which he is familiar. In the preparation of the essay, advantage may be taken of any source of information, but due acknowledgment must be made of all authorities consulted. It should be suitably illustrated by drawings, sketches, photographs or specimens.

3. It must be typewritten, or clearly written on paper of substantial quality, standard letter size (8½ x 11 inches), on one side of the paper only, leaving a clear margin on top and left-hand side. Students are recommended to examine

sample reports to be found in the library or in the departments.

4. *All essays must be handed in to the Dean not later than November 15th.*

All essays, when handed in, become the property of the Department concerned, and are filed for reference. Students may submit duplicate copies of their essays in competition for the students' prizes of the Engineering Institute of Canada, or the Canadian Institute of Mining and Metallurgy.

Essays will be considered as final Christmas examinations. A maximum of 100 marks is allowed, the value being based on presentation, English and matter. In third year essays presentation, that is, the manner in which the material is arranged and presented to the reader, is given most weight, with English second and matter third. In fourth year essays most emphasis is placed on matter, but the other two are still rated highly.

COURSES

I. Chemical Engineering

The course in Chemical Engineering should prepare the student for the duties of managing engineer in a chemical manufactory. As such he must be conversant not only with the chemical processes involved, but he must be prepared to design and to oversee the construction of new buildings and to direct the installation and use of machinery. In the industrial life of British Columbia the chemical engineer may be more particularly concerned with the manufacture of acids and alkalies, the preparation from natural sources of various organic and inorganic compounds, the pulp and paper industry, and the utilization of the waste from a number of industrial plants indigenous to the Province. Accordingly, the course of study includes a number of courses in the older branches of engineering along with the maximum of chemical training allowed by the time at the disposal of the student.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Economics 1 Introductory	200	2	..	2	..
Met. 1 Introductory	226	2	..	2	..
Geol. 2 (a) Mineralogy	207	2	2	..	..
Chem. 3 Organic	187	2	3	2	3
Chem. 4 Theoretical	187	..	..	2	3
Chem. 5 Adv. Analysis	187	1	9	1	6
E.E. 1 General	217	2	2	2	2
Physics 5 Light	229	1	..	1	..
C.E. 12 Hydraulics	193	1	3	1	3

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Chem. 6 Industrial	188	2	..	2	..
Chem. 7 Physical	188	2	3	2	3
Chem. 8 Electro	188	3	3	..	..
Chem. 9 Adv. Organic	188	2	3	2	3
Chem. 16 Engineering	188	..	..	2	..
Met. 2 General	226	2	..	2	..
Thesis	.....	..	12	..	15

II. Chemistry

The aim of this course is to train the students in the practice of Chemistry, and to give a thorough knowledge in the fundamental principles of this subject, that they may be prepared to assist in the solution of problems of value to the industrial and agricultural life of the Province. The course is arranged to give in the first two years a knowledge of the fundamental

principles of Chemistry and Physics, with sufficient mathematics to enable the theoretical parts of the subject to be understood.

In the Third Year, Analytical, Organic, and Physical Chemistry are studied from the scientific side and in relation to technology; while in the Fourth Year a considerable amount of time is devoted to a short piece of original work.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Econ. 1 Introductory	200	2	..	2	..
Chem. 3 Organic	187	2	3	2	3
Chem. 4 Theoretical	187	..	..	2	3
Chem. 5 Adv. Analysis	187	1	9	1	9
Met. 1 Introductory	226	2	..	2	..
Geol. 2 (a) Mineralogy	207	2	2	..	..
Met. 5 Assaying	227	1	5	..	..
German (Arts) B	139	3	..	3	..
Physics 5 Light	229	1	..	1	..

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Bacteriology 1 (Arts)	86	..	7	..	..
Physics 9 Advanced	230	2	..	2	..
Chem. 6 Industrial	188	2	..	2	..
Chem. 7 Physical	188	2	3	2	3
Chem. 8 Electro-	188	3	3	..	..
Chem. 9 Adv. Organic	188	2	3	2	3
Met. 2 General	226	2	..	2	..
Thesis		..	9	..	18

III. Civil Engineering

The broad field covered by Civil Engineering makes it an adjunct of many other branches of engineering, yet the Civil Engineer occupies a distinctive field and is intimately associated with a wide group of undertakings vitally affecting the health, comfort and prosperity of the commonwealth.

The various branches of Civil Engineering deal with problems in water supply and water purification; in sewerage systems, sewage disposal plants, and the handling of municipal and industrial wastes; in hydraulic power development; in irrigation and drainage for agricultural activities; in all types of structures, bridges and buildings, piers and docks, sea walls and protective works; in transportation, canals, locks, highways, electric and steam railways; and in the management and direction of public works, public utilities, industrial and commercial enterprises.

The course in Civil Engineering is designed to provide, in so far as time will permit, foundations for continued growth along those lines which the student's interests and environment determine, without compelling too early specialization. Training in pure and applied science, in the humanities, in economics and engineering law, and in the technical phases of professional work establishes a broad basis for the stimulation of a sincere spirit of public service and for the development of that capacity for reliable work and judgment which makes safe the assumption of responsibilities.

The methods of instruction are planned with the view of bringing out the powers and initiative of the students while training them in habits of accurate analysis and careful work. Students are encouraged to secure summer work which will give them an insight into the various phases of the career upon which they are about to enter, and the summer essays lay the foundation for the ability to set forth, in clear and precise language, descriptions and analyses of projects and engineering activities. In the Fourth Year thesis an opportunity is given for special investigation and research under the supervision of experienced engineers.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
C.E. 8 Foundations	191	2	3	1	..
C.E. 9 Elementary Design	192	..	..	1	3
C.E. 10 Strength of Mtls.	192	2	3	2	3
C.E. 11 Railways	193	2	..	2	..
C.E. 12 Hydraulics	193	1	3	1	3
C.E. 13 Mapping	193	..	3	..	3
C.E. 14 Surveying	193	2	..	2	..
C.E. 15 Drawing	194	..	2	..	2
M.E. 6 (b) Laboratory	215	..	3	..	3
E.E. 1 General	217	2	2	2	2
Econ. 1* Introductory	200	2	..	2	..
C.E. 16 Surveying	194	Field Work			
C.E. 21 Water Power	196	1	.....	1	1
C.E. 28 Seminar	199	1	..	1	..

*Economics 1 in Arts will be accepted in lieu of the Science Course.

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
C.E. 17 Structural Design	194	1	6	1	6
C.E. 18 Engineering Economics	194	2	..	2	..
C.E. 19 Law—Contracts	195	1	..	1	..
C.E. 20 Geodesy	195	1	..	1	..
C.E. 22 Municipal	196	2	2	2	2
C.E. 23 Transportation	197	2	..	2	..
C.E. 24 Mechanics of Mtls.	197	2	3	2	3
C.E. 25 Theory of Structures	198	1	6	1	6
C.E. 26 Trips	198	Required Sat. A.M.			
C.E. 27 Thesis	198	..	3	..	3
C.E. 28 Seminar	199	1	..	1	..
C.E. 29 Hydraulic Machines	199	1	..	1	1

IV. Electrical Engineering

This course is designed for those students who desire a general training in the theory and practice of Electrical Engineering in addition to the basic principles of Mechanical Engineering. The Third Year of the course is devoted mainly to Mechanical Engineering, together with work which involves the broad principles which underlie all engineering work. The Fourth Year is devoted to Electrical Engineering, the fundamental principles of industrial economics, works organization, management, and financing.

Vancouver and the surrounding country afford excellent facilities for the study of engineering works under commercial conditions. The managing officials of these works are pleased to permit students, in charge of a member of the Faculty, to inspect and conduct tests at pre-arranged times. Organized visits to industrial plants constitute a regular part of the advanced work.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
M.E. 3 Kinematics	214	..	2	..	2
M.E. 4 Dynamics	214	2	..	2	..
M.E. 5 Design	214	2	3	2	3
M.E. 7 Thermo-dynamics	215	3	3	3	3
C.E. 10 Str. of Materials	192	2	3	2	3
E.E. 2 General	218	3	4	3	4
C.E. 12 Hydraulics	193	1	3	1	3
M.E. 2b Shop Practice	213	..	4	..	3
Math. 8 (Adv. Calculus) or Math. 9 (Differential Equa.)	212	2	..	2	..

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
E.E. 4 Machines	221	2	6	2	6
E.E. 5 Traction	222	1	..	1	..
E.E. 6 Transmission	223	2	..	2	..
E.E. 7 Design	223	1	3	1	3
E.E. 8 Radio	223	1	..	1	..
M.E. 8 Thermo-dynamics	215	2	3	2	3
M.E. 10 Design	216	2	3	2	3
M.E. 14 Mechanical Design	217	1	..	1	..
Math. 8 (Adv. Calculus) or	212				
Math. 9 (Differential Equa.)	212	2	..	2	..
C.E. 18 Engr. Economics	194	2	..	2	..
C.E. 19 Engr. Law	195	1	..	1	..
C.E. 29 Hydr. Machines	199	1	..	1	..

V. Forest Engineering

In British Columbia the forest industries, including logging and the manufacture of lumber, pulp and paper, now lead all others, and are rapidly expanding. They must always play a very important part in the economy of the Province, because seven-eighths of the productive land is absolute forest soil, that will grow good timber but no other crop of value; and because over half the remaining stand of saw-timber — the last big reserve — of Canada is here. The development of these industries is requiring more and more the services of engineers, and especially is this true in logging. Furthermore, most of the forest land is owned by the public, and the management of these vast estates is a task that will require constant growth on the part of the government forest services.

This indicates very briefly the various fields of service open to Forest Engineers, and for which the course of studies is designed. Primarily the course is planned for the lumber industry, and a major part of the time — apart from the preliminary foundation work — is devoted to the branches of

engineering most used in it. In addition, the fundamental subjects of forestry are covered. As in other engineering courses the students are expected to obtain practical experience during the summer vacations, this being an essential supplement to the studies at the University.

Vancouver contains large sawmills, wood-working plants, and plants for seasoning and preserving wood — more, in fact, than any other place in the Province. Pulp mills, logging operations and extensive forests are within easy reach. The advantages of location are therefore exceptional. A special feature is the affiliation of the Forest Products Laboratory of Canada, maintained at the University by a co-operative arrangement with the Dominion Forestry Branch. A description of this Laboratory and its activities is given in another part of this calendar. It affords opportunities for instruction in testing the mechanical properties of timber and other structural materials, and facilities are now provided for experimental and demonstration work in wood seasoning.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
F.E. 1 General Forestry	201	1	..	1	..
F.E. 2 Mensuration	201	1	4	1	4
F.E. 3 Protection	201	..	..	1	..
F.E. 4 Finance	202	..	..	2	..
Bot. 1 General Botany	183	2	2	2	2
Bot. 5 (b) Dendrology	184	1	2	1	2
E.E. 1 Fundamentals	217	2	2	2	2
C.E. 8 (a) Foundations	191	1	3	.....	.....
C.E. 9 Structural Design	192	.....	.....	1	3
C.E. 10 Strength Materials	192	2	3	2	3
C.E. 11 Railways	193	2	.....	2	.....
C.E. 13 Mapping	193	.....	.....	.....	3
C.E. 14 Surveying	193	2	..	..	..
C.E. 12 Hydraulics	193	1	3	1	3

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures Lectures	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
F.E. 5 Technology	202	2	3	2	3
F.E. 6 Organization	202	1	..	1	..
F.E. 7 History	203	1	..	1	..
F.E. 8 Silviculture	203	2	..	2	3
F.E. 9 Lumbering	203	2	.....	1	.....
F.E. 10 Logging	204	1	4	1	4
F.E. 11 Milling	204	2		..	
F.E. 12 Products	204	..		2	
Bot. 6 (b) Pathology / Zool. 7 Entomology	185 / 235	..	..	1	2
Bot. 7 (a) Ecology	185	1	2	..	..
C.E. 17 Structural Design	194	1	3	1	3
C.E. 18 Economics	194	2	..	2	..
C.E. 19 Law	195	1	..	1	..
M.E. 6 (b) Steam Lab.	215	..	3	..	3

VI. Geological Engineering

This course is designed to meet the requirements of students who intend to enter Geology as a profession.

It gives a broad training not only in Geology, but also in the sciences of Biology, Chemistry, Physics, and Mathematics, which are extensively applied in the solution of geological problems. The engineering subjects are useful not only to the Mining and Consulting Geologist and the Geological Surveyor, but to the Geologist engaged in original research in any branch of the science.

The course therefore furnishes a foundation for the professions of Mineralogist, Geological Surveyor, Mining Geologist, Consulting Geologist, Palaeontologist, Geographer, etc., and is useful for those who will be in any way connected with the discovery or development of the natural resources of the country.

As a supplement to the work in the classroom, laboratory and field during the session, the student is expected to obtain practical experience during the summer vacations.

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Geol. 2 Mineralogy	207	2	2	2	2
Geol. 3 Historical	208	3	..	..	..
Geol. 4 Structural	208	..	..	3	..
Geol. 5 Regional	208	3	1	3	1
Chem. 4 Theoretical	187	..	..	2	3
Econ. 1 (Arts)	200	3	..	3	..
Min. 1 Metal Mining	224	2	..	2	..
Met. 5 Fire Assaying	227	1	5	..	..
Met. 1 General	226	2	..	2	..
Ore Dressing 1 General	227	2	..	2	..
Zool. 1	235	2	2	2	2
C.E. 13 Mapping	193	..	..	..	3
Chem. 5* Adv. Analysis	187	1	6	1	6
Met. 6* Wet Assaying	227	..	3	..	3

*Either Chem. 5 or Met. 6 must be taken.

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Geol. 6 Palaeontology	209	2	2	2	2
Geol. 7 Petrology	209	2	4	2	4
Geol. 8 Economic	209	3	1	3	1
C.E. 18 Engr. Economics	194	2	..	2	..
Geol. 9 Mineralography	210	..	2	..	2
Geol. 10 Field	210	..	3	..	3
Min. 2 Coal and Placer	224	2	..	2	..
Min. 3 Metal Mining	225	2	..	2	..
Min. 5 Surveying	225	1	..	..	..
Met. 2 Smelting	226	2	..	2	..
Ore Dressing 2 Laboratory	228	..	3	..	3
Thesis	.....	..	4	..	5

VII. Mechanical Engineering

As this branch of Engineering forms an outstanding feature in all industrial development, the course of training is general and basic in its character. Because of its general character it is not possible in the time available to give the student an intimate knowledge of the details of practice in any special line of work. The course is designed more particularly for those who are likely to take up the manufacture of machinery, power plant work (including design and construction of steam, gas, oil, or hydraulic plants), heating and ventilation of buildings, refrigeration, or industrial management.

Students in this course are given a systematic course in the fundamentals of Electrical Engineering.

Governed by the fact that values and costs are controlling factors in the practice of Engineering, the subjects of the final years are treated with a view of developing a business sense, an understanding of men, and the ability to report clearly on industrial problems. This demands the study of Economics, the use of good English, and the participation in outside industrial work during the vacation.

THIRD YEAR

As in Electrical Engineering. (See Page 160.)

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
M.E. 9 Thermodynamics	216	2	6	2	6
M.E. 10 Design	216	2	5	2	5
M.E. 11 Heating	216	1	..	1	..
M.E. 12 Plant Design	216	1	..	1	..
M.E. 13 Metals	217	1	3	1	3
E.E. 3 Standard Practice	220	2	3	2	3
C.E. 18 Engr. Economics	194	2	..	2	..
C.E. 19 Engr. Law	195	1	..	1	..
C.E. 29 Hydraulic Mach.	199	1	..	1	..
Math. 8 (Adv. Calculus) or Math. 9 (Differential Equa.)	212	2	..	2	..

VIII.-IX. Metallurgical and Mining Engineering

Modern Metallurgical practice covers a wide and expanding field. The Metallurgical Engineer has to design and operate a great variety of plants and processes. He must be able to deal with furnace and solution processes, based on chemical principles, and mechanical crushing and separating processes, based on physical principles, together with an immense variety of principal and auxiliary machinery, from small to immense, used in the separation and refining of ores, artificial mineral products and metals. The whole forms a keenly competitive and strictly commercial industry, based on, and closely limited by, the practical economic considerations of costs and profits. Rapid and continuous change and improvement is the rule. Methods and machines quickly become obsolete. The field for research and improvement in methods and machinery is ever widening, though the economic margin is ever narrowing.

The Metallurgical course, in the Third and Fourth Years, based on the fundamental earlier years, is designed to give the student a broad general knowledge of standard metallurgical methods and machinery, with a fundamental grasp of the actual applications of the basic sciences in practical metallurgical operations, also sufficient laboratory practice to illustrate and fix these in his mind and train him for an actual junior position after graduation.

Modern mining operations cover a field notable for its breadth and variety. The discovery, steadily becoming more difficult, and the development, steadily becoming more scientific, of new mineral deposits are based largely on a knowledge of the laws and processes of Nature, ultimately physical and chemical, but, immediately, chiefly geological in kind. On the other hand, the operations of actual mining are largely mechanical in kind, and call for use and knowledge of mechanical and electrical equipment, adapted to underground methods and conditions.

The conditions under which mining operations are carried on are often of great natural difficulty, and many of the factors to be dealt with are, to a large extent, obscure or indefinite

oftener than measureable. The qualities of good judgment and decision are therefore of great importance in the application of technical knowledge to mining. As in metallurgy, economic considerations are paramount.

The Mining course is correspondingly broad in scope. In addition to the fundamental sciences, it includes fundamental subjects in Civil, Electrical and Mechanical Engineering, Economics and Economic Geology.

The special mining subjects cover the underlying principles and practice on which the discovery, development and economic operation of mines are based, the practical application of technical knowledge to actual operations, and the use of judgment and decision, by precept, example and illustration. Sufficient practical training and laboratory work are included to fit the student for an actual junior position after graduation. While not given as separate subjects, the social, administrative and ethical sides of the professions of Mining and Metallurgy are included in the general treatment of appropriate subjects.

In this University, emphasis is naturally placed on British Columbia conditions and its chief mineral products, namely: Gold, Silver, Lead, Zinc, Copper, Coal and Coke.

The University is conveniently located in proximity to coal and metal mining districts, large coal and metal mining operations being carried on within a few hours' journey, in connection with which there are large washing and ore concentration plants. There is a large metallurgical plant at Tacoma, within an easy day's journey. Students have little difficulty in obtaining positions in mines or smelters during their vacation, as several of the larger companies have established the practice of accepting student employees in reasonable numbers during the vacation months.

Students are recommended to spend their vacations at practical works, in connection with Metallurgy or Mining, and are required to do so between the Third and Fourth Years as an essential part of their course, without which a degree will not be granted. An essay covering this work is also required, as specified in the Fourth Year curriculum.

Students are advised to become student members of the Canadian Institute of Mining and Metallurgy.

VIII. Metallurgical Engineering

THIRD YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	150				
Econ. 1	200	2	..	2	..
C.E. 9 Elem. Design	192	..	..	1	3
C.E. 10 Str. of Materials	192	2	3	2	3
C.E. 12 Hydraulics	193	1	3	1	3
C.E. 13 Mapping	193	..	..	..	3
M.E. 6 (b) Laboratory	215	..	3	..	3
Geol. 2 Mineralogy	207	2	2	2	2
E.E. 1 General	217	2	2	2	2
Min. 1 Metal Mining	224	2	..	2	..
Ore Dressing 1 General	227	2	..	2	..
Met. 1 General	226	2	..	2	..
Met. 5 Fire Assay	227	1	5	..	..
Met. 6 Wet Assay	227	..	3	..	3

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Geol. 9 Mineralography	210	..	2	..	2
Geol. 8 Economic	209	3	1	3	1
C.E. 18 Engr. Economics	194	2	..	2	..
Chem. 8 Electro-	188	3	3	..	..
Ore Dressing 2 Laboratory	228	..	9	..	9
Min. 3 Metal Mining	225	2	..	2	..
Met. 2 Smelting	226	2	..	2	..
Met. 3 Calculations	226	2	..	2	..
Met. 4 Analysis	227	..	6	..	12

IX. Mining Engineering

THIRD YEAR

As in Metallurgical Engineering. (See Page 168.)

FOURTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay	154				
Geol. 7 Petrology	209	2	4	2	4
Geol. 8 Economic	209	3	1	3	1
C.E. 18 Engr. Economics	194	2	..	2	..
C.E. 19 Engr. Law	195	1	..	1	..
Met. 2 Smelting	226	2	..	2	..
Ore Dressing 2 Laboratory	228	..	9	..	9
Min. 2 Coal and Placer	224	2	..	2	..
Min. 3 Metal Mining	225	2	..	2	..
Min. 4 Machinery	225	2	..	2	..
Min. 5 Surveying	225	1	..	..	..
Min. 7 Methods	226	..	..	1	..
Min. 6 Design	225	..	3	..	3

Short Courses in Mining

The regular Short Courses in Mining for the Session commence on the second Monday in January, and continue for eight weeks. These courses include Mining, Smelting, Ore Concentration, Geology and Ore-deposits, Mineralogy and Rock Study, Fire Assaying, Chemistry, and Surveying.

The courses are thoroughly practical in nature. They are not primarily intended for those who have had a technical training, but rather for those who have had practical experience in mining and prospecting, or are connected with the business of mining in any way. The courses are designed to give practical and technical knowledge, helpful in practical mining work and mining business. While they are short they are complete in themselves, and require no other preparation than a common-school education or ability to read and write.

Experience has shown that they fill a real need, and they have proved very successful in the past.

As they do not form part of the regular University course, a special bulletin is issued, in which details of the courses and requirements for admission are given. Copies of this may be obtained on application to the Registrar of the University.

These courses will not be given unless at least ten students register for them.

X Nursing and Health

1. *Nursing A.*—A five-year undergraduate course. (See below.)

2. *Nursing B.*—A graduate course of one academic year in Public Health Nursing. (See Page 174.)

3. *Nursing C.*—A graduate course of one academic year in Teaching and Supervision in Schools of Nursing. (See Page 175.)

Registration for these courses will be subject to the general University Regulations. (See Pages 43-45) and to the special requirements of the Department.

All regulations are subject to change from year to year, and subjects or courses may be modified during the year as the Faculty may deem advisable.

Nursing A (Five-year Undergraduate Course)

This is a five-year combined course leading to the Degree of B.A.Sc. (Nursing) and to the diploma in nursing. It is given by the University in co-operation with the Associated Hospital Schools of Nursing, which means those that have signified their willingness to supply the professional part of the course, and have received the approval of the University Senate for that purpose. Up to the present time the Vancouver General is the only Hospital which has entered into association with the University to this end.

The course is open to applicants who meet the general requirements mentioned above, and who, in the opinion of the

Department, are personally fitted for the profession of nursing. In addition they must be able to satisfy the entrance requirements of the associated Hospital Schools of Nursing.

The aim of the five-year combined course is to afford a broader education than can be given by the Hospital Schools of Nursing alone, and thus to build a sound foundation for those who desire to fit themselves for Teaching and Supervision in Schools of Nursing or for Public Health Nursing service.

The First and Second Years, which are academic, give the students an introduction to general cultural subjects and a foundation in the sciences underlying the practice of nursing. Between the First and Second years a probationary period of four months will be spent in an associated Hospital School of Nursing. The Third and Fourth Years are devoted to professional training in an Associated Hospital, and are planned to afford experience and training in the care of the sick, and to develop the skill, observation and judgment necessary to the efficient practice of nursing. The Fifth Year affords two alternative courses, one in Public Health Nursing (Nursing B) and the second in Teaching and Supervision in Schools of Nursing (Nursing C).

FIRST YEAR (Academic)

Subject.	For Details. See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
English 1 (a)	112	2	..	2	..
English 1 (b)	113	2	..	2	..
Choice of Mathematics 1	131				
or Latin 1	100				
or French 1	136	3	..	3	..
or History 1, 2, or 3	125				
Physics 1	229	3	2	3	2
Chemistry 1	186	3	3	3	3
Biology 1	182	2	2	2	2
Nursing 1	231	1	..	1	..

Probationary Period (Hospital)

The probationary period of four months, to be taken between the first and second academic years, will be spent in an Associated Hospital. In order to meet the admission requirements of the Associated Hospital School of Nursing, the student must have attained such age as may be fixed by the Associated Hospital School of Nursing before entering upon this probationary period; in the Vancouver General Hospital School of Nursing the eighteenth birthday must be passed.

During this period the student will undergo rigid examination as to fitness in physique, temperament and character for the practice of nursing. This will afford the Hospital School of Nursing information upon which to judge the students' qualifications for the profession of nursing. It also enables the student to determine whether she feels herself personally fitted or inclined to proceed in the course. The Hospital Schools of Nursing reserve the right to reject candidates who do not reach the required standards.

SECOND YEAR (Academic)

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures per Week.	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
English 2 (a)	113	2	..	2	..
English 2 (b)	113	1	..	1	..
Zoology 1	235	2	2	2	2
Philosophy 1	140	4	..	4	..
Economics 1	102	3	..	3	..
Bacteriology 1	86	1	6	..	..
Bacteriology 2	87	..	..	1	6
Nursing 2	231	1	..	1	..
Anatomy and Physiology	231	2	..	2	..

Third and Fourth Years (Professional)

The Third and Fourth Years will be spent in practical training in an associated Hospital School of Nursing. Students

in these years are required to register with the University even though during this portion of the course they are in residence at the Hospital. During these professional years students are subject to the authority and are under the direction of the officers of the associated Hospital Schools of Nursing. The required professional period is twenty-eight months, in which is included the probationary period of four months. Full maintenance and such allowance as the associated Hospital authorities may designate are accorded, and a yearly vacation of three weeks is granted at the convenience of the Superintendent of the School of Nursing.

Instruction in the following Nursing subjects is given by members of the medical staff of the associated Hospital and by qualified nurse instructors: Introductory Ethics of Nursing; Practical Nursing Procedure; Elementary Nutrition and Cookery; Drugs and Solutions; Materia Medica; Surgical Nursing; Medical Nursing (including charting); Gynecological Nursing; Nursing of Communicable Diseases; Obstetrical Nursing; Diet in Disease; Pediatric Nursing and Infant Feeding; Nursing in Diseases of the Eye, Ear, Nose and Throat; Nursing in Tuberculosis; Urinalysis; Introduction to Anaesthesia; Introduction to Physiotherapy and X-Ray.

This schedule is open to change at any time, at the discretion of the associated Hospital School of Nursing.

The period of Hospital service includes actual nursing experience in the following departments:

Medical.	Operating Room.
Surgical.	Eye, Ear, Nose and Throat.
Gynecological.	Obstetrical.
Pediatric and Orthopaedic.	Infectious.
Observation and Neurological.	Tuberculosis.
Infants.	Diet Kitchen.

The Social Service Department of the Hospital offers opportunity for a four weeks' service to a limited number of students. Selection will be made by the Superintendent of Nurses from the students desirous of receiving this course.

Fifth Year (Academic and Professional)

The Fifth Year will be spent in either Nursing B or Nursing C, at the option of the student. The selection between these courses need not be made until registering with the University for the Fifth Year.

Nursing B (Public Health Nursing)

A graduate course of one academic year, including work in the University, and appropriate field work under the supervision of the various associated Public Health organizations.

NURSING B (Public Health Nursing)

Subject	For Details See Page:	Total Hours Lectures	Total Hours Laboratory
Preventable Diseases	231	21	
Epidemiology	231	21	
Tuberculosis	231	11	
Venereal Diseases	231	3	
Mental Hygiene	231	11	
Bacteriology	232		*
Infant Welfare	232	11	
Orthopedics	232	5	
Public Health	232	15	
Public Health Administration	232	4	
Public Health Organiations	232	4	
Vital Statistics	233	18	
Principles and Practice of Public Health Nursing	233	34	
Rural Public Health Nursing	233	6	
Urban Visiting Nursing Programme	233	2	
Health Education	233	16	
History of Nursing and Contemporary Nursing Problems	233	11	
School Hygiene	234	12	
Hospital Social Service	234	3	
Metabolism and Nutrition	234	11	
Psychology for Nurses	234	16	
Principles of Education Applied to Teaching	234	34	
Public Speaking and Parliamentary Procedure	234	18	
Sociology	234	21	
Geography 10	234	16	
Motor Mechanics	234		10
Field Work	175	To run concurrently with the academic work.	

* Hours to be arranged.

Nursing C (Teaching and Supervision)

A graduate course of one academic year, including work in the University, and opportunity for practice teaching and for the observation of Training School administration and ward supervision in associated Hospitals.

NURSING C

Subject	See Page: For Details	Total Hours Lectures	Total Hours Laboratory
Preventable Diseases	231	21	
Mental Hygiene	231	11	
Bacteriology	232		*
Infant Welfare	232	11	
Orthopedics	232	5	
History of Nursing and Contemporary Nursing Problems	233	11	
Teaching in Schools of Nursing	233	34	
Principles of Supervision in Schools of Nursing	233	16	
Metabolism and Nutrition	234	11	
Psychology for Nurses	234	16	
Principles of Education Applied to Teaching	234	34	
Public Speaking and Parliamentary Procedure	234	18	
Sociology	234	21	
Electives from Nursing B or from related Science Courses			
Field Work	176		

* Hours to be arranged.

Field Work in Nursing B and C

Through the courtesy and co-operation of the following agencies arrangements have been made for supervised field work, or observation:

FOR NURSING B

Vancouver General Hospital.—The Social Service Department, Miss Laura B. Timmins, Director.

The Provincial Department of Health.—Dr. H. E. Young, Provincial Health Officer.

The Victorian Order of Nurses.—Miss M. Duffield, District Superintendent.

The Medical Department of the Vancouver Public Schools.—Dr. H. White, Medical Director; Miss E. Breeze, Director, School Hygiene.

The Vancouver Rotary Clinic for Diseases of the Chest.—Dr. H. A. Rawlings, Director.

The Department of Child Hygiene, City of Vancouver.—Dr. F. T. Underhill, City Health Officer; Miss L. Sanders, Supervisor, Department of Child Hygiene.

The Government Venereal Disease Clinic.—Dr. J. Ewart Campbell, Director; Miss E. V. Cameron, Nurse in charge.

The Provincial Mental Hospital, Essondale.—Dr. A. L. Crease, Medical Superintendent.

FOR NURSING C

The Vancouver General Hospital.—Dr. F. C. Bell, Superintendent; Miss K. W. Ellis, Superintendent of Nurses.

The academic work and field work will run concurrently throughout the two University terms, with the exception of the last four weeks of the Second Term which, in Nursing B, will be devoted entirely to field work under the supervision of the Provincial Rural Public Health Nursing organizations and, in Nursing C, to such Hospital Service as may be arranged by the Associated Hospitals. Field work for some students may have to be delayed until after the close of the University year.

During the period spent in the Hospital, all students will be subject to the authority, and under the direction, of the officers of the Associated Hospital School of Nursing.

Adequate opportunity for observation, as well as for practice, is thus afforded in all of the more important fields of Public Health Nursing and in the field of Teaching and Supervision in Schools of Nursing.

Admission to Nursing B and C

The courses are open to students of the five-year course, and also to nurses who have graduated from recognized Schools of Nursing, who are eligible for registration in British Columbia and who are personally fitted for their proposed work. For Nursing C it is also required that applicants shall fulfil the University Educational requirement of Junior Matriculation.

Applications for admission to the courses of Nursing B or C should be sent to the Department of Nursing and Health not later than July 15th of the current year. A certificate of good health and physical condition, signed by a regular practising physician, must be presented with the applications.

As a preparation for Nursing B, nurses without previous Public Health Nursing service are advised to obtain at least one month's experience in a visiting nursing agency, or other public health or social agency approved by the Department. While not obligatory, this month is most important, and various Field Agencies—the Provincial Board of Health, the Vancouver General Hospital Social Service Department and the Victorian Order of Nurses, have each agreed to receive nurses for this month in so far as it can be arranged. Inquiry should be made at as early a date as possible to the Department of Nursing and Health that arrangements may be made with the Field Agencies. Nurses will be responsible for their own maintenance, and will receive no remuneration during this period.

Nurses registering for Nursing C who have had no experience in family case-work, social service or visiting nursing, are also advised to secure this month's experience with one of the Public Health organizations if possible.

For the convenience of graduate nurses already engaged in nursing, who wish to take Nursing B or C, but are unable to take a year off, provision is made that either one may be taken as a part-time course over a period of two or more years. Nurses registering in this way must fulfil the same requirements as the regular-course students.

DOUBLE COURSE FOR THE DEGREES OF B.A. AND B.A.Sc.

The requirements for the first and second years are as set forth in the Calendar for the first and second years of Arts (Pages 68-71) except as follows:

1. Physics 1 or 2, Mathematics 2 (c) (Calculus) and Chemistry 1 must be taken. The passing grade for each of these subjects is fifty per cent. (See also, admission to Applied Science, Page 150.)

2. Biology 1, Chemistry 2, Mathematics 2 (a) and 2 (b), and Physics 3 or 4 may not be taken. These subjects are covered later in Applied Science.

3. A course in German is recommended (and, for those intending to enter Geological or Civil Engineering, French also).

The third, four, fifth and sixth years of the double course correspond to the first, second, third and fourth years of Applied Science. The degree of B.A. is conferred on completing the fifth year of this course.

COURSES LEADING TO THE DEGREE OF M.A.Sc.

1. Candidates for the degree of Master of Applied Science must hold a B.A.Sc. degree from this University, or its equivalent.

2. A graduate of another university applying for permission to enter as a graduate student is required to submit with his application an official statement of his graduation together with a certificate of the standing gained in the several subjects of his course. The Faculty will determine the standing of such a student in this University. The fee for examination of certificates is $2.00

3. Candidates with approved degrees and academic records who proceed to the Master's degree shall be required:

(*a.*) To spend one year in resident graduate study; or

(*b.*) (At the discretion of the Faculty concerned):

(i.) To do two or more years of private work under the supervision of the University, such work to be equivalent to one year of graduate study; or

(ii.) To do one year of private work under University supervision and one term of resident graduate study, the total of such work to be equivalent to one year of resident graduate study.

4. One major and one minor shall be required and a thesis must be prepared on some approved topic in the major subject. (Two typewritten copies of each thesis shall be submitted. See special circular of "Instructions for the Preparation of Masters' Theses").

The choice of and relationship between major and minor subjects, and the amount of work in each, or of tutorial work, must be approved by each of the departments concerned, by the Committee on graduate studies, and by the Dean.

5. First or Second Class standing in History and Principles of Education and Educational Psychology of the Teacher Training Course will be accepted as equivalent to a Minor for the M.A.Sc. degree, subject in each case to the consent of the Head of the Department in which the student wishes to Major.

6. Examinations, written or oral, or both, shall be required, and a standing equivalent to at least 75 per cent. in the major subjects and 65 per cent. in the minor.

7. Application for admission as a graduate student shall be made to the Registrar by October 15th. For fees see Page 47.

EXAMINATIONS AND ADVANCEMENT

1. Examinations are held in December and in April. December examinations will be held in all subjects of the First and Second Years, and are obligatory for all students of these years. December examinations in subjects of the Third and Fourth Years, excepting those subjects that are completed before Christmas, shall be optional with the Departments concerned. Applications for special consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period. In cases where illness is the plea for absence from examinations, a medical certificate must be presented on the appropriate form which may be obtained from the Dean's office.

2. Candidates in order to pass must obtain at least 50 per cent. in each subject. The grades are as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 80 per cent.; Passed, 50 to 65 per cent. But in the First and Second Years of the course in Nursing and Health the requirements for passing are the same as those for the First and Second Years in Arts and Science. (See Page 84.)

3. If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed. Notice will be sent to all students to whom such examinations have been granted.

4. Supplemental examinations will be held on September 18th, 19th, 20th and 21st, and will not be granted at any other time, except by special permission of the Faculty, and on payment of a fee of $7.50 per paper.

5. Applications for supplemental examinations, accompanied by the necessary fees (see Schedule of Fees Page 47), must be in the hands of the Registrar at last two weeks before the date set for the examinations.

6. No student may enter a higher year with supplemental examinations still outstanding in respect of more than 4 units

of the preceding year, or with any supplemental examination outstanding in respect of the work of an earlier year unless special permission to do so is granted by Faculty. Such permission will be granted only when Faculty is satisfied that the failure to remove the outstanding supplemental examinations had an adequate cause. Students in Nursing A must remove all outstanding supplemental examinations before entering their third year.

7. No student will be allowed to take any subject unless he has previously passed, or secured exemption, in all pre-requisite subjects. If any subject has another which is concurrent with it, both must be taken in the same session.

8. A student who is not allowed to proceed to a higher year may not register as a *partial* student in respect of the subjects of that higher year. But a student who is required to repeat his year may, *on application in writing,* be exempted by the Faculty from attending lectures and passing examinations in subjects in which he has already made at least Second Class standing. In this case he may take, in addition to the subjects of the year which he is repeating, certain subjects of the following year.

9. A student who fails twice in the work of the same year may, upon the recommendation of the Faculty, be required by the Senate to withdraw from the University.

10. Any student whose academic record, as determined by the tests and examinations of the first term of the First or Second Year, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session. Such a student will not be readmitted to the University as long as any supplemental examinations are outstanding.

11. Term essays and examination papers will be refused a passing mark if they are noticeably deficient in English.

DEPARTMENTS IN APPLIED SCIENCE

N.B.—The following subjects may be modified during the year as the Faculty may deem advisable.

Department of Botany

Professor: A. H. Hutchinson.
Associate Professor: Frank Dickson.
Assistant Professor: John Davidson.
Assistant: Jean Davidson.
Assistant: R. W. Pillsbury.
Assistant: Dorothy Newton.

Biology

1. *Introductory Biology.*—The course is introductory to more advanced work in Botany or Zoology; also to courses closely related to Biological Science, such an Agriculture, Forestry, Medicine.

The fundamental principles of Biology; the interrelationships of plants and animals; life processes; the cell and division of labour; life-histories; relation to environment.

Text-book: Smallwood, *Text-book of Biology,* Lea & Febiger, 1924.

The course is prerequisite to all other courses in Biology.

One lecture and one period of two hours laboratory per week.

2. *Principles of Genetics.*—The fundamentals of Genetics illustrated by the race-histories of certain plants and animals; the physical basis of heredity; variations; mutations; acquired characters; Mendel's law with suggested applications.

Prerequisite: Biology 1.
Text-book: Castle, *Genetics and Eugenics,* Harvard Press.
Two lectures per week. First Term.

3. *General Physiology* of animal and plant life processes. Open to students of Third and Fourth Years having prerequisite Biology, Chemistry and Physics; the Department should be consulted.

Text-book: Bayliss, *Principles of General Physiology,* Longmans-Green.

Two lectures and one period of three hours laboratory per week. Second Term.

Botany

1. *General Botany.*—A course including a general survey of the several fields of Botany and introductory to more specialized courses in Botany.

Prerequisite: Biology 1.

Text-book: Coulter, Barnes & Cowles, *Text-book of Botany,* Vol. I, University of Chicago Press.

This course is prerequisite to all other courses in Botany, except the Evening Course. Partial credit for this course (2 units) may be obtained through the Evening Course.

Two lectures and one period of two hours laboratory per week.

2. *Morphology.*

General Morphology of plants. A comparative study of plant structures. The relationships of plant groups. Comparative life histories. Emphasis is placed upon the increasing complexity of plant structures, from the lower to the higher forms involving a progressive differentiation accompanied by an interdependence of parts.

Prerequisite: Botany 1.

Text-book: Coulter, Barnes & Cowles, *Text-book of Botany,* Vol. I, University of Chicago Press.

Two lectures and two periods of two hours laboratory per week. First Term.

3. *Plant Physiology.*

Prerequisite: Botany 1.

Text-book: Palladin, *Plant Physiology,* English Edition (Translation of 6th Russian Edition), 1918, P. Blakiston.

Two lectures and two periods of two hours laboratory per week. First Term.

4. *Histology.*—A study of the structure and development of plants; methods of killing, fixing, embedding, sectioning, staining, mounting, drawing, reconstructing. Use of microscope, camera lucida; photo-micrographic apparatus.

Text-book: W. C. Stevens, *Plant Anatomy,* P. Blakiston.

Prerequisite: Botany 1.

One lecture and two periods of three hours laboratory per week. Second Term.

5. *Systematic Botany.*

5. (*a*) *Economic Flora.*—An introduction to the classification of plants through a study of selected families of economic plants of British Columbia; useful for food, fodder, medicine and industrial arts; harmful to crops and stock. Weeds, and poisonous plants. Methods of control.

Prerequisite: Botany 1.

Text-books: Jepson, *Economic Plants of California,* Jepson, University of California. Thomas and Sifton, *Poisonous Plants and Weed Seeds,* University of Toronto Press.

Two lectures and two hours laboratory per week. First term.

5. (*b*) *Dendrology.*—A study of the forest trees of Canada, the common shrubs of British Columbia, the important trees of the United States which are not native to Canada. Emphasis on the species of economic importance. Identification, distribution, relative importance, construction of keys.

Prerequisite: Botany 1.

Text-books: Morton & Lewis, *Native Trees of Canada,* Dominion Forestry Branch Ottawa. Sudworth, *Forest Trees of the Pacific Slope,* Superintendent of Documents, Washington, D. C.; Davidson and Abercrombie, *Conifers, Junipers and Yew,* T. F. Unwin.

One lecture and one period of two or three hours laboratory or field work per week.

5. (*c*) *Descriptive Taxonomy.*—An advanced course dealing with the collection, preparation and classification of "flowering plants." Methods of field herbarium and laboratory work. Plant description, the use of floras, preparation of keys, identification of species. Systems of classification. Nomenclature.

Prerequisites: Botany 1 and 5 (*a*).

Text-books: Hitchcock, *Descriptive Systematic Botany,* Wiley & Sons, N.Y.; Henry, *Flora of Southern British Columbia,* Gage & Co., Toronto.

One lecture and four hours laboratory per week. Second Term.

6. (*a*) *General Plant Pathology.* — Identification and life-histories of parasites causing plant-diseases; means of combating them.

Prerequisite: Botany 1.

Text-book: Heald, *Manual of Plant Diseases.*

One lecture and one period of two hours laboratory per week. Second Term.

6. (*b*) *Forest Pathology.*—Nature, identification and control of the more important tree-destroying fungi and other plant parasites of forests.

Text-book: Rankin, *Manual of Tree Diseases,* Macmillan.

One lecture and one period of two hours laboratory per week during one-half of one term.

7. (*a*) *Forest Ecology and Geography.*—The inter-relations of forests and their environment; the biological characteristics of important forest trees; forest associations; types and regions; physiography.

Text-book: Hardy, *The Geography of Plants,* Oxford University Press.

One lecture per week during one term. Field trips and laboratory work during the session amounting to thirty hours, one period per week.

Department of Chemistry

Professor: R. H. Clark.
Professor of Analytical Chemistry: E. H. Archibald.
Associate Professor: W. F. Seyer.
Associate Professor: M. J. Marshall.
Assistant Professor: J. Allen Harris.
Instructor: John Allardyce.
Instructor: D. F. Stedman.
Assistant: A. F. Gallaugher.
Assistant: R. H. Ball.
Assistant: H. R. Lyle Streight.
Assistant: A. Ernest Morell.
Assistant: E. H. Nunn.

1. *General Chemistry.*—This course is arranged to give a full exposition of the general principles involved in modern Chemistry and comprises a systematic study of the properties of the more important metallic and non-metallic elements and their compounds, and the application of Chemistry in technology.

Text-book: Horace Byers, *Inorganic Chemistry,* Scribner's.

Three lectures and one period of three hours laboratory per week.

2. *Qualitative and Quantitative Analysis.*

(*a*) *Qualitative Analysis.*—During the first six weeks of the term an additional lecture may be substituted for a part of the laboratory work.

Text-book: A. A. Noyes, *Qualitative Analysis,* Macmillan.

Prerequisite: Chemistry 1.

One lecture and one period of three hours laboratory per week.

(*b*) *Quantitative Analysis.*—This course embraces the more important methods of gravimetric and volumetric analysis.

Text-book: Cumming & Kay, *Quantitative Analysis,* Gurney & Jackson.

Prerequisite: Chemistry 1.

One lecture and one period of three hours laboratory per week.

Course (*b*) must be preceded by Course (*a*).

3. *Organic Chemistry.*—This introduction to the study of the compounds of carbon will include the method of preparation and a description of the more important groups of compounds in both the fatty and the aromatic series.

Chemistry 3 will also be given to those students taking Chemistry 2, or those who have had the equivalent of Chemistry 2.

Text-books: Holleman-Walker, *Text-book of Organic Chemistry,* Wiley; Gatterman, *The Practical Methods of Organic Chemistry,* Macmillan.

Two lectures and one period of three hours laboratory per week.

4. *Theoretical Chemistry.*—An introductory course on the development of modern Chemistry, including osmotic phenomena, the ionization theory, the law of mass action, and the phase rule.

Text-book: James Walker, *Introduction to Physical Chemistry,* Macmillan.

Prerequisite: Chemistry 2.

Two lectures and one period of three hours laboratory per week. Second Term.

5. *Advanced Qualitative and Quantitative Analysis.*

(*a*) *Qualitative Analysis.* — The work of this course will include the detection and separation of the less common metals, particularly those that are important industrially, together with the analysis of somewhat complex substances occurring in nature.

One lecture and two periods of three hours laboratory per week. First Term.

(*b*) *Quantitative Analysis.*—The determinations made will include the more difficult estimations in the analysis of rocks, as well as certain constituents of steel and alloys. The principles on which analytical chemistry is based will receive a more minute consideration than was possible in the elementary course.

Prerequisite: Chemistry 2.

One lecture and two periods of three hours laboratory per week. Second Term.

6. *Industrial Chemistry.* — Those industries which are dependent on the facts and principles of Chemistry will be considered in as much detail as time will permit. The lectures will be supplemented by visits to manufacturing establishments in the neighbourhood, and it is hoped that some lectures will be given by specialists in their respective fields.

Prerequisite: Chemistry 2 and 3.

Two lectures per week.

7. *Physical Chemistry.*—The lectures, which are a continuation of those given in 4, include the kinetic theory of gases, thermo-chemistry, the application of the principles of thermodynamics to chemistry, osmotic phenomena, applications of the dissociation theory, colloidal solutions, and a study of the physical properties of gases, liquids, and solids and of their chemical constitutions.

Text-book: Findlay, *Physico-Chemical Measurements,* Longmans-Green.

Reference books: Ramsay's Series of Books on Physical Chemistry, Longmans. Getman, *Theoretical Chemistry,* Wiley.

Prerequisite: Chemistry 2, 3 and 4.

Two lectures and one period of three hours laboratory per week.

8. *Electro-Chemistry.*—As in Arts. (See Page 95.)

9. *Advanced Organic Chemistry.* — As in Arts. (See Page 96.)

11. *Physical Organic Chemistry.*—As in Arts. (See Page 96.)

12. *Colloid Chemistry*—As in Arts. (See Page 96.)

16. *Chemical Engineering.* — Theory and design of fractionating columns, condensers, multiple effect evaporators; chamber, tunnel, drum, rotary and spray driers. Theory and practice of technical filtration; calculation of capacity of box

filters, filter presses, centrifugals, etc. Principles of counter current extraction.

Prerequisites: Chemistry 3 and 4.

Text-book: Walker, Lewis & McAdams, *Principles of Chemical Engineering*, McGraw-Hill.

Reference books: Liddell, *Handbook of Chemical Engineering*, McGraw-Hill. Robinson, *Elements of Practical Distillation*. McGraw-Hill.

Two lectures per week during second term of Fourth Year.

17. *Chemical Thermodynamics.*—As in Arts. (See Page 97.)

18. *Advanced Inorganic Chemistry.*—As in Arts. (See Page 97.)

Department of Civil Engineering

Professor: Wm. E. Duckering.
Associate Professor: E. G. Matheson.
Assistant Professor: F. A. Wilkin.
Assistant Professor: A. H. Finlay.
Instructor: A. Lighthall.
Instructor: A. G. Stuart.
Assistant: Arthur H. Lang.

1. *Descriptive Geometry.*—Geometrical drawing; orthographic, isometric and axometric projections.

Text-book: Armstrong, *Descriptive Geometry*, second edition, Wiley.

One three-hour period per week.

Mr. Matheson, Mr. Wilkin, Mr. Finlay, Mr. Stuart, Mr. Lang.

2. *Field Work 1.*—Elementary surveying. Practical problems involving the use of the chain, telemeter, compass, transit and level. Traverses, closed circuits, contour and detail surveys. Levels for profiles, benches and contours.

Work commences immediately upon the close of spring examinations, and consists of field work, eight hours per day for twenty days, or equivalent.

Mr. Stuart, Mr. Wilkin.

3. *Materials of Engineering.**—Manufacture and properties of iron and steel; principal alloys; considerations governing selection of materials; manufacture and properties of cements; concrete; stone and brick masonry; principal kinds of commercial timber; treating and preservation of timber; discussion of standard specifications for engineering work.

Text-book: Moore, *Materials of Engineering,* McGraw-Hill.

References: Mills, *Materials of Engineering;* Johnson, *Materials of Construction,* Wiley; Upton, *Materials of Engineering,* Wiley.

One lecture per week. Mr. Matheson.

4. *Graphical Statics.* — Elementary theory of structures; composition of forces; general methods involving the force and equilibrium polygons; determination of resultants, reactions, centres of gravity, bending moments; stress in framed structures, cranes, towers, roof-trusses and bridge-trusses. Algebraic check methods will be used throughout.

Text-book: Hudson and Squire, *Elements of Graphic Statics,* McGraw-Hill.

Prerequisites: Physics 4 must either precede or accompany Civil 4.

One two-hour period per week. Mr. Lighthall.

5. *Mapping 1.*—Draughting from notes obtained in Civil 2. Maps of telemeter, compass and transit surveys. Contour and topographical maps in convention or color.

Prerequisite: Civil 2.

One three-hour period per week. Mr. Stuart.

6. *Surveying 1.* — Chain and angular surveying; the construction, adjustment and use of the transit, level, compass, stadia, minor field instruments, planimeter, and pantograph; leveling; topography; contour surveying; stadia; railway curves; vertical curves; transition curves.

Prerequisite: Civil 2.

*Elective

Text-book: Breed and Hosmer, *Elementary Surveying,* Vol. I, Wiley.

References: Allen, *Curves and Earthwork,* McGraw-Hill; Sullivan, *Spiral Tables,* McGraw-Hill.

Two lectures per week. Mr. Stuart.

7. *Field Work 2.*—(*a*) Railway surveys, reconnaissance, preliminary and location surveys, methods of taking topography, cross-sectioning; estimating quantities; running in easement and vertical curves, etc. The notes secured will be used in class work for mapping and for estimating quantities and costs.

(*b*) Hydrographic surveys, topography of a section of river-bed by sounding and fixing position by transits and sextants; the three-point problem; stream-gauging by surface and deep floats and by the current meter.

(*c*) Solar and stellar observations for latitude and azimuth; adjustments of instruments; the use of plane table, sextant and minor instruments.

Prerequisite: Civil 2.

Time, same as for Civil 2.

Mr. Matheson, Mr. Wilkin, Mr. Lighthall.

8. *Foundations and Masonry.*—(*a*) Borings; bearing power of soils; pile and other foundations; cofferdams; caissons; open dredging; pneumatic and freezing processes; retaining walls; estimates of quantities and costs.

Prerequisite: Civil 4.

Text-book: Jacoby and Davis, *Foundations of Bridges and Buildings,* McGraw-Hill.

One lecture and one three-hour period per week. First Term.

Mr. Matheson.

(*b*) Theory of Earth Pressure; combined stresses, ellipse of stress, principal and conjugate axes, as applied to the determination of earth pressures; Rankine's Coulomb's, Weyrauch's, Cain's and Rebhann's theories and solutions for earth pressure; retaining walls; dams.

Prerequisite: Civil 4; Civil 8a must accompany 8b during the First Term.

References: Ketchum, *Walls, Bins and Grain Elevators;* Howe, *Retaining Walls for Earth;* Cain, *Earth Pressure, Walls and Bins;* Morley, *Theory of Structures.*

One lecture per week each term. Mr. Matheson.

9. *Structural Design 1.*—Problems in draughting, illustrating designs in structural engineering; estimates of quantities and costs; preparation of plans.

Text-book: Conklin, *Structural Draughting and Elementary Design,* Wiley; Carnegie, *Pocket Companion,* Carnegie Steel Co.

Prerequisite: First Term of Civil 10.

One lecture and one three-hour period. Second Term.

Mr. Matheson.

10. *Strength of Materials.*—A thorough introduction to the fundamental principles dealing with the strength of materials; stress, deformation, elasticity and resilience; the application of the laws of derived curves to the construction of load, shear, moment, inclination and deflection diagrams, fibre stress, deflection of simple, cantilever, and continuous beams under any loading; riveted joints; torsion; columns; combined stresses; longitudinal shear; reinforced concrete; special beams.

The laboratory period includes the testing of cement, concrete, timber and steel specimens to determine the strength and elasticity of these materials.

About one-half of the laboratory time will be set aside for the solution of problems in investigation and design.

Text-book: Maurer and Withey, *Strength of Materials,* Wiley.

Reference: Swain, *Strength of Materials,* McGraw-Hill.

Prerequisites: Physics 4, Civil 4 and 31.

Two lectures and one three-hour period per week.

Mr. Duckering, Mr. Lighthall.

NOTE:—The laboratory testing is performed in the Forest Products Laboratories, under the supervision of Superintendent McElhanney and Mr. Lighthall.

11. *Transportation 1. Railways.*—The inception of railway projects; reconnaissance, preliminary and location; grade problems; grades, curvature and distance and their effects upon operating costs and revenue; velocity and pusher grades; adjustment of grades for unbalanced traffic; construction; railway economics, traffic, revenue, branch lines.

Prequisite: Civil 6 and 7.

Text-book: Williams, *Design of Railway Location,* Wiley.

Reference: Allen, *Railroads, Curves and Earthwork,* McGraw-Hill; Wellington, *Economic Theory of the Location of Railways,* Wiley.

Two lectures per week. Mr. Wilkin.

12. *Hydraulic Engineering 1.*—(*a*) Hydrostatics; design of standpipes, reservoirs and dams.

(*b*) Hydrodynamics; fundamental principles and their application to problems on the discharge of orifices, notches and weirs; flow in pipes and open channels; practical field and laboratory measurements; examination of hydraulic developments.

Prerequisite: Physics 4.

Text-book: Russell, *Hydraulics,* Third Edition, Holt.

One lecture and one three-hour period per week.

Mr. Wilkin, Mr. Lighthall.

13. *Mapping 2.* — Draughting from notes obtained in Civil 7; railway location and hydrographic surveys; topographic maps from photographic plates.

One three-hour period per week. Mr. Lighthall.

14. *Surveying 2.*—A continuation of Civil 6. (*a*) Theory and use of aneroid, sextant, plane-table and precise instruments; plane-table surveying; mine, hydrographic and phototopographic surveying; Dominion and Provincial surveys. First Term.

(*b*) Field astronomy. Second Term.

Text-book: Breed and Hosmer, *Surveying,* Vol. II, Wiley.

References: Johnson and Smith, *Theory and Practice of Surveying,* Wiley; Wilson, *Topographic, Trigonometric and Geodetic Surveying,* Wiley; Green's *Practical and Spherical Astronomy,* Ginn and Co; *Manual of Surveys of Dominion Lands; Instructions for B. C. Land Surveyors.*

Prerequisite: Civil 6.

Two lectures per week. Mr. Lighthall.

15. *Perspective Drawing and Map Projections.*—(*a*) Mathematical perspective; perspective drawings of buildings and structures. First Term.

(*b*) Map projections. Second Term.

Prerequisite: Civil 1.

Text-book: Crosskey, *Elementary Perspective,* Blackie & Son; Armstrong, *Descriptive Geometry,* Second Edition, Wiley. Son.

16. *Field Work 3.*—Problems in geodetic and precise surveying; determination of latitude, azimuth and time by solar and stellar observations; baseline measurements; precise levelling.

Prerequisite: Civil 7.

Time, same as for Civil 2. Mr. Lighthall.

17. *Structural Design 2.* — Selection of types of bridges; determination of loadings; stresses; choice of cross-sectional forms and areas; design of combination wood and steel trusses. steel trusses; design of connections; masonry structures, dams and retaining walls; complete drawings.

Text-book: Kuntz, *Design of Steel Bridges,* McGraw-Hill.

Reference: Johnson, Bryan and Turneaure, *Modern Framed Structures,* Vol. III, Wiley; Kirkham, *Structural Engineering,* McGraw-Hill; Carnegie, *Pocket Companion.*

Prerequisites: Civil 8, 9 and 10.

One lecture and two three-hour periods per week.

Mr. Matheson.

18. *Engineering Economics.*—(*a*) A general treatment of: sinking funds; first cost; cost analysis; salvage and scrap values;

yearly cost of service; collecting data; estimating; economic selection, reports.

Text-book: Fish, *Engineering Economics,* 2nd Ed., McGraw-Hill.

Prerequisite: Economics 1.

Two lectures per week. First Term. Mr. Wilkin.

(*b*) Principles of financing; forms of business enterprises; stocks; bonds; operating and fixed charges; business finance; capital and interpretation of financial statements.

References: Fish, *Engineering Economics,* Second Edition. Anger, *Digest of Canadian Mercantile Law.* Lough, *Business Finance.*

Two lectures per week. Second Term. Mr. Wilkin.

19. *Engineering Law.*—The engineer's status; fees; salary; as a witness; responsibility; engineering contracts; tenders; specifications; plans; extras and alterations; time; payments and certificates; penalty, bonus or liquidated damages; maintenance and defects; subcontractors; agents; arbitration and awards; specification and contract writing.

Text-book: Waddell and Wait, *Specifications and Contracts,* McGraw-Hill.

References: Anger, *Digest of Canadian Mercantile Law of Canada,* W. H. Anger; Ball, *Law Affecting Engineers,* Constable and Co.

One lecture per week. Mr. Matheson.

20. *Surveying 3.*—Geodesy; the determination of azimuth, longitude, latitude, time, the figure of the earth; measurement of baselines; triangulation systems; adjustments and reductions of observations; precise levelling.

References: Hosmer,*Geodesy,* Wiley; Cary, *Geodetic Surveying,* Wiley; Gillespie, *Higher Surveying,* D. Appleton and Co.

Prerequisite: Civil 14.

One lecture per week. Mr. Lighthall.

21. *Hydraulic Engineering 2.* — Waterpower engineering; rainfall, runoff, stream flow; investigation of power problems; selection of hydraulic machines; hydrographs; auxiliary power; mass curves, load factors and characteristics; impulse and reaction wheels; methods of control and operation of various forms of machines; transmission of hydraulic power.

Text-books: Gibson, *Hydroelectric Engineering,* Volume I, Blackie.

References: Mead, *Water Power Engineering,* McGraw-Hill. Mead, *Hydrology,* McGraw-Hill.

Prerequisites: Civil 12 must either precede or accompany Civil 21.

One lecture per week and fifteen hours in laboratory. Second Term. Mr. Wilkin.

22. *Municipal Engineering.*—(*a*) *Sewerage and Sewage Disposal.* General methods and economic consideration; quantity and run-off; design of sewers, manholes, flushtanks, etc.; construction methods, materials and costs; estimate, design, maintenance and managemment.

Sewage Disposal: physical, chemical, biological and economical aspects of sewage treatment; dilution; screening, sedimentation, filtration; disinfection; maintenance and management costs. First Term.

References: Metcalf and Eddy, *Sewerage and Sewage Disposal,* McGraw-Hill; Fuller and McClintock, *Sewage Problems,* McGraw-Hill.

(*b*) *Water Supply,* Rainfall; evaporation; run-off; quantity, quality and pressure required; pumping machinery; storage; aqueducts, pipe lines and distribution systems; purification systems; valves, hydrants and fire service; materials, estimates and designs; construction methods and costs. Second Term.

References: Turneaure, *Public Water Supply,* 3rd Edition, Wiley; Flinn, Westbrook, Bogart, *Waterworks Handbook,* McGraw-Hill.

(*c*) *Town Planning;* covering the economical and artistic development of a city, city management. Street cleaning and disposal of waste; composition and quantity of city wastes; collection, dumping and disposal; land treatment; incineration and reduction; costs and returns. Second Term.

Reference: Lewis, *City Planning,* Wiley.

Prerequisite: Civil 12.

Two lectures and one two-hour period per week. Mr. Stuart.

23. *Transportation 2.* (*a*) *Railways.*—Organization and rules of maintenance-of-way; roadway; ballast; ties; lumber preservation; rails and appurtenances; turnouts, tracks, accessories; structures and their design; stresses in track; track tools; track work; work-train service; maintenance-of-way records and accounts; expenditures; betterments; improvements of old lines, yards and terminals; maximum capacity of single track.

Prerequisite: Civil 11.

Two lectures per week, First Term. Mr. Wilkin.

(*b*) *Highways.*—Highway economics, surveys and locations; grades; cross-sections; paving materials; construction methods; designs and estimates.

Streets and pavements; materials, design, construction, maintenance and repairs.

Text-book: Agg, *Construction of Roads and Pavements,* McGraw-Hill.

Reference: Harger and Bonney, *Highway Engineer's Handbook.*

Prerequisite: Civil 11.

Two lectures per week, Second Term. Mr. Matheson.

24. *Mechanics of Materials.* — A continuation of Civil 10, Strength of Materials; the application of the Principle of Least Work to the determination of statically indeterminate forces in beams and rigid frames; stress and deflection of unsymmetrical sections and beams with variable moment of inertia; analysis and design of reinforced concrete beams, slabs, columns, and reinforced concrete arches.

Text-book: Hool and Kinne, *Concrete Engineer's Handbook,* McGraw-Hill.

References: Ketchum, *Steel Mill Buildings;* Hool, *Reinforced Concrete,* Vol. III; Urquhart and O'Rourke, *Design of Concrete Structures,* McGraw-Hill

Prerequisite: Civil 10.

Two lectures and one three-hour period per week.

Mr. Duckering.

25. *Theory of Structures.*—The analysis of statically determinate framed structures under dead and live loads; distortion of framed structures; the use of influence lines for analysis of stresses and deflections; hinged and hingeless arches; secondary stresses and redundant members.

Text-book: Kuntz, *Design of Steel Bridges,* McGraw-Hill.

References: Johnson, Bryan and Turneaure, *Modern Framed Structures,* Vols. I and II, Wiley; Hool and Kinne, *Framed Structures,* McGraw-Hill; Morley, *Theory of Structures,* Longmans Green and Co.

Prerequisite: Civil 10.

One lecture and two three-hour periods per week.

Mr. Finlay.

26. *Class Excursions.* — Members of the Fourth Year class in Civil Engineering, under the supervision of an instructor, will visit such factories, industrial developments, public works, docks, shipyards, and important examples of engineering construction as are calculated to assist the student best to grasp the application and scope of the studies pursued and to broaden his vision of the engineering field. Written reports of trips are required.

NOTE:—In periods where no trips are taken, tests of hydraulic machines will be made in Hydraulic Laboratory. (See Civil 29.)

27. *Civil Engineering Thesis.*—Original research on selected topics; analyses of engineering projects; experimental or the-

oretical investigations. Topics may be selected from divisions or the Civil Engineering Course: Goedetics, Railways, Hydraulics, Municipal, Highways, Economic and Business Engineering, Structures. Copy of thesis must be filed with the department.

28. *Seminar.* — Written and oral discussion of articles appearing in the current Transactions and Proceedings of the various engineering societies, also reviews of important papers in engineering periodicals; reports on local engineering projects visited in Civil 26; written outlines must be prepared for all oral reports; training in technical writing and public speaking.

Required of all Third and Fourth Year students in Civil Engineering.

Reference: Rickard, *Technical Writing,* McGraw-Hill.

One hour per week.

29. *Hydraulic Engineering 3.* — Theory, investigation and design of hydraulic motors and machinery. Turbines, Pelton and impulse wheels, centrifugal pumps, hydro-electric installations, plant design and operation.

Laboratory work, testing hydraulic machines, arranged for periods when no trips are taken. (See Civil 26.)

Prerequisite: Civil 12.

Text-book: Dougherty, *Hydraulic Turbines,* Third Edition McGraw-Hill.

Reference: Gibson, *Hydro-electric Engineering;* Volume I, Gibson, *Hydraulics and Its Application,* Van Nostrand; Mead, *Water Power Engineering,* Second Edition, McGraw-Hill.

One lecture per week. Mr. Wilkin.

30. *Engineering Problems 1.* — Training in methods of attacking, analyzing and solving engineering problems. Coaching in proper methods of work and study, including drill in systematic arrangement and workmanship in calculations. The content is based upon the application of mathematics to problems in physics and engineering.

Prerequisite: First Year Arts.

Text-books: Duckering, *Notes and Problems,* Second Edition, McGraw-Hill; Swain, *How to Study,* McGraw-Hill.

Two two-hour periods per week.

Mr. Wilkin, Mr. Finlay, Mr. Lighthall, Mr. Stuart, Mr. Lang.

31. *Engineering Problems 2.*—A continuation of Engineering Problems 1, involving a thorough drill in problems in the principal divisions of mathematics given in the First and Second Years of Applied Science, drawn from the field of mechanics, surveying, draughting, and engineering.

Prerequisite: Civil 30.

Text-book: Duckering, *Notes and Problems,* Second Edition McGraw-Hill.

One three-hour period per week.

Mr. Lighthall, Mr. Wilkin.

50. Elementary problems in rural engineering, dealing with drainage, water supply, sewerage and sewage disposal, ventilation, simple structures and surveying. Adapted to the needs of students in Dairying.

One lecture per week. Mr. Stuart.

Department of Economics

Professor: Theodore H. Boggs.
Associate Professor: H. F. Angus.
Associate Professor: S. E. Beckett.
Assistant: Doris E. Lazenby.

1. *Principles of Economics.* — An introductory study of general economic theory, including a survey of the principles of value, prices, money and banking, international trade, tariffs, monopoly, taxation, labour and wages, socialism, the control of railways and trusts, etc.

Text-books: Fairchild, Furniss, Buck, *Elementary Economics,* Macmillan. *The Canada Year Book,* 1927.

Two lectures per week.

Department of Forestry

Professor: H. R. Christie.
Assistant Professor: F. Malcolm Knapp.

1. *General Forestry.*—A general survey of the subject.

Text-book: Fernow, *Economics of Forestry,* Toronto University Press.

References: Whitford and Craig, *Forests of British Columbia,* Commission of Conservation, Ottawa. Pinchot, *Primer of Forestry,* Superintendent of Documents, Washington, D.C. Moon and Brown, *Elements of Forestry,* Wiley, second edition. Allen, *Practical Forestry in the Pacific Northwest,* Western Forestry and Conservation Association, Portland. Schlich, *Forest Policy in the British Empire,* fourth edition, Bradbury Agnew. Zon and Sparhawk, *Forest Resources of the World,* McGraw-Hill. Various government publications.

One lecture per week.

2. *Forest Mensuration.*—Measurement of felled timber, of standing timber, and of growth of trees and forests. Includes scaling, timber estimating, and preparation of tables of volume, growth and yield.

Text-book: Chapman, *Forest Mensuration,* Wiley, second edition. Winkenwerder and Clark, *Problems in Forest Mensuration,* second edition, Wiley.

Reference books: Graves, *Woodsman's Handbook,* Superintendent of Documents, Washington, D.C. Graves, *Forest Mensuration,* Wiley. Carey, *Manual for Northern Woodsmen,* third edition, Harvard Press.

One lecture and one period of four hours' field or laboratory work per week.

3. *Forest Protection.*—The fire problem, legislation, organizations, prevention and control.

Text-book: *Western Fire Fighters' Manual,* Western Forestry and Conservation Association, Portland.

Reference books: Millar, *Methods of Communication Adapted to Forest Protection,* Dominion Forestry Branch, Ottawa. U. S. Forest Service, *Trail Building in the National Forests,* Superintendent of Documents, Washington, D.C.

One lecture per week. Second Term.

4. *Forest Finance.*—Forestry from the financial standpoint, including studies of compound interest, valuation, rotation, insurance and taxation.

Text-book: Roth, *Forest Valuation,* University of Michigan, Second Edition.

Reference books: Chapman, *Forest Finance,* Wiley. Woodward, *Valuation of American Timber Lands,* Wiley.

Two periods of one hour each, lectures and problems, per week. Second Term.

5. *Timber Physics and Wood Technology.*—The structure of wood; the identification of different woods and their qualities and uses; wood seasoning; wood preservation; emphasis on the Canadian woods of commercial importance.

Text-books: Record, *Economic Woods of the United States,* Wiley, second edition. Record, *Mechanical Properties of Wood,* Wiley.

Reference books: Koehler, *The Properties and Uses of Wood,* McGraw-Hill. Koehler and Thelen, *Kiln Drying of Lumber,* McGraw-Hill. Snow, *Wood and Other Organic Structural Materials,* McGraw-Hill. Roth, *Timber,* U. S. Forest Service, Bul. 10, Superintendent of Documents, Washington, D. C.

Two lectures and one period of three hours laboratory per week.

6. *Forest Organization.* — The principles and methods of organizing forest areas for business management. Normal forest, increment, rotation, felling budget, working plans.

Text-book: Roth, *Forest Regulation,* Roth, University of Michigan.

Reference books: Recknagel and Bentley, *Forest Management,* Wiley. Recknagel, *Forest Working Plans,* Wiley, second

edition. Schlich, *Forest Management,* Bradbury Agnew. Woolsey, *American Forest Regulation,* Woolsey, New Haven.

One lecture per week.

7. *History of Forestry and Forest Administration.* — The development of forestry in different parts of the world; forest resources and industries, policy, legislation and education.

Reference books: Fernow, *History of Forestry,* University of Toronto Press, second edition. Schlich, *Forest Policy in the British Empire,* Bradbury Agnew. Boerker, *Our National Forests,* MacMillan. Ise, *The United States Forest Policy,* Yale University Press. Zon and Sparhawk, *Forest Resources of the World,* McGraw-Hill. Various government publications.

One lecture per week.

8. *Silviculture.* — Principles and methods of caring for forests and growing timber crops.

Text-books: Hawley, *Practice of Silviculture,* Wiley. Toumey, *Planting and Seeding in the Practice of Forestry,* Wiley.

Reference books: Graves, *Principles of Handling Woodlands,* Wiley. Woolsey, *Studies in French Forestry,* Wiley. Schlich, *Silviculture,* Bradbury Agnew. Various government publications.

Two lectures per week during the year, and one period of three hours field or laboratory work during the second term.

9. *General Lumbering.*—A general study of the principles and practice of logging and milling in the chief timber regions of North America.

Text-book: Bryant, *Logging,* Wiley, second edition.

Reference books: Gibbons, *Logging in the Douglas Fir Region,* U. S. D. A. Bul. 711, Superintendent of Documents, Washington, D. C. Berry, *Lumbering in the Sugar and Yellow Pine Region of California,* U. S. D. A. Bul. 440, Superintendent of Documents, Washington, D. C.

Two lectures per week, First Term.

One lecture per week, Second Term.

10. *Logging.*—An intensive study of logging systems and operations in the forests of western North America.

Text-book: Gibbons, *Logging in the Douglas Fir Region,* U. S. D. A. Bul. 711, Superintendent of Documents, Washington, D. C.

Reference books: Various articles in the *Timberman, B. C. Lumberman* and other trade journals.

One lecture per week throughout the year; one period of four hours laboratory or field work per week, alternating with Forestry 11 and 12.

11. *Milling.*—A study of the sawmilling and allied woodworking industries of western North America.

Text-book: Bryant, *Lumber,* Wiley.

Reference books: Oakleaf, *Lumber Manufacture in the Douglas Fir Region,* Commercial Journal Co. Brown, *American Lumber Industry,* Wiley. Berry, *Lumbering in the Sugar and Yellow Pine Region of California,* U. S. D. A. Bul. 440, Superintendent of Documents, Washington, D. C. Seeley, *Small Sawmills,* U. S. D. A. Bul. 718, Superintendent of Documents, Washington, D. C.

Two lectures per week; one period of four hours laboratory or field work per week, alternating with Forestry 10. First Term.

12. *Forest Products.*—A study of other forest industries, including paper and pulp, naval stores, and wood distillation.

Text-book: Brown, *Forest Products, Their Manufacture and Use,* Wiley.

Reference books: Joint Authorship, *The Manufacture of Pulp and Paper,* Vol. 3 to 5, McGraw-Hill. Hawley, *Wood Distillation,* Chemical Catalogue Co.

Two lectures per week; one period of four hours laboratory or field work per week, alternating with Forestry 10. Second Term.

Vancouver Laboratory

Forest Products Laboratories of Canada

R. M. Brown, B.Sc.F. (Toronto), Superintendent.
R. S. Perry, B.Sc. (McGill), Assistant Engineer.
J. H. Jenkins, B.A.Sc. (Brit. Col.), Timber Products Supervisor.
J. B. Alexander, B.Cc. (New Brunswick), D.L.S., A.L.S., Timber Tests Supervisor.
H. W. Eades, B.Sc.F. (Washington), Assistant Timber Pathologist.
F. W. Guernsey, B.A.Sc. (Brit. Col.), Assistant in Timber Products.
J. T. Lee, Timber Tester.
D. S. Wright, Timber Tester.

The Forest Service of the Federal Department of the Interior maintains two Forest Products Laboratories, one at Ottawa, and the other at Vancouver, in association with the University of British Columbia. The latter was established in 1918 in order to more adequately deal with forest products research problems of the western portion of Canada. It was equipped at first only for timber testing, as British Columbia timbers are of outstanding importance for structural purposes. The scope of the work of the laboratory has gradually extended in accordance with the requirements of the timber industry and now includes lumber seasoning ingestigations, timber decay research, etc. A most important phase of the work of the laboratory is its technical service to the timber industries in the dissemination of information on a variety of subjects, such as wood preservation, utilization of wood waste, pulp and paper, wood distillation, etc. Research in wood preservation is, at present, confined to the Ottawa Laboratory. A new co-operative laboratory has been established at McGill University through an arrangement with the Canadian Pulp & Paper Association, McGill University and the Forest Products Laboratories of Canada, which will deal with all questions relating to pulp and paper research.

An increasingly valuable amount of material has been collected from the research work of other laboratories and catalogued for reference.

A mutually beneficial scheme of co-operation exists between the Laboratory and the University, whereby students of the

University in Engineering and Forestry have access to the laboratory to watch the work being carried on and to use the apparatus at times in testing strength of materials. The staff of the Laboratory also has the benefit of the University library and the advice and assistance of University specialists in related work.

Department of Geology and Geography

Professor: R. W. Brock.
Professor of Physical and Structural Geology: S. J. Schofield.
Professor of Palaeontology and Stratigraphy: M. Y. Williams.
Associate Professor of Mineralogy and Petrology: T. C. Phemister.
Assistant: J. A. E. Kania.

Geology

1. *General Geology.*—This course serves as an introduction to the science of Geology. The following subjects are treated in the lectures and laboratory:

(*a*) ***Physical Geology,*** including: weathering, work of the wind, ground water, streams, glaciers, the ocean and its work, the structures of the earth, earthquakes, volcanoes and igneous intrusions, metamorphism, mountains and plateaus, and ore-deposits.

Two lectures per week. First Term. Mr. Schofield.

(*b*) *Laboratory Exercises in Physical Geology,* including the study and identification of the most common minerals and rocks, the interpretation of topographical and geological maps, and the study of structures by the use of models.

Two hours laboratory per week. First Term. Mr. Schofield.

(*c*) *Historical Geology,* including the earth before the Cambrian, the Palaeozoic, the Mesozoic, the Cenozoic and Quarternary eras.

Two lectures per week. Second Term. Mr. Williams.

(*d*) *Laboratory Exercises in Historical Geology,* consisting of the general study of fossils, their characteristics and associations, their evolution and migration s illustrated by their occurrence in the strata. The principles of Palaeogeography will be

taken up and illustrated by the study of the palaeogeography of North America.

Two hours laboratory per week. Second Term. Mr. Williams.

Field Work will replace laboratory occasionally, and will take the form of excursions to localities, in the immediate neighborhood of Vancouver, which illustrate the subject matter of the lectures.

Prerequisite: Matriculation Chemistry or Physics, or Chemistry 1 or Physics 1, taken either before or concurrently.

Text-book: Pirsson and Schuchert, *Introductory Geology,* Wiley.

Reference books: Geikie, *Text-book of Geology.* Merrill, *Rocks, Rock-Weathering and Soils.* Coleman and Parks, *Elementary Geology.* Shimer, *Introduction to the Study of Fossils.* Davis, *Geographical Essays.* Hugh Miller's works.

Students will be required to make a passing mark in each of the above subdivisions. 3 units.

2. (*a*) *General Mineralogy.*—A brief survey of the field of mineralogy.

Lectures take the form of a concise treatment of (1) Crystallography, (2) Physical Mineralogy, and (3) Descriptive Mineralogy of 40 of the more common mineral species, with special reference to Canadian occurrences.

Laboratory Work consists of the study of the common crystal forms and of 40 prescribed minerals, accompanied by a brief outline of the principles and methods of Determinative Mineralogy and Blowpipe Analysis.

Text-books: Dana, *Text-book of Mineralogy,* revised by Ford, Wiley.

Prerequisite: Chemistry 1.

Two lectures and one laboratory period of two hours per week. First Term. Mr. Phemister.

2. (*b*) *Descriptive and Determinative Mineralogy.* — This course supplements 2 (*a*) and consists of a more complete survey

of Crystallography, Physical and Chemical Mineralogy, with a critical study of about 50 of the less common minerals, special emphasis being laid on their crystallography, origin, association and alteration.

Text-book: Dana, *Text-book of Mineralogy,* revised by Ford, Wiley.

Prerequisite: Geology 2 (*a*).

Two lectures and one laboratory period of two hours per week. Second Term. Mr. Phemister.

3. *Historical Geology.*—Continental evolution and development of life, with special reference to North America.

Text-book: Schuchert, *Historical Geology,* 2nd Ed., Wiley.

Prerequisite: Geology 1.

Three lectures per week. First Term. Mr. Williams.

4. *Structural and Physiographical Geology.*—The following subjects are treated in the lectures: Fractures, faults, flowage, structures common to both fracture and flow, mountains, major units of structures, forces of deformation, the origin and development of land forms with special reference to the physiography of British Columbia.

Text-book: Leith, *Structural Geology,* Holt.

Prerequisite: Geology 1.

Three lectures per week. Second Term. Mr. Schofield.

5. (*a*) *History of Geology.*—A brief history of the study of the earth and the development of the geological sciences. Mr. Brock.

(*b*) *Geology of Canada.*—The salient features of the geology and economic minerals of Canada. Mr. Williams, Mr. Schofield, Mr. Brock.

(*c*) *Regional Geology.*—The main geological features of the continents and oceanic segments of the earth's crust, and their influences upon life. Mr. Brock.

Prerequisite: Geology 1.

Three lectures and one laboratory period of one hour per week.

6. *Palaeontology.*—A study of invertebrate and vertebrate fossils, their classification, identification and distribution both geological and geographical.

Reference books: Grabau and Shimer, *North American Index Fossils.* Zittel-Eastman, *Text-book of Paleontology.*

Prerequisite: Geology 1.

Two lectures and one laboratory period of two hours per week. Mr. Williams.

7. *Petrology.*—This course consists of systematic studies of (i) optical mineralogy, and (ii) petrography, with an introduction to petrogenesis.

The laboratory work deals with the determination of rocks, first under the microscope, and then in hand specimens.

Text-books: Pirsson, *Rocks and Rock Minerals,* Wiley. Johannsen, *Essentials for the Microscopical Determination of Rock-forming Minerals and Rocks,* University of Chicago Press. Dana, *Text-book of Mineralogy,* revised by Ford, Wiley.

Reference works: Johannsen, *Manual of Petrographic Methods.* Rosenbusch, *Microscopical Physiography of the Rock-making Minerals,* translated by Iddings. Rosenbusch, *Elemente der Gesteinslehre.* Harker, *Petrology for Students.* Grubenmann, *Die Kristallinen Schiefer.*

Prerequisites: Geology 1 and 2.

Two lectures and two laboratory periods of two hours per week. Mr. Phemister. 4 units.

8. *Economic Geology.*—A study of the occurrence, genesis, and structure of the principal metallic and non-metallic mineral deposits with type illustrations; and a description of the ore-deposits of the British Empire, special stress being placed on those in Canada.

Text-book: Emmons, *General Economic Geology,* McGraw-Hill.

Reference book: Lindgren, *Mineral Deposits,* 2nd ed.

Prerequisite: Geology 1. Geology 7 must precede or accompany this course.

Four lectures per week.

Mr. Brock, Mr. Williams, Mr. Schofield, Mr. Phemister.

9. *Mineralography.*—Principally a laboratory course dealing with the study and recognition of the opaque minerals by means of the reflecting microscope.

The work consists of practice in the cutting, grinding and polishing of ore specimens, accompanied by training in microchemical methods of mineral determination.

During the second term each student is assigned a suite of ores from some mining district for a critical examination and report.

Text-book: Davy and Farnham, *Microscopic Examination of the Ore Minerals,* McGraw-Hill.

Prerequisite: Geology 7 and 8 must precede or accompany this course.

One laboratory period of two hours per week. Mr.Phemister.

10. *Field Geology.* — The methods taught are the fundamental ones used by professional geologists and by the officers of the Geological Survey of Canada. The course is essentially practical, and is designed to teach methods of observing, recording and correlating geological facts in the field. The students construct geological maps of selected areas in the vicinity of Vancouver which require the use of the various methods and instruments employed in field geology.

Reference books: Lahee, *Field Geology.* Hayes, *Handbook for Field Geologists.* Spurr, *Geology Applied to Mining.*

Prerequisite: Geology 1. Geology 4, if not already taken, must be taken concurrently.

One period of three hours per week. Mr. Schofield.

14. *Crystallography.*—This course consists of a systematic study of the morphology of crystals, with an introduction to mathematical crystallography.

The practical work deals with the measurement of crystals, and, in the case of students in chemistry, a certain number of the crystals measured will be grown in the laboratory.

Students are advised to consult with the instructor before registering for this course.

Text-book: Tutton, *Crystallography and Practical Crystal Measurement,* Macmillan.

Two lectures and six hours laboratory per week.

Mr. Phemister. 5 units.

Department of Mathematics

Professor: Daniel Buchanan.
Professor: F. S. Nowlan.
Associate Professor: G. E. Robinson.
Associate Professor: E. E. Jordan.
Associate Professor: L. Richardson.
Assistant: Harold D. Smith.

1. *Plane Trigonometry.*—An elementary course, including the solution of triangles and the use of logarithms, inverse and hyperbolic functions.

Text-books: Playne and Fawdry, *Practical Trigonometry,* Copp, Clark. *Six-Place Tables,* McGraw-Hill.

Two lectures per week. Second Term.

2. *Solid Geometry.*—A study of the three-faced corner, the various polyhedra and solid figures, and the theorems of Pappus.

Text-book: Foster, *Geometry, Practical and Theoretical,* (Vol. III Solid), Bell.

Two lectures per week. First Term.

3. *Algebra.*—A review of simple series, permutations, combinations and the binomial theorem, and a study of exponential and other series, undetermined coefficients, partial and continued fractions, graphical algebra.

Two lectures per week.

Text-book: Rietz and Crathorne, *College Algebra,* Holt.

4. *Calculus.*—An introductory study of the differential and integral calculus will be made, and some of the simpler applications considered.

Text-book: Woods and Bailey, *Elementary Calculus,* Ginn.
Two lectures per week.

6. *Calculus.*—Differential and integral calculus with various applications.

Text-book: Woods and Bailey, *Elementary Calculus,* Ginn.
Three lectures per week.

7. *Analytical Geometry.*—A study of the conics and other curves occurring in engineering practice, and elementary work in three dimensions.

Text-book: Fawdry, *Co-ordinate Geometry,* Bell.
Two lectures per week.

8. *Applied Calculus.* — The applications of calculus to various problems in engineering.

Two lectures per week.
(Given in 1928-29 and alternate years.)

9. *Differential Equations.*—A study of ordinary and partial differential equations and their applications.

Two lectures per week.
(Given in 1929-30 and alternate years.)

Department of Mechanical and Electrical Engineering

Professor: Herbert Vickers.
Associate Professor of Mechanical Engineering: F. W. Vernon.
Assistant Professor of Mechanical Engineering: H. F. G. Letson.
Assistant Professor of Electrical Engineering: Leonard B. Stacey.
Lecturer in Mechanical Engineering: G. Sinclair Smith.
Instructor in Mechanical Engineering: John F. Bell.
Assistant in Drawing: H. P. Archibald.

Mechanical Engineering

1. *Mechanical Drawing.*—Practice in freehand lettering in accordance with common practice. Geometrical Drawing, to give facility in the use of drawing instruments. Freehand sketching

of machine parts and structures from which drawings are made to scale. Drawing to scale of simple machine parts. Making of assembly drawings from detail drawings, and detail drawings from assembly drawings. Tracing and blueprinting.

Two three-hour periods per week.

2. (*a*) *Shop Work.*—This work is intended to supplement the manual training given in the high schools, and also to give the student some knowledge of the more common machine shop methods and processes as employed commercially. The object is to provide some basis for the intelligent design of machines and structural parts.

Lectures.—Physical properties of the materials used in machine construction. Modern methods of handling and finishing wood. Forging and hammering of metals. Annealing and tempering. Making of patterns and cores. Cupola practice.

Soldering and brazing, tinning, electroplating. Drilling and tapping, turning and boring, calipering and fitting, milling and milling cutters, reaming and reamers, screw cutting. Grinding and abrasive wheels. Lapping. Punching and shearing. Drop forging and die-casting. Metal spinning. Torch and electric welding. Cold sawing and torch cutting. Tool-making and dressing. Use of jigs. Machine shop standards, including wire and sheet metal gauges, threads, etc.

Text-book: Colvin & Stanley, *American Machinists' Handbook,* McGraw-Hill.

One lecture per week.

Practice in Metal-working.—Bench work, including marking off, chipping, filing, scraping, tapping, and fitting; lathe work, including turning and boring, screw-cutting and finishing; lathe adjustments; shaping; milling; gear-cutting; tool-dressing.

One two-hour period per week.

2. (*b*) *Machine Shop Practice.*—A continuation of Mechanical Engineering 2.

Five hours laboratory per week First Term, and three hours Second Term.

3. *Kinematics of Machines.* — Displacement, velocity and acceleration. Relative motions. Harmonic motions. Gear trains. Cams, ratchets, and escapements. Classification of mechanisms. Study of mechanisms in common use. Transmission of motion by belting. Design of outlines of gear teeth.

Text-book: Durley, *Kinematics of Machines,* Wiley.

Reference book: McKay, *Kinematics of Machines,* Longman Green.

One two-hour period per week.

4. *Dynamics of Machines.*—Friction and lubrication. Transmission of power by belts, ropes, gears and friction clutches. Function and dynamics of speed governors. Dynamics of the screw. Forces involved in linear and angular acceleration of moving parts, with special reference to engines, turbines, and pumps. Stresses due to centrifugal force. Balancing of moving parts. Dynamics of the gyroscope.

Reference books: Low, *Applied Mechanics.* Dent & Harper, *Kinematics and Kinetics of Machinery,* Wiley.

Two lectures per week.

5. *Machine Design.*—Strength of materials used in machine construction. Factors of safety and allowable stresses under various conditions of load. Design of: Valve mechanisms for steam engines; governors; thin cylinders and tanks; rivetted joints; fastenings, such as bolts, screws and cotters; levers and winch handles.

Reference books: Spooner, *Machine Design, Construction and Drawing,* Longmans Green. Dalby, *Valves and Valve Gears,* Arnold.

Two lectures and one three-hour period per week.

6. *Elementary Thermodynamics.*—(*a*) Fuels and combustion. General principles underlying the construction and operation of steam boilers. Elementary theory of the steam engine. Measurement of power. Performance of various types of steam engines. Elementary theory of internal combustion engines.

Design and operation of isolated power plants to give the best economic results. Theory of air compressors, transmission and use of compressed air. Elementary theory and practical operation of producer gas plants.

Text-books: *Inchley's Heat Engines,* Longmans Green; or Allen & Bursley, *Heat Engines,* McGraw-Hill.

Reference books: Ewing, *Thermodynamics,* Cambridge Press. Callendar, *Steam Power,* Longman's Green. Simmons, *Compressed Air,* McGraw-Hill. Marks and Davis, *Steam Tables and Diagrams,* Longman's Green. Gebhardt, *Steam Power Plant Engineering,* Wiley. Kent, *Mechanical Engineer's Pocket Book,* Wiley. Fernald & Orrok, *Engineering of Power Plants,* McGraw-Hill.

Two lectures per week.

(*b*) *Laboratory.*—Testing of boilers, steam engines and internal combustion engines. Analysis and calorimetry of fuels.

One three-hour laboratory period per week.

7. *Thermodynamics.* — A more precise study of the performances and construction of various types of boilers, including furnaces and superheaters. Theoretical efficiency of different types of reciprocating engines working under various conditions. Influence on efficiency of size, speed and ratio of expansion with variations of load. Compound and triple expansion engines. Use of steam tables in reference to calculations on saturated and superheated steam. Flow of gases and vapours through orifices and nozzles.

Text-book: Low, *Heat Engines,* Longman's Green.

Reference books: Ewing, *Thermodynamics,* Cambridge Press. Callendar, *Steam Power,* Longman's Green. Lucke, *Thermodynamics,* McGraw-Hill, and as under Mechanical 6.

Three lectures and one three-hour laboratory period per week.

8. *Thermodynamics.* — Advanced theory relative to the transformation of heat into mechanical energy. Laws governing

the flow of heat through various substances. More precise study of the theory and performance of all types of prime movers, including all types of reciprocating and rotary steam engines, steam turbines, and internal combustion engines.

Text-book: Low, *Heat Engines,* Longman's Green.

Reference book: Ewing, *Thermodynamics,* Cambridge Press.

Two lectures and one three-hour period per week.

9. *Thermodynamics.*—For Mechanical Engineering students only.

Text-book: Low, *Heat Engines,* Longman's Green.

Laboratory text-book: Moyer, *Power Plant Testing,* McGraw-Hill.

Reference book: Ewing, *Thermodynamics,* Cambridge Press.

Two lectures and one six-hour laboratory per week.

10. *Machine Design.*—The design of machine and structural parts, including parts of engines of all types; design of appliances for the transmission of power, including belts, rope, cable, friction and toothed gearing. The student is required to work out the complete design of some machine or appliance, and make the drawings and tracings requisite for its construction.

Text-book: Spooner, *Machine Design,* Longmans Green.

Two lectures and one five-hour laboratory per week for Mechanical Engineering, and two lectures and one three-hour laboratory for Electrical Engineering.

11. *Heating, Ventilation, and Refrigeration.*—Design of steam, hot water, and hot air systems of heating. Heaters for steam and water systems. Use of exhaust steam for heating. Central heating plants. Loss of heat from buildings. Refrigerating systems.

Reference book: Harding & Willard, *Mechanical Equipment of Buildings* (Vols. I and II), Wiley.

One lecture per week.

12. *Design of Power Plants.*—A study of the function, construction, and performance of the various machines and appli-

ances which enter into the design of industrial plants. Special attention is given to the economic results to be expected from various combinations.

Reference books: Harding & Willard, *Mechanical Equipment of Buildings* (Vols. I and II), Wiley. Fernald & Orrok, *Engineering of Power Plants,* McGraw-Hill.

One lecture per week.

13. *Physical Treatment of Metals.*—A study of the various metals used in commercial work, with special reference to the treatment applied to get the physical properties and qualities required for specific purposes.

Text-book: Colvin & Juthe, *The Working of Steel,* McGraw-Hill.

One lecture and one three-hour laboratory per week.

14. *Mechanical Design of Electrical Machines.*

Electrical Engineering

1. *Theory and Operation of Electrical Machines.*—A practical course for students not specializing in Electrical or Mechanical Engineering. *Units:* Absolute electrostatic and electromagnetic, practical units, conversion factors.

Magnetic Circuit: Unit magnetic pole, field, intensity, induction; flux, magnetomotive force, reluctance, permeability, potential, B-H curves, hysteresis. *Electric Circuit:* Unit quantity, current and current density, electromotive force, Ohms Law, Joules Law, Kirchhoff's Laws, resistivity and specific resistance, conductivity and conductance; induction, self and mutual.

Direct Current Machines: The dynamo, motor and generator; Emf. equation; armature, simple lap and wave; excitation; characteristic curves of series, shunt, separately and compound excited generators and motors; armature reaction; commutation; efficiency, rating and heating; types of motors suited to various classes of service; boosters; balancers for three wire systems; parallel operation of generators.

Alternating Current: The production of simple alternating electromotive forces and currents; wave form; form factor; frequency; maximum, average, and root-mean-square values; effect of induction and capacity on the properties of alternating current circuits; vector diagrams; measurement of power; power factor; polyphase circuits; Y and Delta connections.

Alternating Current Machines—Alternator: Emf. equation; armature winding; magneto-motive forces and fluxes; armature reaction; leakage reactance; regulation; efficiency. *Synchronous Motor:* Principle; vector diagram; output; power factor; synchronizing; hunting; parallel operation of alternators. *Transformer:* Constant potential; vector diagrams; leakage reactance; constant current; losses; efficiency; connections; phase transformation; auto and booster transformers. *Induction Motor:* Revolving field; slip; characteristics; circle diagram; variable speed; wound rotor induction motor; choice of type; starting. *Rotary Converters:* Description of operation.

Transmission of Electrical Energy: Comparison of cost of transmission with different number of phases; instrument transformers.

The above course is designed to introduce to the students the principal factors in electrical machinery; only enough theory being given to explain intelligently the operating characteristics of the apparatus studied.

Text-books: Gray, *Principles and Practice of Electrical Engineering,* McGraw-Hill. Maclean, *Electrical Laboratory Course for Junior Students,* Blackie & Sons.

Prerequisite: Physics 3.

Two lectures and one laboratory period of two hours per week.

2. *Elementary Electrical Engineering.—Units:* Absolute, electrostatic, electromagnetic and practical units.

Electromagnetism: Permeability; flux-density; magneto-motive force; magnetic reluctance; calculation of pull of electromagnets; inductance, self and mutual.

Commercial Current and Voltage Measuring Instruments: Requirements of good measuring instruments, amperemeters and voltmeters; construction and moving-coil; hot-wire; electrostatic and induction-type measuring instruments.

Secondary Batteries: Theory; use and application.

Armature Winding: Theory of lap and wave windings; use of equalizing connections; characteristics of series, shunt and compound wound motors; characteristics of shunt and compound wound generators; commutation, and armature reaction in direct current machines.

Elementary Theory of Alternating Currents: The production of simple alternating electromotive forces and currents; wave form, frequency, crest and RMS valves; Cartesian and Polar diagrams; effect of self induction and capacity on the properties of alternating current circuits; measurement of power in A.C. circuits; polyphase circuits, balanced and unbalanced systems; star and mesh connections; vector treatment.

Elementary Theory of the Transformer. Automatic Reversible Battery Boosters. Testing of apparatus studied.

Wave Form Indicators: The Oscillograph, Joubert's contact, the Ondograph.

Insulation: Characteristics of various types, switches and fuses.

Illumination and Photometry: Arc Lamps, Incandescent Lamps, Street Illumination, etc.

Text-books: MacCall, *Electrical Engineering Continuous Currents,* University Tutorial Press Ltd. Lawrence, *Alternating Currents,* McGraw-Hill. MacCall, *Electrical Engineering Alternating Currents,* University Tutorial Press Ltd. Smith, *Testing Dynamos and Motors,* Scientific Publishing Co. Smith, *Practical Alternating Currents,* Scientific Publishing Co. Maclean, *Electrical Laboratory Course for Junior Students,* Blackie & Sons. Bennett & Crothers, *Electro-Dynamics,* McGraw-Hill.

For Third Year Electrical and Mechanical students only.

Prerequisite: Physics 3.

Three lectures and one laboratory period of four hours per week.

3. *Electrical Engineering. — Direct Current Machines:* Separation of losses by various methods; back to back methods of testing efficiency; parallel operation; review of armature reaction and the compensating thereof; further study of commutation.

Alternating Current Machines: The Alternator; Induced Electromotive force, Armature winding, Magnetomotive forces and fluxes concerned in the Alternator, Armature Raection, Armature leakage reactance, Armature effective Resistance, Regulation, Methods of predeterminating Regulation and the vector diagrams thereof, Losses, Efficiency.

Static Transformers: Types of Transformers, The Ideal Transformer, True equivalent circuit of a Transformer, Approximate equivalent circuit of a transformer, Calculation of Magnetizing current and inphase current supplying Core losses, Calculation of leakage reactance, Solution of the vector diagram and Calculation of Regulation, Losses in a Transformer—Eddy Current Loss—Hysteresis Loss—Copper Loss, Calculation of Efficiency, Ratio Test, Polarity Test, Short Circuit Test. Calculation of Regulation from the short circuit Test, Regulation by loading, Sumpner efficiency Test, Separation of Hysteresis and Eddy Current loss Test, Current Transformer, Potential Transformer, Constant Current Transformer, Auto-Transformer, Induction Regulator, Parallel operation of Transformers, Transformer Connections, Phase Transformation.

Synchronous Motors: General characteristics, Power factor, V Curves, Methods of starting, Explanation of the operation of a Synchronous Motor, Hunting, Damping, Stability, Circle diagram of the Synchronous Motor, Losses and Efficiency, Parallel operation of Alternators.

Synchronous Converters: Voltage Ratio and current relations, Armature heating and resistance and the effect thereof of change in power factor.

Polyphase Induction Motors: Revolving field, slip, Transformer properties of an Induction Motor, True and approximate equivalent circuit of an induction motor, Load equivalent to a non inductive resistance, Circle diagram, Characteristic Curves, Methods of starting Induction Motors, Speed Control.

Transmission of Electrical Energy: A brief treatment dealing with the economy of conducting material for different number of phases.

Text-books: Smith, *Practical Alternating Currents,* Scientific Publishing Co. Lawrence, *Principles of Alternating Current Machinery,* McGraw-Hill.

For Fourth Year Mechanical students only.

Prerequisite: Electrical 2.

Two lectures and one laboratory period of three hours per week.

4. *Electrical Machinery. Theory of the Transformer. Core and Shell types. Vector diagrams.* Magnetizing current, Regulation, Current Rush on suddenly switching on. Systems of Connection. Methods of Cooling. Testing.

The Alternator. Salient and non-salient pole types. Alternator windings. EMF equation. Breadth factor, Form Factor, Coil-span Factor. Method of obtaining pure sine wave form. Regulation. Calculation of Regulation. Synchronous Impedance. Short Circuit Currents. Method of Calculating excitation on loads of various power factors. Synchronizing of alternators. Synchroscopes. Parallel Operation of Alternators.

The Synchronous Motor. Single and Polyphase Types. Vector diagram. Variation of power factor with excitation. Calculation of excitation necessary for power factor improvement. Damping windings. Hunting and its cure. Methods of Starting.

The Induction Motor. Windings. Production of Rotating field, Circle diagram. Slip, torque and other characteristics. Squirrel Cage and Slip Ring Types. Effect of rotor resistance. Torque slip curves. Starting methods of Squirrel cage machines. Calculation of steps of starting resistances for wound rotor machines. Crawling of Induction motors. Leakage fluxes in Induction motors. Pole changing. Cascade Connection and its characteristics. Speed Control by rotor resistance, by change of frequency, by use of AC commutating motors. Hunt Cascade motor.

Efficiency Tests. Stroboscopic method of slip measurement. Single Phase Induction Motor Theory.

The Rotary Converter. EMF and current relations. Heating of Rotaries. Methods of Changing voltage ratios. Starting and Synchronizing.

The Three Phase Commutator Motor. Shunt and Series Types. Vector diagrams and characteristics.

Text-books: McCall, *Alternating Currents,* University Tutorial Press. Lawrence, *Alternating Currents,* McGraw-Hill. Steinmetz, *Theory and Calculation of Electric Apparatus,* McGraw-Hill. H. Vickers, *The Induction Motor,* Sir Isaac Pitman & Sons.

Two lectures and one laboratory period of six hours per week.

5. *Electric Traction.*—Electric Railways: advantages and disadvantages of various systems. Low tension DC and high tension DC. High tension systems. Speed-time curves and their estimation. Estimation of power required for electric trains. Train Resistance. Series Traction Motors DC and AC and their complete theory and characteristics. Control and Control Systems. Equipment and Rolling Stock. Regenerative Braking. Overhead construction and rail construction. Feeder systems and their design. Sub-station Equipment.

Text-books: A. T. Dover, *Electric Traction,* Sir Isaac Pit-

man & Sons. F. W. Carter, *Electric Traction,* Chapman & Hall. Harding, *Electric Traction,* McGraw-Hill.

One lecture per week.

6. *Electric Power Plants and Transmission Lines.* — Comparison of amounts of Copper for Various Systems. Choice of Site and type of machinery. Load Factor and diversity factor. Inductance and Capacity Calculations. Voltage drops on Single Phase and Three phase lines. Charging currents. Voltage rises on AC systems. Automatic Protective Switch-gear. Lightning Arresters. Kelvin's Law. Design of Feeders. Voltage drops in feeders and cables. Conductors and disributing networks; loss of potential in networks. Voltage control. Tirrill Regulator. Economics of hydro-electric development. Design of E.H.T. feeders. Suspension Type Insulators and other types. Mechanical design of line and towers.

Corona. Losses due to Corona. Laws of Corona. Voltage and Power Factor Control of Transmission lines.

Lowe, *Electric Power Transmission,* McGraw-Hill.

Text-book: Still, *Overhead Power Transmission,* McGraw-Hill.

Two lectures per week.

One lecture per week.

7. *Electrical Design.*—Design of DC generators and motors. Induction motors. Salient and non-salient Pole Alternators. Rotary Converters. Transformers.

Text-books: Slichter, *Design of Electrical Machinery,* Wiley & Sons. Miles Walker, *Specification and Design of Electrical Machinery,* Longmanns, Green & Co. Gray, *Design of Electrical Machinery,* McGraw-Hill. H. Vickers, *The Induction Motor,* Sir Isaac Pitman & Sons. Whittaker, *The Rotary Converter,* Benn Bros.

One lecture per week.

8. *Radio, Telegraphy and Telephony.* — Open and closed oscillators. Resonance. Coupled Circuits. Forced and free vibrations. Waves on coils and wires.

Antennae and Earth Connections. Propagation of waves over the earth's surface.

Generation of Oscillations. Spark. Arc. High-frequency Alternator. Frequency Changers and Ionic Valves.

Methods of Detection. Valve Circuits, beat reception, relaying, amplifying, with special attention to work on Ionic Valves.

Wireless Telephony. Microphones: Various Types. Transmitting Circuits. Receiving Circuits. Tuning.

Direction Finding. Latest work on above. Interference and its prevention. Short Wave Work with Beam Systems.

Text-book: Eccles, *Continuous Wave Telegraphy and Telephony,* Van Nostrand. Lauer & Brown, *Radiotelegraphy and Telephony,* McGraw-Hill. Morecroft, *Principles of Radio Communication,* Wiley & Sons.

One lecture per week.

Department of Mining and Metallurgy

Professor of Mining: J. M. Turnbull.
Professor of Metallurgy: H. N. Thomson.
Associate Professor of Mining: Geo. A. Gillies.
Assistant in Metallurgy: W. B. Bishop.

Mining

1. *Metal Mining.*—An introductory course in metal mining, covering the following subjects:

Ores and economic minerals; economic basis of mining; ordinary prospecting; mineral belts; conditions in British Columbia; preliminary development of mines; timbering and framing; tunnelling; shaft sinking; transportation and haulage; drainage; ventilation.

Two lectures per week. Mr. Turnbull.

2. *Coal and Placer Mining.*—A general course in coal and placer mining, covering the following subjects:

(*a*) Classification of coals; prospecting; mine development; mining methods; ventilation; transportation and haulage; drainage; tipples; coal mines acts and laws.

(*b*) Gravel deposits; nature and origin of paystreaks; prospecting; examination and testing of deposits; ordinary mining methods; hydraulic and dredging methods; plant and equipment; placer mines acts and laws.

Two lectures per week. Mr. Turnbull.

3. *Metal Mining.* — An advanced course in metal mining, covering the following subjects:

Scientific prospecting; development work in mines; mining methods; blasting and explosives; examination of mines and prospects; methods of ore sampling; mine valuation; accounting and costs, administration; welfare and safety work; mining laws and contracts; economics; ethics.

Prerequisite: Mining 1.

Two lectures per week. Mr. Turnbull.

4. *Mining Machinery.*—A special course covering the structural and mechanical features of Mining Engineering, as follows:

Mine structures; mining plant and machinery; core and churn drills; tramways, etc.

Prerequisites: Mining 1; Mechanical Engineering 3, 6; Civil Engineering 3 and 10.

Two lectures per week. Mr. Gillies.

5. *Mine Surveying.*—A practical course covering the work of the surveyor and staff in metal mines:

Methods and practice in mine surveying; geological work underground; maps, plans and models; notes and records.

Prerequisites: Civil Engineering 2 and 6.

One lecture per week. First Term. Mr. Turnbull.

6. *Mining Design.*—A laboratory draughting course covering the special requirements of Mining students in regard to design of the layout and details of mining plant, structures, and mine survey plans.

One three-hour period per week. Mr. Gillies.

7. *Mining Methods.*—A special course covering the mining of large ore bodies by special mining methods.

Prerequisite: Mining 1.

Concurrent Courses: Mining 2, 3 and 4.

One lecture per week. Second Term. Mr. Turnbull.

Metallurgy

1. *General Metallurgy.*—This course covers the fundamental principles underlying metallurgical operations in general, and is introductory to subsequent more specialized study.

The lectures follow in general the subject as taken up in *Principles of Metallurgy,* by Chas. H. Fulton, including the following main subjects:

Physical mixtures and thermal analysis. Physical properties of metals. Alloys. Measurement of high temperatures. Typical metallurgical operations. Roasting and fusing. Electrometallurgy. Slags. Matte. Bullion. Refractory materials. Fuels. Combustion. Furnaces.

Text-book: Fulton, *Principles of Metallurgy,* McGraw-Hill.

Reference books: Hofman, *General Metallurgy,* McGraw-Hill. Current Mining and Metallurgical Journals. Trade Catalogues.

Prerequisites: Chemistry 1 and Physics 1 and 2.

Two lectures per week. Mr. Thomson.

2. *Smelting and Leaching.*—A general course covering principles and practice of Pyrometallurgy and Hydrometallurgy as applied to gold, silver, copper, iron, lead and zinc.

Prerequisite: Metallurgy 1.

Two lectures per week. Mr. Thomson.

3. *Metallurgical Calculations.*—A special course covering Thermochemistry; Metallurgical Calculations; Furnace Design and Efficiency; Special Processes.

A large portion of the time will be given to the study of heat balances of typical smelting operations.

Reference book: Richards, *Metallurgical Calculations.*

Prerequisites: Metallurgy 1, Chemistry 1.

Two hours per week. Mr. Thomson.

4. *Metallurgical Analysis.*—Advanced course in Metallurgical Analysis of Ores and Furnace Products, Pyrometry and Refractories.

Special attention will be given to analytical methods used by smelting plants in purchase of ores and control of furnace operations.

Prerequisites: Metallurgy 1, Metallurgy 6.

Six hours laboratory per week, First Term. Twelve hours laboratory per week, Second Term. Mr. Thomson.

5. *Fire Assaying.*—Quantitative determination of gold, silver, and other metals by fire-assay methods, with underlying principles.

Text-book: Bugbee, *Fire Assaying,* Wiley.

One lecture and one five-hour laboratory period per week. First Term. Mr. Thomson.

6. *Wet Assaying.*—An introductory course in metallurgical analysis of ores and concentrates.

Most of the time will be given to the technical determination of zinc, copper and lead.

One three-hour laboratory period per week. Mr. Thomson.

Ore Dressing

1. *Ore Dressing.*—A general course covering the concentration of ores by mechanical means.

Most of the time is spent in considering fundamental principles, typical machines, and their general operations and relations in modern milling practice, emphasizing the economic and practical aspects.

Students are taught the commercial and technical characteristics of true concentrating ores, the general principles on which the size, character, site, and other features of a mill are designed.

The general lay-out of crushing, handling, and separating machinery. The laws of crushing and of various classifying and separating actions, and the design, operation, and comparative efficiency of typical machines, such as crushers, rolls, stamps, ball and tube mills, jigs, tables, screens, classifiers, and slime-handling devices.

Attention is paid to pneumatic, magnetic, electrostatic, flotation, and other special processes, including coal-washing.

Text-books: F. Taggart, *A Manual of Flotation Processes*, Wiley.

Reference Books: S. J. Truscott, *Text-book of Ore Dressing*. Richards and Locke, *Text-book of Ore Dressing*.

Two lectures per week. Mr. Gillies.

2. *Ore Dressing Laboratory.*—A variety of crushing, sizing, classifying and separating operations are carried out by the students and studied quantitatively on appropriate machines, singly and in combination. Special attention is paid to flotation processes, several types of machines being used.

Ores from British Columbia mines are usually chosen, so that the work of the students is along practical lines in comparison with actual work in operating plants.

Prerequisite: Ore Dressing 1.

Nine hours laboratory per week. Mr. Gillies.

NOTE:—All students in Mining and Metallurgy are advised to provide themselves with a copy of Peele's *Mining Engineer's Handbook* (Wiley), which is used for reference in many of the courses in which no special text-book is required.

Department of Physics

Professor: T. C. Hebb.
Associate Professor: A. E. Hennings.
Associate Professor: J. G. Davidson.
Assistant Professor: G. M. Shrum.
Assistant: H. W. Fowler.

The instruction includes lectures on the general principles of Physics, accompanied by courses of practical work in the laboratory.

1. *Mechanics 1.*—An elementary treatment of the subject of statics, dynamics, and hydrostatics, with particular emphasis on the working of problems. The course is given in the first half of the First Year of Applied Science.

Text-books: Loney, *Mechanics and Hydrostatics,* Cambridge University Press. Millikan, *Mechanics, Molecular Physics and Heat,* Ginn.

Three lectures and one three-hour laboratory period per week.

2. *Advanced Heat.*—This course is begun when Mechanics 1 is finished, and the six hours devoted to it are divided in the same manner. The course is based on the supposition that the student is already familiar with the elementary principles of heat.

Text-books: Edser, *Heat for Advanced Students,* Macmillan. Millikan, *Mechanics, Molecular Physics and Heat,* Ginn.

3. *Electricity and Magnetism.*—A quantitative study of the fundamental principles of electricity and magnetism, with a special reference to the fact that the student is to be an engineer.

The course includes a short treatment of the elements of alternating currents.

Text-books: Millikan and Mills, *Electricity, Sound and Light* (first part), Ginn. Smith, *Electrical Measurements,* McGraw-Hill.

Two lectures and one three-hour laboratory period per week.

4. *Mechanics 2.*—The subject-matter consists of an extension of the statics and dynamics of Mechanics 1, but with the use of the differential and integral calculus.

Prerequisite: Mechanics 1.

Text-book: Poorman, *Applied Mechanics,* McGraw-Hill.

Two lectures per week.

5. *Light.* — A short lecture course on light for students taking Chemical Engineering. The time will be devoted to a

study of refraction, dispersion, interference, diffraction, double-refraction, polarization and spectroscopy.

One hour per week.

9. *Recent Advances in Physics.*—A course of lectures dealing with the electrical properties of gases, the electron theory, and radioactivity.

Prerequisites: Physics 3 and 4, and Mathematics 10.

Reference books: Thomson, *Conductivity of Electricity Through Gases,* Cambridge University Press, Second Edition. Rutherford, *Radio-active Substances and Their Radiations,* Cambridge University Press. Millikan, *Electron,* University of Chicago Press, Second Edition. Thomson, *Positive Rays,* Longman's. Hughes, *Photo-electricity,* Cambridge University Press, *X-Rays,* Longman's.

Department of Nursing and Health

Professor: Hibbert Winslow Hill.
Assistant Professor: Mabel F. Gray.

Part-time Lecturers:

Miss Elizabeth Gertrude Breeze, R. N.
Miss Margaret Duffield, Cert.P.H.N. (University of Toronto).
Miss Laura Halland, P.H.N.
John Ewart Campbell, B.A., M.D., C.M. (McGill).
Ralph Elswood Coleman, M.B. (Toronto).
William A. Dobson, M.D. (Jefferson Medical College).
Mrs. Isabelle M. Gibb, R.N.
Miss Laura B. Timmins, R.N., Cert.P.H.N. (British Columbia).
Miss Ruby Adeline Kerr.
Frank Cornwall McTavish, M.B. (Toronto), L.S.A. (London), M.R.C.S. (England), L.R.C.P. (London).
Robert Lester Pallen, D.M.D. (North Pacific College of Dentistry).
Alfred Howard Spohn, M.B. (Toronto).
Frederic Theodore Underhill, L.R.C.P. & S., L.M., and F.R.C.S. (Edinburgh), D.P.H. (Edinburgh and Glasgow), F.R.S.I. London), F.R.I.P.H.
Charles Harvey Vrooman, M.D., C.M. (Manitoba).
Harold White, M.D. (McGill), L.M.C.C.
Henry Esson Young, B.A. (Queen's), M.D., C.M., (McGill), LL.D. (Toronto), LL.D. (McGill), LL.D. (British Columbia), L.M.C.C.

Subjects of Nursing A

(Five-year Undergraduate Course)

1. *Introduction to Nursing.*—A series of lectures dealing with the nature of hospital service and discipline, designed to prepare students for entrance to Schools of Nursing. No formal credit is given for this course, but attendance is compulsory.

One hour per week, First Year. Miss Gray.

2. *History of Nursing.*—A series of lectures dealing with the origin and history of nursing.

One hour a week, Second Year. Miss Gray.

3. *Anatomy and Physiology.*—A study of the structure and function of the normal human body as the basis for the study of all pathological conditions, as well as for the study of hygiene.

Two hours a week, Second Year. Miss Gray.

Nursing B (Public Health Nursing)

Preventive Medicine in the Public Health Nursing Programme

1. *Preventable Diseases.*—Brief sketches of the more important of the preventable diseases; immunology; vaccine therapy.

One hour a week. Both Terms. Dr. Hill.

2. *Epidemiology.*—Principles and practice in the control of disease.

One hour a week. Both Terms. Dr. Hill.

3. *Tuberculosis.*—A study of tuberculosis, its prevention and cure.

Eleven lectures. Dr. Vrooman.

4. *Venereal Diseases.*—The care and control of venereal diseases.

Three lectures. Dr .Campbell.

5. *Mental Hygiene.*—An introduction, with clinical demonstrations, to the study of mental illness, its cure and prevention.

Eleven lectures. Dr. Dobson.

6. *Bacteriology.*—A short laboratory course to familiarize students with the practical application of laboratory technique in Public Health measures.

Hours to be arranged. Miss Wilson.

Child Welfare

7. *Infant Welfare.*—A series of lectures and clinics dealing with pre-natal care, and the normal development of the infant; also dealing with the disorders of infancy, their prevention and cure.

Eleven hours. Dr. Spohn.

8. *Orthopedics.*—A series of lectures dealing with the problem of children handicapped by deformities, with emphasis upon the importance of early recognition of deformities and their prevention and cure.

Five hours. Dr. McTavish.

Public Health, Hygiene and Sanitation

Public Health, Hygiene and Sanitation.

9. *Public Health.*—A series of lectures covering the fields of general hygiene and sanitation.

One hour a week. Fifteen lectures. Dr. Hill.

10. *Public Health Administration.*—A study of the official relation of the Public Health Nurse to the Departments of Health.

Four lectures. Dr. Underhill, Dr. Young.

11. *Public Health Organizations.*—A series of single lectures dealing with special aspects of their work.

(a) Diagnostic Clinics for Tuberculosis. Dr. Lamb.

(b) The Hospital's Relation to the Community Health Programme. Dr. Bell.

(c) The Rotary Clinic. Dr. Rawlings.

(d) The Workmen's Compensation Act. Dr. Bastin.

12. *Vital Statistics.*—The general principles governing the collection and arrangement of statistical facts, and their application in Public Health Nursing.

One hour a week. Eighteen lectures. Dr. Hill.

Nursing

13. *Principles and Practice of Public Health Nursing.*—A study of the principles and practice of public health nursing.

One hour a week. Both Terms. Miss Gray.

Text-book: Gardner, *Public Health Nursing,* Macmillan.

14. *Rural Public Health Nursing.*—A study of the principles and practice of public health nursing in rural communities.

Six hours. Mrs Gibb.

15. *Urban Visiting Nursing Programme.*

Two lectures. Miss Duffield.

16. *Health Education.*—A consideration of the material to be presented in the teaching of personal hygiene and home nursing, and the method of presentation.

Two hours a week. Second Term. Miss Gray.

17. *History of Nursing and Contemporary Nursing Problems.*—A study of the origin and history of nursing, followed by the consideration of recent developments in the nursing field.

Eleven lectures. Miss Gray.

18. *Teaching in Schools of Nursing.*—A study of the Curriculum; the selection of subjects, and content of each, and methods of presentation.

One lecture a week. Both Terms. Miss Gray.

19. *Principles of Supervision in Schools of Nursing.*—A study of the organization of the School of Nursing, its relation to the various departments of the Hospital; and the problems of training and record keeping.

One lecture a week. Both Terms. Miss Gray.

20. *School Hygiene.*—A series of twelve lectures given by members of the staff of the Medical Departmnt of the Vancouver School Board, dealing with the specific problems of this division of Public Health.

One hour a week. First Term. Miss Breeze, Miss Kerr, Dr. Pallen, Dr. White.

21. *Hospital Social Service.*—A presentation of the principles underlying Medical Social Service.

Three lectures. Miss Johnston.

22. *Metabolism and Nutrition.*

Eleven lectures. Dr. Coleman.

23. *Psychology for Nurses.*

Two hours a week. Second Term. Dr. Wyman.

24. *Principles of Education Applied to Teaching.*

Two hours a week. Both Terms. Dr. Weir.

25. *Public Speaking and Parliamentary Procedure.*—Principles and practice, fitting students for giving addresses and conducting meetings.

One hour a week. Eighteen hours. Dr. Hill.

26. *Sociology.*—The nature of Sociology as a study; environment; influence of technology and other conditions on social development, etc.; social pathology.

One hour a week. Both Terms. Mr. Beckett.

Text-book: Beach, *Introduction to Sociology,* Houghton-Mifflin.

27. *Geography 10.*

One hour a week. Both Terms. Mr. Brock, Mr. Schofield.

28. *Motor Mechanics.*

Practical instruction in the structure and operation of automobiles, including practice driving.

One hour a week. One Term. Mr. Bell.

Department of Zoology

Professor: C. McLean Fraser.
Assistant Professor: G. J. Spencer.
Instructor: Gertrude M. Smith.
Assistant: Mildred H. Campbell.

NOTE:—Biology 1 is prerequisite to all courses in Zoology.

1. *General Morphology.*—General morphology of animals. Comparative anatomy. The relationships of animal groups. Comparative life-histories.

Text-books: T. J. Parker and W. A. Haswell, *Manual of Zoology,* Macmillan (American Edition, 1916).

This course is prerequisite to other courses in Zoology.

Two lectures and two hours laboratory per week.

7. *Economic Entomology* (in part).—The portion of the course in Economic Entomology that deals with forest insects.

One lecture and two hours' laboratory work per week for half of Second Term.

THE FACULTY OF AGRICULTURE

TIME TABLE

FACULTY OF AGRICULTURE---

FIRST

	MONDAY	ROOM	TUESDAY	ROOM	WEDNESDAY	ROOM
9-10	Agronomy 1	Ag 100	English 1 b Poultry 1	A 100 Ag 100	Agronomy 1	Ag 100
10-11			Animal Husbandry 1	Ag 100		
11-12	Biology 1 Zoology 1	Ap 100 Ap 101	French 1 Botany 1	A 104 A 204	Biology 1 Zoology 1	Ap 100 Ap 101
12-1						
1-2	Chemistry 1 a English 2 b	S 300 A 100	Agronomy 1 Bacteriology 1	Ag 103 S	Chemistry 1 a English 2 a	S 100 A 100
2-3			Agronomy 1 Bacteriology 1	Ag 103 S	Botany 1 Lab.	Ap
3-4	Chemistry 1 Lab. 1 Bacteriology 1	S S	Agronomy 1 Chemistry 2 Lab b	Ag 103 S	Botany 1 Lab.	Ap
4-5	Chemistry 1 Lab. 1 Bacteriology 1	S S	Chemistry 2 Lab b	S		
5-6	Chemistry 1 Lab. 1 Bacteriology 1	S S	Chemistry 2 Lab b	S		

SECOND

	MONDAY	ROOM	TUESDAY	ROOM	WEDNESDAY	ROOM
9-10	Agronomy 2	Ag 100	English 1 b Dairying 1	A 100 Ag 100	Agronomy 2	Ag 100
10-11	Horticulture 1	Ag 100	Animal Husbandry 4	Ag 100	Animal Husbandry 4	Ag 100
11-12	Biology 1 Zoology 1	Ap 100 Ap 101	French 1 Botany 1	A 104 A 204	Biology 1 Zoology 1	Ap 100 Ap 101
12-1						
1-2	Chemistry 1 a English 2 b	S 300 A 100	Agronomy 2	Ag 103	Chemistry 1 a English 2 a	S 300 A 100
2-3	Dairying 1 Lab.	Ag 108	Agronomy 2	Ag 103	Botany 1 Lab.	Ap
3-4	Chemistry 1 Lab. 1 Dairying 1 Lab.	S Ag 108	Agronomy 2 Chemistry 2 Lab. b	Ag 103 S	Botany 1 Lab.	Ap
4-5	Chemistry 1 Lab. 1 Dairying 1 Lab.	S Ag 108	Chemistry 2 Lab. b	S		
5-6	Chemistry 1 Lab. 1	S	Chemistry 2 Lab. b	S		

KEY TO BUILDINGS: A, Arts; Ag, Agriculture;

—1928-29

FIRST AND SECOND YEARS.

TERM

THURSDAY	ROOM	FRIDAY	ROOM	SATURDAY	ROOM	
English 1 b	A 100	Poultry 1	Ag 100	English 1 a Poultry 1	A 100 Ag 102	9-10
		Animal Husbandry 1 Chemistry 2	Ag 114 S 300	Poultry 1	Ag 102	10-11
French 1 Botany 1	A 104 A 204	Animal Husbandry 1	Ag 114	French 1 Poultry 1	A 104 Ag 102	11-12
						12-1
Zoology 1 Lab.	Ap	Chemistry 1 a English 2 a	S 300 A 100			1-2
English 1 a Zoology 1 Lab.	A 100 Ap	Bacteriology 1	S			2-3
Animal Husbandry 1 Chemistry 2 Lab. b	Ag 114 S	Bacteriology 1	S			3-4
Animal Husbandry 1 Chemistry 2 Lab. b	Ag 114 S	Biology 1 Lab. 6	Ap			4-5
Chemistry 2 Lab. b	S	Biology 1 Lab. 6	Ap			5-6

TERM

THURSDAY	ROOM	FRIDAY	ROOM	SATURDAY	ROOM	
English 1 b	A 100	Dairying 1	Ag 100	English 1 a	A 100	9-10
		Animal Husbandry 4 Chemistry 2	Ag 100 S 300			10-11
French 1 Botany 1	A 104 A 204	Horticulture 1	Ag 100	French 1	A 104	11-12
						12-1
Zoology 1 Lab.	Ap	Chemistry 1 a English 2 a	S 300 A 100			1-2
English 1 a Zoology 1 Lab.	A 100 Ap	Horticulture 1	Ag 104			2-3
Chemistry 2 Lab. b	S	Horticulture 1	Ag 104			3-4
Chemistry 2 Lab. b	S	Biology 1 Lab. Horticulture 1	Ap Ag 104			4-5
Chemistry 2 Lab. b	S	Biology 1 Lab.	Ap			5-6

Ap, Applied Science; S, Science.

FACULTY OF AGRICULTURE

INFORMATION FOR STUDENTS IN AGRICULTURE

The degrees offered in this faculty are:

Bachelor of Science in Agriculture (B.S.A.) and Master of Science in Agriculture (M.S.A.).

Courses of Study

Five distinct lines of study are offered, as follows:

(1.) A Four-year Course leading to the Degree of Bachelor of Science in Agriculture (B.S.A.).

(2.) A One-year Occupational Course in which the basic work is in Agronomy, Animal Husbandry, Dairying, Horticulture, and Poultry Husbandry, leading to a Diploma in Agriculture.

(3.) A series of Short Courses at the University, in Agronomy, Animal Husbandry, Dairying, Horticulture and Poultry Husbandry.

(4.) Extension Courses at different points in the Province.

(5.) Graduate work in Agriculture, leading to the degree, M.S.A.

Course Leading to the Degree of B.S.A.

Students in Agriculture are required to have Junior Matriculation or its equivalent before entering upon this course (see "Matriculation Requirements"). The degree of B.S.A. is granted only after the successful completion of four years of lecture and laboratory work. The course is planned for students who wish to obtain a practical and scientific knowledge of Agriculture, either as a basis for demonstration and teaching, or as an aid to success in farm management.

The Occupational Course

The Occupational Course is planned for those students whose academic qualifications are not high, but whose practical

qualifications are satisfactory. The course permits of work in Agronomy, Animal Husbandry, Poultry Husbandry, Dairying, Horticulture, Farm Management and Marketing on the part of those who wish to extend their practical knowledge. A successful completion of the course leads to a Diploma in Agriculture. Matriculation standing for entrance is not required.

A printed descriptive folder giving further details of this course may be secured on application to the Registrar, University of British Columbia.

Short Courses

The Short Courses are planned for those men and women who are unable to take advantage of the longer courses, but who desire to extend their knowledge of agriculture in one or more of those branches in which they are particularly interested. The work throughout is intensely practical. Illustrative material and periods devoted to demonstration and judging work are strong features of the course. No entrance examination is required, nor are students asked to write an examination at the conclusion of the course.

Special announcements giving details of the various divisions of the course are issued in December of each year, and may be obtained from the Registrar on application.

Extension Courses

In order to reach those engaged in Agriculture who are not able to avail themselves of the Winter Courses given at the University, the Faculty of Agriculture offers extension short courses in various centres throughout the Province. These courses are of at least four days' duration, are proceeded with according to a definite time-table, and include lectures and demonstrations in connection with the work of each department of the Faculty. Detailed programmes are prepared to suit the specific centres, and requests for such courses may be addressed to the Registrar.

(Not offered in 1928-29.)

Graduate Work

For regulations, see page 248.

CURRICULUM

Courses are described in terms of units. A unit normally consists of one lecture hour (or one continuous laboratory period of not less than two or more than three hours) per week throughout the session, or two lecture hours (or equivalent laboratory periods) throughout a single term.

The first two years of work leading to the degree in Agriculture are devoted to acquiring a knowledge of the basic sciences upon which Agriculture rests, in adding to the student's knowledge of language, and in laying a foundation for more advanced studies in practical and scientific Agriculture. The Third Year is devoted largely, and the Fourth Year almost wholly, to courses in Applied Agriculture.

Except under special circumstances, students under the age of seventeen will not be eligible for registration. Specialization will begin at the commencement of the Third Year. Students who have not had at least one full season's practical farm experience will be required to obtain this preliminary training before registering for the Third Year.

FIRST YEAR

	Units
Agronomy (1 and 2)	3
Animal Husbandry (1 and 4)	3
Biology 1	3
Chemistry 1	3
English 1	3
The first course in a language offered for Matriculation	3
Total required	18

SECOND YEAR

	Units
Poultry Husbandry 1	1½
Horticulture 1	1½
Dairying 1	1½
Botany 1	3
Zoology 1	3
English 2	3
Bacteriology 1	2
Chemistry 2	3
Total required	18½

THIRD AND FOURTH YEARS

On account of the specialized types of farming which must necessarily be followed in many parts of British Columbia, the work in the Third and Fourth Years leading to the degree of B.S.A. has been arranged in major courses so as to admit of a measure of specialization in one of the several recognized branches of Agriculture. At the same time all courses have been so arranged that every student will get the basic work in all lines no matter what option is chosen.

Prior to the beginning of the Third Year every student must indicate in which one of the major options he wishes to continue his study, and shall arrange his elective courses with the approval of the Head of the Department in which he is majoring, and in consultation with the Heads of other Departments directly concerned.

A thesis shall be prepared by each student on some topic, the subject of which shall be selected, with the approval of the Head of the Department in which the student is majoring, before the end of the Third Year's work.

Two typewritten copies of each thesis on standard-sized paper (8½ in. by 11 in.) shall be submitted on or before the 1st of April in the graduating year.

Agricultural students are required to take a total of 35 units, thesis included, in their Third and Fourth Years.

THIRD YEAR

(Required subjects)

	Units
Economics 1	3
Chemistry 3 or 14	3
(To be taken on the advice of the Head of the Department in which the student is majoring.)	
Principles of Heredity—Biology 2	1
Total required	7

FOURTH YEAR

(Required subjects)

	Units
Agricultural Economics	1½
Thesis	3
Total required	4½

Agronomy Major

THIRD YEAR

	Units
Required subjects, as above	7
Plant Physiology—Botany 3	2
Systematic Entomology—Zoology 4	2
Economic Entomology—Zoology 7	2
*Total	13

FOURTH YEAR

	Units
Required subjects, as above	4½
Animal Husbandry 9	1½
*Total	6

* Students are required, with the advice and consent of the Head of the Department, to elect up to a total of from 15 to 18 units.

Animal Husbandry Major

THIRD YEAR

	Units
Required subjects, as above	7
*Total	7

FOURTH YEAR

	Units
Required subjects, as above	4½
Agronomy 7	1½
*Total	6

Dairying Major

THIRD YEAR

	Units
Required subjects, as above	7
*Total	7

FOURTH YEAR

	Units
Required subjects, as above	4½
Civil Engineering (Special)	1
Plant Physiology—Botany 3	2
Dairy Chemistry	2
*Total	9½

* Students are required, with the advice and consent of the Head of the Department, to elect up to a total of from 15 to 18 units.

Horticulture Major

THIRD YEAR

	Units
Required subjects, as above	7
Plant Physiology—Botany 3	2
Systematic Entomology—Zoology 4	2
Economic Entomology—Zoology 7	2
*Total	13

FOURTH YEAR

	Units
Required subjects, as above	4½
Plant Pathology—Botany 6 (c)	2
*Total	6½

Poultry Husbandry Major

THIRD YEAR

	Units
Required subjects, as above	7
*Total	7

FOURTH YEAR

	Units
Required subjects, as above	4½
*Total	4½

Botany (Plant Pathology) Major

THIRD YEAR

	Units
Required subjects, as above	7
*Total	7

* Students are required, with the advice and consent of the Head of the Department, to elect up to a total of from 15 to 18 units.

FOURTH YEAR

	Units
Required subjects, as above	4½
*Total	4½

Zoology (Entomology) Major

THIRD YEAR

	Units
Required subjects, as above	7
*Total	7

FOURTH YEAR

	Units
Required subjects, as above	4½
*Total	4½

COURSES LEADING TO THE DEGREE OF M.S.A.

1. Candidates for the degree of Master of Science in Agriculture (M.S.A.) must hold a bachelor's degree from this University, or its equivalent.

2. A graduate of another university applying for permission to enter as a graduate student is required to submit with his application an official statement of his graduation together with a certificate of the standing gained in the several subjects of his course. The Faculty will determine the standing of such a student in this University. The fee for examination of certificates is $2.00.

3. Candidates with approved degrees and academic records who proceed to the master's degree shall be required:

(a.) To spend at least one year in resident graduate study; or

*** Students are required, with the advice and consent of the Head of the Department, to elect up to a total of from 15 to 18 units.**

(b.) (At the discretion of the Faculty concerned):

(i.) To do two or more years of private work under the supervision of the University, such work to be equivalent to one year of graduate study; or

(ii.) To do one year of private work under University supervision and one term of resident graduate study, the total of such work to be equivalent to one year of resident graduate study.

4. Students doing tutorial work shall not be allowed to come up for final examination in less than two academic years after registration as M.S.A. students.

5. One major and one minor shall be required. Candidates may select their minor in another Faculty.

6. (*a.*) A thesis must be prepared on some approved topic in the major subject.

(*b.*) Examinations, written or oral, or both, shall be required.

7. Two typewritten copies of each thesis, on standard-sized thesis paper, shall be submitted. (See special circular of "Instructions for the Preparation of Masters' Theses.")

8. Application for admission as a graduate student shall be made to the Registrar by October 15th. (See schedule of fees.)

Examinations and Advancement

1. Examinations in all subjects, obligatory for all students, are held in December and in April. Applications for special consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period. In cases where illness is the plea for absence from examinations, a medical certificate must be

presented on the appropriate form which may be obtained from the Dean's office.

2. In the First and Second years candidates taking a full course will not be considered as having passed unless they obtain at least 40 per cent. on each subject and 50 per cent. on the aggregate. In the Third and Fourth years candidates will not be considered as having passed unless they obtain at least 50 per cent. on each subject and at least 60 per cent. on all subjects of the Department in which the student is majoring. Candidates taking less than a full course (15 units) must obtain at least 50 per cent. on each subject of the First and Second years, and at least 60 per cent. on each subject of the Third and Fourth years. Students taking work in the Summer Session will not be considered as having passed unless they obtain 50 per cent. or more in each subject.

3. Successful candidates will be graded as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 80 per cent.; Passed, 50 to 65 per cent.

4. If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed. Notice will be sent to all students to whom such examinations have been granted.

5. Supplemental examinations will be held in September and will not be granted at any other time, except by special permission of the Faculty, and on payment of a fee of $7.50 per paper.

6. Applications for supplemental examinations, accompanied by the necessary fees (see Schedule of Fees) must be in the hands of the Registrar at least two weeks before the date set for the examinations.

7. No student may enter a higher year with supplemental examinations still outstanding in respect of more than 3 units of the preceding year, nor with any supplemental examination

outstanding in respect of the work of an earlier year or of Matriculation unless special permission to do so is granted by Faculty. Such permission will be granted only when Faculty is satisfied that the failure to remove the outstanding supplemental examinations had an adequate cause.

8. A student may not continue in a later year any subject in which he has a supplemental examination outstanding from an earlier year, except in the case of compulsory subjects in the Second Year.

9. A student who is not allowed to proceed to a higher year may not register as a partial student in respect of the subjects of that higher year. But a student who is required to repeat his year may, *on application in writing,* be exempted by the Faculty from attending lectures and passing examinations in subjects in which he has already made at least Second Class standing. In this case he may take, in addition to the subjects of the year which he is repeating, certain subjects of the following year.

10. A student who fails twice in the work of the same year may, upon the recommendation of the Faculty, be required by the Senate to withdraw from the University.

11. Any student whose academic record, as determined by the tests and examinations of the first term of the First or Second Year, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session. Such a student will not be readmitted to the University as long as any supplemental examinations are outstanding.

12. Term essays and examination papers will be refused a passing mark if they are noticeably deficient in English, and, in this event, students will be required to pass a special examination in English to be set by the Department of English.

COURSES IN AGRICULTURE

Department of Agronomy

Professor: P. A. Boving.
Associate Professor: G. G. Moe.
Assistant Professor: D. G. Laird.
Assistant: G. B. Boving.
Assistant: C. A. Lamb.

1. *Soil and Soil Fertility.*—An examination will be made of the more important soil types; cultivation, manuring, and rotation of crops will be studied in their relation to soil productivity; methods of treatment will be observed, and the principles underlying soil management and improvement will constitute the basis for subsequent courses in Agronomy.

Two lectures and one laboratory per week. First Term, First Year. Mr. P. A. Boving, Mr. Laird. 1½ units.

References: Miller, *The Soil and Its Management,* Ginn & Co.; Hopkins, *Soil Fertility and Permanent Agriculture,* Ginn & Co.

2. *Field Crops.*—This course embraces a study of the most important grain, corn, forage, and root crops. A detailed study of the crops, in the field and in the laboratory, will supplement the lecture work in order to give the student a comprehensive idea, not only of the different phases of crop production, but also of the relative value of separate specimens and samples.

Two lectures and one laboratory per week. Second Term, First Year. Mr. Moe, Mr. G. B. Boving. 1½ units.

References: Montgomery, *Productive Field Crops,* Lippincott; Hutcheson and Wolfe, *Production of Field Crops,* McGraw-Hill; Rutter, *Wheat Growing,* A. and C. Black.

3. *Seed Growing.*—This course deals with the production and marketing of vegetable, root, clover, and grass seeds.

Two lectures and one laboratory per week. First Term, Third Year. Mr. P. A. Boving, Mr. G. B. Boving. 1½ units.

Reference: Cox and Starr, *Seed Production and Marketing,* John Wiley and Sons.

4. *Field Crops (Advanced).*—Course 4 constitutes a more detailed study of field crops than was possible in Course 2. It also embraces special lecture and laboratory work on the harvesting, threshing, cleaning, storing, and marketing of our ordinary field crops. The two courses combined will give the student a more complete understanding of the various factors bearing upon the production of a first-class article, whether intended for sale or for feeding.

One lecture and one laboratory per week. First and Second Terms, Third Year. Mr. Moe. 2 units.

References: Piper, *Forage Plants and Their Culture,* Macmillan; Bracken, *Crop Production in Western Canada,* Grain Growers' Guide; Piper, *Principals of the Grain Trade of Western Canada,* Macmillan.

5. *Economics of Crop Production.*—This course embraces a study of the selecting, planning, and operating of a farm. Various conditions, systems and practices prevailing on the American Continent and in Europe will be discussed and compared.

Two lectures and one laboratory per week. Second Term, Third Year. Mr. P. A. Boving, Mr. Laird. 1½ units.

Reference: Adams, *Farm Management,* McGraw-Hill.

6. *Field-crop Judging.* — The judging and handling of grains, grasses, forage and root crops will be taken up in the field as well as in the laboratory.

One lecture and two laboratories per week. First Term, Fourth Year. Mr. Moe. 1½ units.

7. *Soil Management.* — Different systems of cultivation, rotation, manuring and irrigation, as practised in Canada and elsewhere, will be discussed, and the influence of these factors on the maintenance or exhaustion of soil fertility will be studied.

Two lectures and one laboratory per week. Second Term, Third Year. Mr. Laird. 1½ units.

References: Russell, *Soil Conditions and Plant Growth,* Longmans Green; Murray, *Soils and Manures,* Constable & Co.;

Emerson, *Agricultural Geology,* John Wiley and Sons; Rothamstead Exp. Station Reports.

8. *Plant-breeding.* — This course is planned to follow Biology 2. With this as a basis, the course is designed to illustrate and explain the breeding of field crops.

One lecture and two laboratories per week. Second Term, Fourth Year. Mr. Moe. 1½ units.

Hayes and Garber, *Breeding Crop Plants,* McGraw-Hill; Babcock and Clausen, *Genetics in Relation to Agriculture,* McGraw-Hill; Sinnott and Dunn, *Principles of Genetics*A McGraw-Hill.

9. *Field Experiments.* — The scope, the methods and the interpretation of field experiments will be discussed, and a study will be made of the more important results obtained in different parts of the world.

Two lectures per week. Second Term, Fourth Year. Mr. Laird. 1 unit.

10. *Thesis.* 3 units.

11. *Crop Adaptation and Distribution (Crop Ecology).*— The relation of field crops to elevation, climate and soils will be studied in order to give the student a comprehensive idea of the distribution of crops and the adaptation of various types to different parts of the world.

One lecture per week. First Term, Fourth Year. Mr. Moe. ½ unit.

Reference: Finch and Baker, *Geography of the World's Agriculture,* U. S. A. Department of Agriculture.

12. *Research (Directed).* 3 units.
(Not required of Undergraduates.)

13. *Soil Bacteriology.*—Laboratory and lecture course, in which the bacteria of soils are studied qualitatively and quantitatively, with special reference to soil fertility.

Prerequisites: Bact. 1, Agronomy 1.

Five hours per week. First Term. Mr. Laird. 2 units.

References: Löhnis and Fred, *Text-book of Agricultural Bacteriology,* McGraw-Hill; Waksman, *Principles of Soil Microbiology,* Williams and Wilkins.

50. *Research (Directed).* 3 to 5 units.
(Open to Graduates only.)

Students majoring in Agronomy are required to work one summer under the direction of the Department.

Department of Animal Husbandry

Professor: H. M. King.
Assistant Professor: R. L. Davis.
Assistant Professor: H. R. Hare.
Lecturer in Veterinary Science: J. G. Jervis.

1. *Market Classes and Grades of Livestock.*—A study of the characteristics and requirements of the various market classes and grades of beef cattle, dairy cattle, horses, sheep, swine and goats.

Texts: Vaughan, *Types and Market Classes of Livestock.* Plumb, *Judging Farm Animals.*

Three laboratories per week. First Term, First Year.
Mr. King, Mr. Davis, Mr. Hare. 1½ units.

2. *Breeds of Cattle.*—A study of the origin, history of development, characteristics, and adaptations of the breeds of cattle. Students are required to make several trips to leading herds in the Province.

Text: Plumb, *Types and Breeds of Farm Animals.*
Prerequisites: Animal Husbandry 1.
Three laboratories per week. First Term, Third Year.
Mr. King, Mr. Davis. 1½ units.

3. *Breeds of Horses, Sheep, Swine and Goats.*—A study of the origin, history of development, characteristics, and adaptations of the breeds of horses, sheep, swine and goats.

Text: Plumb, *Types and Breeds of Farm Animals.*
Prerequisites: Animal Husbandry 1.
Two laboratories per week. Second Term, Third Year.
Mr. Davis, Mr. King. 1 unit.

4. *Livestock Feeding and Management.*—The feeding, care, and management from birth to maturity of the various types of livestock.

Text: Henry and Morrison, *Feeds and Feeding,* abridged edition.

Prerequisite: Animal Husbandry 1.

Three lectures per week. Second Term, First Year.

Mr. Davis, Mr. King, Mr. Hare. 1½ units.

5. *Advanced Judging.*—A continuation of the type of work represented in the laboratory of Animal Husbandry 2 and 3. Designed to strengthen Animal Husbandry students in the selection of herd sires, foundation breeding herds, and in the building up of superior flocks and herds. Special work in the fitting and handling of live stock is presented. Students are required to make several trips to leading herds in the Province.

Prerequisites: Animal Husbandry 2 and 3.

Three laboratories per week. First Term, Fourth Year.

Mr. Davis, Mr. King. 1½ units.

6. *Livestock Breeding.* — A study of the principles of breeding in their application to livestock development and improvement.

Text: Rice, *Breeding and Improvement of Farm Animals.*

Prerequisites: Animal Husbandry 2 and 3 and Biology 2.

Two lectures per week. Second Term, Third Year.

Mr. Davis. 1 unit.

(Not offered in 1928-29.)

7. *Herd, Flock and Stud-book Study.*—An advanced course in the study of the principal breeds of livestock, familiarizing the student with the leading sires, dams, families, and herds of the various breeds, and the blood lines entering into their formation. Emphasis is placed upon a study of pedigrees.

Prerequisites: Animal Husbandry 2 and 3.

Two lectures and one laboratory per week. Second Term, Third Year. Mr. King, Mr. Davis. 1½ units.

(Not offered in 1928-29.)

8. *Nutrition.* — A study of the elements and compounds important to animal nutrition and their relation to the animal organism; the digestive system; the digestion, absorption, assimilation, and disposition of food materials. A study of the various feedstuffs.

Texts: Henry and Morrison, *Feeds and Feeding.* Armsby, *Animal Nutrition.*

Two lectures per week. First Term, Fourth Year.

Mr. Davis. 1 unit.

(Not offered in 1928-29.)

9. *Animal Feeding.*—The feeding of all classes of livestock, having distinct regard to the economic problems confronting the breeder and the producer.

Text: Henry and Morrison, *Feeds and Feeding.*

Three lectures per week. Second Term, Fourth Year.

Mr. Davis, Mr. King, Mr. Hare. 1½ units.

(Open to Third Year Students in 1928-29.)

10. *Markets and Marketing.*—A careful study of the markets with their requirements for livestock and livestock products, and the relation which these bear to production. Marketing of breeding stock.

Two lectures per week. First Term, Fourth Year.

Mr. King. 1 unit.

(Not offered in 1928-29.)

11. *Thesis.* 3 units.

12. *Livestock Practice and Seminar.*—Every Animal Husbandry student is required to spend the summer months between the Third and Fourth Years on an approved livestock farm and to present a written report upon his summer's work before entering upon the Second Term of the Fourth Year.

Open only to students majoring in Animal Husbandry.

A seminar of one hour per week for the special study of current problems and literature is held. Mr. King. 1½ units.

13. *Livestock Farm and Ranch Management.*—The management of the range, ranch, and farm for the production of live stock.

Texts: Potter, *Western Livestock Management.* Sampson, *Farm and Range Management.*

Prerequisite: Animal Husbandry 12.

Two lectures and one laboratory per week. Second Term, Fourth Year. Mr. King, Mr. Hare. 1½ units.

(Open to Third Year Students in 1928-29.)

14. *Veterinary Science.*—A study of the common diseases of horses, cattle, sheep, swine and goats; their causes, prevention, and treatment.

Prerequisites: Animal Husbandry 1 and 4.

Three lectures per week. First Term, Third Year.

Mr. Jervis. 1½ units.

15. *Research (Directed).* 3 units.

(Not required of Undergraduates.)

50. *Research (Directed).* 3 to 5 units.

(Open to Graduates only.)

Department of Dairying

Professor: Wilfrid Sadler.
Associate Professor: N. S. Golding.
Assistant: H. L. A. Tarr.

1. *Elementary Dairying.*—An elementary course of lectures on the principles underlying the successful practice of dairying. Laboratory work on the control of milk, the preparation of dairy products, the judging of the same, and the methods of testing adopted.

Two lectures and one laboratory per week. Second Term, Second Year. Mr. Golding, Mr. Sadler. 1½ units.

2. *Farm Cheese-making.* — Principles and practices of cheese-making, hard-pressed, blue-veined, and soft; the making

of cheese on the farm; a general knowledge required of the principal varieties of each class of cheese, and laboratory practice in the making of standard varieties.

This course is offered in the Third Year or Fourth Year to students other than those who propose to major in Dairying.

One lecture and two laboratories per week for one term. 1½ units.

3. *Dairy Bacteriology.*—The bacteriology of milk; sources of bacteria in milk, and quantitative and qualitative determinations of the bacterial content; normal and abnormal fermentations of milk, and a somewhat detailed study of certain organisms responsible therefor.

One lecture and two laboratories per week. First Term. Third Year. Mr. Sadler. 1½ units.

4. *Creamery Butter-making.* — Creamery butter-making· grading of cream; treatment and preparation of cream for butter-making; pasteurization; manufacture of creamery butter; judging, grading, and marketing of butter.

Prerequisite: Dairying 3.

One lecture and two laboratories per week. First Term, Third Year. Mr. Golding, 1½ units.

5. *Market Milk*—The hygienic aspect of milk production; handling and management of milk designed for city consumption; grading of milk on bacterial standards; pasteurization, control and distribution of milk.

One lecture and two laboratories per week. Second Term. Third Year. Mr. Sadler, Mr. Golding. 1½ units.

6. *Cheese and Cheese-making.*—This course deals with the principles and practices of cheese-making — hard-pressed, blue-veined, and soft.

Offered to those majoring in Dairying.

Two lectures and two laboratories per week. Fourth Year. Mr. Golding. 4 units.

7. *Dairy Bacteriology.* — The ripening of hard-pressed cheeses; the bacteria employed in the practice of cheese-making;

the organisms concerned in the ripening processes of cheese; and of necessity, in a measure, a systematic study of the Lactic Acid Bacteria.

One lecture and two laboratories per week. Mr. Sadler. 3 units.

8. *Testing of Milk and Dairy Products.* — The testing of milk, cream, butter, and cheese; the selling of milk and cream on the butter-fat basis; causes of variation in butter-fat content.

One lecture-laboratory per week. First Term, Mr. Golding. ½ unit.

9. *Dairy Buildings and Equipment.*—Buildings suitable for handling of milk and manufacturing of dairy products; their situation, construction, arrangement; equipment of farm dairies, creameries, and cheese-factories. This course includes detailed studies of selected buildings.

One lecture and one laboratory per week. Second Term, Fourth Year. 1 unit.

(Not offered in 1928-29.)

10. *The Judging and Grading of Milk and Milk Products.*— Offered to students of the Senior Year.

Mr. Golding, Mr. Sadler. 1½ units

(Open to Third Year Students in 1928-29.)

11. *Thesis.* 3 units.

12. *Research (Directed).* 3 units.

(Not required of Undergraduates.)

50. *Research (Directed).* 3 to 5 units.

(Open to Graduates only.)

Department of Horticulture

Professor: F. M. Clement.
Professor: A. F. Barss.
Associate Professor: F. E. Buck.

1. *Principles of Horticulture.* — A study of the principles involved in the selection, propagation, planting, and general care of the more important fruits, vegetables, flowers and ornamental trees and shrubs, with sufficient practice to enable a student to care for the home plantings.

This course is designed to meet the needs of all students in Agriculture, giving them a general knowledge of Horticultural Crops. At the same time the work is fundamental for students who are planning to take further courses in Horticulture.

Two lectures and one laboratory per week. Second Term, Second Year. Mr. Barss, Mr. Buck. 1½ units.

Text: Hood, *Farm Horticulture,* Lea & Febiger.

3. *Practical Pomology.* — A detailed study of the best methods in Orchard Management with field practice in various orchard operations, such as planting, pruning, and spraying. The course also deals with the culture of small fruits.

Two lectures and two laboratories per week. Second Term, Third Year. Mr. Barss. 2 units.

Text: Gardner, Bradford and Hooker, *Orcharding,* McGraw-Hill.

Reference: Chandler, *Fruit Growing,* Houghton Mifflin Co.

4. *Plant Propagation and Nursery Practice.*—This course deals with the methods used in propagating plants, including budding and grafting; and with Commercial Nursery practices.

One lecture and one laboratory per week. Second Term, Third Year. Mr. Buck. 1 unit.

Text: Hottes, *Practical Plant Propagation,* De la Mare Co.

5. *Commercial Pomology.*—A study of the problems connected with the handling of fruits and vegetables—harvesting, grading, packing, shipping, storing, marketing; packing and

storage houses; marketing associations; costs of production and marketing.

Two lectures and one laboratory per week. First Term, Fourth Year. Mr. Barss. 1½ units.

(Open to Third Year Students in 1928-29.)

Reference: Folger and Thomson, *The Commercial Apple Industry of North America,* Macmillan.

6. *Systematic Pomology.*—A course in description, identification, classification, displaying, and judging of fruits. The course also includes a certain amount of work in Systematic Olericulture.

One lecture and two laboratories per week. First Term, Fourth Year. Mr. Buck, Mr. Barss. 1½ units.

(Not offered in 1928-29.)

Reference: Drain, *Essentials of Systematic Pomology,* John Wiley & Sons.

7. *Practical Vegetable Gardening.*—A study of the problems connected with the commercial growing of vegetables, including the selection of a location, soil requirements, fertilizing, irrigating, and special cultural methods for the more important vegetables. This course also deals with the construction of hot-beds, cold-frames, greenhouses, and their management in the forcing of vegetable crops.

Two lectures and one laboratory per week. Second Term, Fourth Year. Mr. Buck. 1½ units.

(Open to Third Year Students in 1928-29.)

Text: Thompson, *Vegetable Crops,* McGraw-Hill.

8. *Special Horticulture.*—A course for the study of special branches of Commercial Horticulture, including the manufacture of horticultural products, such as canned fruits, dried products, jams, jellies, and fruit juices.

Two lectures per week. Second Term, Fourth Year. Mr. Barss. 1 unit.

(Not offered in 1928-29.)

Reference: Cruess, *Commercial Fruit and Vegetable Products,* McGraw-Hill.

9. *Horticultural Problems.*—An introduction to the study of problems in Horticulture, including the breeding of Horticultural crops, variety adaptations, and methods of research, together with a review of Horticultural investigational work in other institutions. There will also be practice in outlining investigations, and in preparing reports.

Two lectures and one laboratory per week. First Term, Fourth Year. Mr. Barss. 1½ units.

References: Hayes and Garber, *Breeding of Crop Plants,* McGraw-Hill; Gardner, Bradford and Hooker, *Fundamentals of Fruit Production,* McGraw-Hill.

10. *Landscape Gardening and Floriculture.* — The course aims to give the student a working knowledge of the selection, planting and care of ornamental plants—trees, shrubs, and flowers; with the principles for the improvement of home grounds, school grounds, city streets, and parks. The course includes practice in identification of plant materials; also practice in making of planting plans.

Two lectures and one laboratory per week. First Term, Fourth Year. Mr. Buck. 1½ units.

Text: Cridland, *Practical Landscape Gardening,* De la Mare Co.

Reference: Van Rensselaer, *Art Out of Doors,* Charles Scribner & Sons.

11. *Thesis.* 3 units.

12. *Research (Directed).* 3 units.
(Not required of Undergraduates.)

50. *Research (Directed).* 3 to 5 units.
(Open to Graduates only.)

Department of Poultry Husbandry

Professor: E. A. Lloyd.
Associate Professor: V. S. Asmundson.
Assistant: W. J. Riley.

1. *General.*—Fundamentals of poultry husbandry, including breeds, breeding, judging, selection, culling, feeds, feeding, incubation, brooding, poultry-house construction, killing, egg-grading, marketing, sanitation and hygiene, diseases, general management.

The regular laboratory exercises are supplemented by practice work in the feeding and care of poultry flocks.

Two lectures and one laboratory per week. First Term, Second Year. Mr. Lloyd. 1½ units.

2. *Markets and Marketing.*—Marketing conditions for poultry products in British Columbia. The relation of the home market to outside markets. Canadian Egg Marketing Regulations. Provincial Egg Acts and Regulations. Egg-grading, care, packing, storing, selling. Fattening poultry for market; killing, packing, storing, selling. Production and sale of high-class breeding stock for local demand and export trade. Advertising. Principles and practice of marketing, private and co-operative. Study of prices.

One lecture and two laboratories per week. First Term, Third Year. Mr. Lloyd. 1½ units.

3. *Incubation and Brooding.*—Selection and care of hatching eggs. Shipping hatching eggs. Natural incubation. Artificial incubation. Types of incubators. Natural brooding. Artificial brooding. Rearing, including systems of management, housing, feeding and training chicks. Brooding equipment. Practice in operating incubators and brooders.

Prerequisite: Poultry Husbandry 1.

One lecture and two laboratories and practice per week. Second Term, Third Year. Mr. Asmundson. 1½ units.

4. (*a*) *Breeds and Breeding.*—The breeds of poultry; their history, origin and economic qualities. The principles of breeding as applied to Poultry Husbandry. Breeding records.

Prerequisite: Poultry Husbandry 1 and Biology 2.

Two lectures and one laboratory per week. Second Term, Third Year. Mr. Asmundson. 1½ units.

4. (*b*) *Advanced Breeding.*—Breeding for egg and meat production. Statistical study of production records.

Prerequisite: Poultry Husbandry 4 (a).

One lecture and one laboratory per week. Second Term, Fourth Year. Mr. Asmundson. 1 unit.

5. (*a*) *Poultry Management.*—Types of poultry farms and their respective problems. Farm layouts. Economy of investment of capital in land, buildings, stock and equipment. Efficiency in breeds, maintenance, labor, housing, feeding, production and personnel. Marketing. Farm income, labor income and profit as based on University survey. Studies of individual farms for criticism.

One lecture and two laboratories per week. First Term, Fourth Year. Mr. Lloyd, Mr. Riley. 1½ units.

5. (*b*) *Advanced Farm Management.*—Continuation of Poultry 5, with more detailed study of surveys and cost account records to determine labor income and profits. Inventory valuations. Special study of disease problems. Estimates on cost of developing poultry farms. Efficiency factors. Costs of production.

One lecture and one laboratory per week. Second Term, Fourth Year. Mr. Lloyd, Mr. Riley. 1 unit.

6. *Diseases, Housing and Hygiene.*—Common ailments of poultry and their treatment. Parasites. Infectious and contagious diseases of poultry and chicks, turkeys, geese and ducks Autopsies. Dissection. Poultry-house construction, building sites, types, costs and uses. Yarding. Sanitation and hygiene.

Two lectures and one laboratory per week. Second Term, Fourth Year. Mr. Lloyd, Mr. Asmundson. 1½ units.

7. (*a*) *Feeding Management.*—Feeding growing stock, laying hens, breeding males and females, turkeys, ducks and geese. Use of lights. Study of standard methods of routine management.

Two lectures per week. First Term, Fourth Year.

Mr. Asmundson. 1 unit.

7. (*b*) *Poultry Rations.*—Application of the facts revealed by studies in nutrition to the compounding of rations for poultry. Study of feed mixtures. Problems and assigned reading.

Prerequisite: Animal Husbandry 8.

One lecture and one laboratory per week.

Second Term, Fourth Year. Mr. Asmundson. 1 unit.

8. *Seminar.*—Poultry literature. Reports on current events. Research and experimental problems. Preparation of reports and bulletins. Export trade. Advertising and other economic propaganda.

One lecture per week. Three hours practice per week. Second Term, Fourth Year. Mr. Lloyd. 1 unit.

9. *Judging and Selection.*—Judging according to standard. Changes induced by egg production. Characteristics of layers. Selection for egg production. Selection for meat production.

Two laboratories per week. First Term, Fourth Year.

Mr. Asmundson. 1 unit.

10. *Thesis.* 3 units.

11. *Research* (*Directed*). 3 units.

(Not required of Undergraduates.)

50. *Research* (*Directed*). 3 to 5 units.

(Open to Graduates only.)

Agricultural Economics

Dean Clement.

A. Farm Organization and Management.—This is a lecture and laboratory course, based on a detailed study of five hundred farms in British Columbia, as recorded on the Farm Survey Sheets.

References and assigned readings.

Two lectures and one laboratory per week. Fall Term.

Mr. Hare. 1½ units

B. Agricultural Economics and Marketing.—Some applications of the principles of Economics and Marketing to Agriculture. Required of all students in the Occupational Course, but not open for credit to degree students.

Text: Carver, *Elements of Rural Economics,* Ginn.

Three lectures per week. Second Term.

Mr. Hare. 1½ units.

1. *Agricultural Economics.*—The principles of Economics as applied to Agriculture; historical background, the agricultural problem, and some special topics, such as the agricultural surplus, production in relation to population growth, the farm income and the share of agriculture in the national income.

Text: Taylor, *Agricultural Economics,* Macmillan.

References and assigned readings from Grey, Carver, Nourse, and others.

Three lectures per week.

Mr. Clement. 3 units.

2. *Marketing.*—The principles of Marketing as applied to the individual farm and to Agriculture as a whole. The general principles of Marketing, the marketing of agricultural products as compared to wholesale and retail distribution of manufactured goods, the contributions of national Farmer Movements, co-operative marketing as illustrated by the marketing of wheat, fruit, and milk in Canada.

Texts: Brown, *Marketing,* Harper and Brothers. Mackintosh, *Agricultural Co-operation in Western Canada.* Ryerson Press, Toronto.

References and assigned readings from Macklin, Hibbard, Boyle, Benton, and others.

Three lectures per week.

Mr. Clement. 3 units.

50. *Agricultural Economics.*—The principles of Economics as applied to the individual farm and to agriculture as an industry. Lectures, discussions and assigned readings. (Open to graduates only.)

Mr. Clement. 3 to 5 units.

(Not offered in 1928-29.)

51. *Agricultural Economics.*—The general principles of marketing, price fixing, marketing by commission, the influence of the market on production, co-operation; and on special topics and assigned readings from general reference and the reports of the American Institute of Co-operation. (Open to graduates only.)

Mr. Clement. 3 to 5 units.

(3 and 4 are offered in alternate years.)

NOTE:—Where courses other than those listed under Agronomy, Animal Husbandry, Dairying, Horticulture, Poultry Husbandry and Agricultural Economics are mentioned, the student will please refer to outlines of courses in Arts and Science or Applied Science.

LIST OF STUDENTS IN ATTENDANCE, SESSION 1928-29

FACULTY OF ARTS AND SCIENCE

FIRST YEAR

Full Undergraduates

Name	*Home Address*
Abramson, Alice S.	Anyox
Acheson, Helen K.	Vancouver
Adams, Marjorie W.	New Westminster
Agar, Martha J.	New Westminster
Aitken, Stirling C.	Vancouver
Akenhead, A. Edwin	Ladysmith
Akerly, Ernest N.	Vancouver
Alexander, Hugh J.	Vancouver
Alexander, Margaret R.	Mission City
Allan, Margaret M.	Vancouver
Archibald, Marjorie D.	Vancouver
Armstrong, A. Helen	Vancouver
Armstrong, Berniece M.	Vancouver
Armstrong, Howard S.	Vancouver
Armstrong, L. Gwendolyn R.	New Westminster
Astell, Clara A.	Vancouver
Attenborough, Esmé N.	Aldergrove
Bachmann, Hazel T.	Vancouver
Bailey, Alice T.	Vancouver
Baillie, G. By	Vancouver
Bain, Violet B.	Murrayville
Baird, Thomas C.	Vancouver
Ball, Mary O. B.	Vancouver
Ball, M. Elizabeth	Sandwick
Banno, Edward C.	Vancouver
Barber, Phyllis M.	Vancouver
Bardsley, John H.	Vancouver
Barnett, Thomas S.	Brea, Calif.
Barr, Helen I.	Vancouver
Barran, Arthur	New Westminster
Bartlett, Eugene	Port Coquitlam
Barton, Helen C.	Vancouver
Bate, Shirley C.	Vancouver
Beall, Desmond	New Westminster
Beavan, A. Paul	Courtenay
Beech, Raymond J.	Waldo
Bell, Alberta	Vancouver
Bell, Florence A.	Coronado, Calif.
Benedict, Howard	Abbotsford
Bennett, Gordon H.	Vancouver
Bickford, Edith P.	Vancouver
Bischoff, Harold D.	Hilversum, Holland
Black, Bertie A. F.	Vancouver
Black, Peter	Prince Rupert
Blackledge, Vera M.	New Westminster
Bolam, M. Gwendolyn	North Vancouver
Bolton, Reginald S.	Vancouver

Name.	*Home Address.*
Bolton, Verna M.	Vancouver
Boutilier, Helen R.	Vancouver
Bowell, Lyla A.	Vancouver
Bradbury, John F.	Vancouver
Brent, Norma M.	Vancouver
Briggs, S. Isabelle	Vancouver
Bright, Richard A.	Vancouver
Brissenden, Pearley R.	Vancouver
Brock, A. Ellis	Haney
Brooke, Gordon L.	Steveston
Brookes, Mary	Vancouver
Brown, Brenton S.	Vancouver
Brown, C. E. Gordon	Liverpool, Eng.
Brown, Edgar N.	Vancouver
Brown, Evelyn M.	Vancouver
Brown, Ralph M.	Vancouver
Bruce, Dorothy M.	Agassiz
Bryant, Beverly	Vancouver
Buchanan, Richard D.	Vancouver
Buckland, Elizabeth C.	Vancouver
Burchell, William U.	Vancouver
Burnham, Frank L.	Vancouver
Burns, Ronald M.	Vancouver
Burritt, Oscar C.	Vancouver
Burton, Geoffrey S.	Enderby
Butler, Ruth	Vancouver
Butorac, Jeanne B.	Trail
Cade, Arthur F.	Prince Rupert
Cairns, Edmund A. M.	Trail
Caldicott, Arthur H.	Trail
Callan, Pat J.	Vancouver
Cameron, Duncan	Agassiz
Cameron, Jean G.	Vancouver
Campbell, Alan T.	New Denver
Campbell, Colin B.	New Denver
Campbell, Kenneth F.	Vancouver
Campbell, Nora	Vancouver
Campbell, Phyllis M.	New Denver
Carnwath, Velma S.	Vancouver
Carpenter, Margaret E.	Vancouver
Carstairs, G. Dennis	Vancouver
Carter, A. Elizabeth	Burnaby
Cartlidge, Annie	North Vancouver
Chodat, Henry H.	Vancouver
Christie, Jean S.	New Westminster
Clark, Edward A.	Vancouver
Clark, Harland W.	Cranbrook
Clarke, Allan F.	Vancouver
Clarke, Maurice C.	Trail
Clarke, Norma R.	Vancouver
Clement, Maurice G.	Vancouver
Cleveland, Courtney E.	Vancouver
Clydesdale, Marion	Vancouver
Cole, Cedric A.	Christchurch, N. Z.
Collinson, Carl A.	Lloydminster, Sask.

Name.	*Home Address.*
Coltart, Robert	Vancouver
Cooke, Carlton C.	Vancouver
Corp, Grenville A.	New Westminster
Costerton, Leonard F.	Vernon
Cowan, Ian M.	North Vancouver
Crawford, Thomas E.	Vancouver
Creelman, Margaret W.	Vancouver
Crisp, Allan G.	Vancouver
Culley, Erma L.	Vancouver
Cummings, John M.	Vancouver
Currie, Jack B.	North Vancouver
Custance, Lillian E.	New Westminster
Cuthbert, Enda M.	New Westminster
Dairon, David A.	Vancouver
Dalton, Christopher J. A.	North Vancouver
Davidson, Edna M.	Vancouver
Davidson, Jack	Vancouver
Davidson, Margaret H.	Vancouver
Dawe, Harold J. F.	New Westminster
Dawson, Barbara L.	Vancouver
Deacon, George B.	Vancouver
Dick, Hazel M.	Britannia Beach
Dickie, Mildred O.	Vancouver
Dillabough, Alice E.	Vancouver
Dingle, Edith A.	New Westminster
Dixon, Harold S.	Vancouver
Dodd, Dorothy A. E.	Vancouver
Doherty, Thomas H.	North Vancouver
Dunbar, Ross P.	Vancouver
Duncan, Kathleen	Vancouver
Dunfee, Harry C.	Vancouver
Dunlap, Francis A.	New Westminster
Dunn, Janet B.	Vancouver
Dunning, Edgar C.	Ladner
Dutcher, Howard N.	Vancouver
Edwards, H. Gwendoline S.	North Vancouver
Edwards, Joan E.	Steveston
Efford, Ruby E.	Vancouver
Eldridge, Beverley A.	Vancouver
Ellett, Alec S.	Vancouver
Ellison, Florence R.	Vancouver
Ellison, Robert	Trail
Fanning, George	Vancouver
Farris, John L.	Vancouver
Ferguson, Ann B. S.	Vancouver
Fernie, W. Vacy	Kamloops
Fernlund, Holger B.	Vancouver
Finlay, Margaret G.	Vancouver
Fisher, Kathleen P.	Ladner
Fishman, Solomon	Vancouver
Fletcher, Margaret G.	Victoria
Follick, C. Ralph	Vancouver
Forsyth, Agnes J.	Vancouver
Foss, I. Harriet	Vancouver
Fowler, Jean R.	Vancouver

Name.	*Home Address.*
Fox, Clara G. B.	Thurlow
Fox, John W.	Vancouver
Fraser, Frances L.	Vancouver
Fraser, Kenneth F.	Vancouver
Fraser, Louise G.	Vancouver
Fraser, T. Clyde	Vancouver
Frattinger, Peter A.	Vancouver
Fridleifson, Leif F.	Vancouver
Frost, John W.	Vancouver
Fukumoto, Aichi	Vancouver
Gallagher, J. Wilfred	Vancouver
Galloway, Verna E.	Nanaimo
Garden, Murray E.	Chapman Camp
Garratt, Morley W.	Vancouver
Garrison, Florence T.	Vancouver
Gaul, Katharine L. C.	Vancouver
Gaul, Robert W.	Vancouver
Gavin, Harold D.	New Westminster
Gibson, Eileen	Smithers
Gilbert, Frank M.	Ladner
Giles, Harold F.	North Vancouver
Gillespie, Charles R.	Vancouver
Gillies, Eleanor M. D.	Vancouver
Gillies, Isobel L.	Vancouver
Girardi, Elda	Vancouver
Givins, Henry C.	Vancouver
Glover, Herbert G.	Vancouver
Godfrey, Langford M.	Vancouver
Goranson, Ewald	Vancouver
Gordon, Boyd J.	Vancouver
Gordon, Francis	Anyox
Gotoh, John	Vancouver
Graham, Dorothy M.	Vancouver
Graham, Mary H. S.	Vancouver
Grant, Donald B.	Vancouver
Grant, Donald E.	Vancouver
Grant, George	Burnaby
Gray, Alice G.	Vancouver
Gray, David	Vancouver
Green, Bertha M.	Pemberton Meadows
Green, James J.	Vancouver
Greenwood, Dorrie	Vancouver
Greenwood, Frances M.	Vancouver
Griffin, Eileen B.	Vancouver
Griffin, Herbert H.	Vancouver
Griffith, Dorothy M.	Vancouver
Groves, Philip S.	Vancouver
Haase, Rudolph E.	Vancouver
Hager, A. Robert	Vancouver
Haley, Francis E.	Santa Monica, Calif.
Hallett, Joan E.	Nelson
Hamilton, M. Ruth	Vancouver
Hansen, Joyce E.	New Westminster
Harford, Barrie H.	Burnaby
Harrell, Bert F.	Vancouver

Name.	*Home Address.*
Harrison, Margaret W.	Vancouver
Harvey, H. Stuart	Vancouver
Harvey, John	Vancouver
Harvey, William H.	Vancouver
Hawes, Isabel G.	Vancouver
Healey, Agnes M.	Vancouver
Heap, Maxwell	Vancouver
Hebb, Malcolm H.	Vancouver
Hedreen, Guy N.	Vancouver
Helmer, Cecil D.	Vancouver
Henderson, Gibb G.	Vancouver
Henderson, Margaret H. T.	Vancouver
Hendry, Alexander	Vancouver
Henniger, William F.	Grand Forks
Herbert, Ruth E.	Vancouver
Herbison, Mary	Vancouver
Hewer, Jack M.	Vancouver
Hill, Evelyn S.	Vancouver
Hillier, William V.	Vancouver
Hockin, Katharine B.	Vancouver
Holloway, Mavis M. E.	Vancouver
Hood, Jean A.	Dundarave
Hopkinson, Dorothy M.	Aberdeen, Wash.
Horton, R. Donald	Vancouver
Howe, Eileen D.	Vancouver
Humble, Ralph S.	Vancouver
Hume, Philip G.	Vancouver
Hunt, Cicely R.	North Vancouver
Hunter, Virginia	Vancouver
Hurford, James R.	Courtenay
Hutchinson, Grace M.	Vancouver
Hutchinson, Myrl	Vancouver
Hutchison, Donald F.	Vancouver
Hutson, A. Maud	Vancouver
Huycke, Barbara S.	Vancouver
Hyndman, John	Vancouver
Inglis, Effie F.	Vancouver
Inglis, James W.	Courtenay
Jack, Lawrence B.	Hatzic
Jakeway, Thomas G.	Vancouver
James, Bessie M.	Vancouver
James, Doris E.	Vancouver
Jestley, H. Lyle	Nakusp
Johnson, Edwin B.	Vancouver
Johnson, H. Elizabeth	Vancouver
Johnston, John	New Westminster
Johnston, Viola M.	Vancouver
Jordan, John S.	Vancouver
Kelly, Dorothy B.	Vancouver
Kennedy, Bessie	Vancouver
Kidd, Allan J.	Burnaby
Kilpatrick, T. Donald	Vancouver
King, Elva M.	Vancouver
King, Margaret A.	Vancouver
Knappett, Louisa M.	Victoria

Name.	*Home Address.*
Knight, Hilda	Vancouver
Knowles, C. Lockhart	Vancouver
Knowlton, Edna M.	Vancouver
Koshevoy, Himie	Vancouver
Kyle, Lorne S.	Vancouver
Ladner, Frank E.	New Westminster
Laing, Jean L. C.	Vancouver
Lammers, Walter A.	Vancouver
Lane, Melvin W.	New Westminster
Large, F. Margaret	Vancouver
Larson, Bertil F.	New Westminster
Larson, May E.	Vancouver
Lawley, J. E. Ryan	Vancouver
Lawrance, John C.	North Vancouver
Lawson, Martha E.	Vancouver
Lea, Margaret	Vancouver
Leard, Ralph M. P.	New Westminster
Leatherdale, Donald A.	Vancouver
Lind, Carl A. A.	Golden
Lind, J. Walter	Sidney
Lind, Lily A.	Vancouver
Little, Archie F.	Vancouver
Lloyd, Douglas	Vancouver
Lockhart, Myra R.	Vancouver
Lowe, Ronald	Sidney
Lugsdin, Claribel	New Westminster
Lundell, Torsten E.	Revelstoke
Madeley, F. St. John H.	Vancouver
Maguire, Helen K.	Vancouver
Makepeace, Ronald A.	Vancouver
Mallory, William R.	Montreal, P. Q.
Malm, Carl A.	Britannia Beach
Manley, J. Reginald	Vancouver
Marr, I. Isabelle	Vancouver
Marshall-Wright, Winnifred A. E.	Brighouse
Martin, Berna A.	Enderby
Martin, D. Gordon	New Westminster
Martin, Edward E.	Vancouver
Martin, Vera	Vancouver
Mathers, William W.	Burnaby
Matheson, Malcolm A.	Mayo, Yukon Territory
Mathews, James D.	Vancouver
Matsuzaki, Susumu	Steveston
Matthews, Helen M.	Vancouver
Mawby, Vera B.	Vancouver
Mayers, E. Wallace	New Westminster
Mayse, Shirley I.	Vancouver
Mearns, William L.	Vancouver
Meilicke, Marian E.	Vancouver
Mellish, Humphrey W.	Vancouver
Meredith, George M.	Vancouver
Millar, Robert D.	Vancouver
Mitchell, M. Ellen	Vancouver
Moilliet, Theodore K.	Vavenby
Mole, Dorothy S.	Ladner

Name.	*Home Address.*
Montserrat, Dorothy L.	Vancouver
Moodie, Elizabeth M.	New Westminster
Moore, Elizabeth E.	Vancouver
Moore, Emma W.	Nanaimo
Morley, Frank S.	Vancouver
Morrison, C. Florence	Vancouver
Morrison, George	Vancouver
Morrow, James W.	New Westminster
Moscrop, Margaret A.	Vancouver
Mossey, Margaret N.	Vancouver
Mouat, William J.	Ganges
Moxham, Kathleen A.	New Westminster
Muir, Mildred E.	Vancouver
Muirhead, Margaret O.	Vancouver
Munday, Otis J.	New Westminster
Mundie, John A.	Vancouver
Munn, Emily G.	Vancouver
Murdoch, Margaret J. M.	Vancouver
Murdoch, M. Jean	Vancouver
Murray, Elmore	Vancouver
Murray, Grace W.	Burnaby
Murray, Mae	Vancouver
Murray, Mary K.	Vancouver
Myers, Dorothy I.	Vancouver
McAlister, Louise M.	Vancouver
McBay, John	Vancouver
McBride, Clarke F.	Vancouver
McCague, Mary L.	Vancouver
McCall, R. Joseph	Vancouver
McCallum, Albert D.	Keremeos
MacCallum, Mary	Agassiz
McCharles, Donalda M.	Vancouver
McColl, Marjorie	North Vancouver
McConnachie, Mae T. W.	Vancouver
McCormick, C. Marjorie K.	New Westminster
McDonald, A. Ruth	Vancouver
MacDonald, Catherine	Vancouver
Macdonald, John L.	Vancouver
McDonald, Mabel L.	Vancouver
Macdonald, Marian E.	Vancouver
McDonald, M. Frances	Vancouver
MacDonald, Wilfred J.	Vancouver
MacDonald, William R.	Ruskin
McEwen, Enid C.	New Westminster
McEwen, Norman R.	Hatzic
McEwen, Theodore S.	New Westminster
McGinness, John H.	Eburne
MacGregor, Harold T.	Vancouver
McIntosh, Edith J.	Vancouver
MacIver, Dorothy	Vancouver
MacKay, Clifford H.	Vancouver
McKay, Dorothy E.	Vancouver
MacKay, J. Fraser	Kamloops
McKee, G. Eleanor	Vancouver
MacKenzie, Donald A.	Vancouver

Name.	*Home Address.*
McKenzie, Francis J.	Vancouver
McKie, Marion C.	Vancouver
MacKinnon, Peter E.	Revelstoke
MacKnight, Wilfred T.	Vancouver
McLarty, Robert L.	Vancouver
McLean, John F.	Vancouver
MacLean, Lachlan M.	Vancouver
McLean, Mary E.	Vancouver
McLellan, Marion C.	Vancouver
MacLeod, Audrey L.	North Vancouver
McLeod, Beulah H.	Vancouver
McLeod, Jessie M.	Vancouver
McLeod, J. Lorne	Van Anda
McLeod, Katherine	Vancouver
McLeod, Kenneth A.	Vancouver
MacLeod, Margaret P.	Dundarave
McNab, Zora	Waldo
MacPherson, Donald W.	Vancouver
McQuillan, Henry C.	Courtenay
McRae, D. Fraser	Vancouver
MacRae, Duncan G.	Vancouver
McRae, Roderick B.	Vancouver
MacSween, Allan J.	North Vancouver
McVicar, John S.	Vancouver
McWhinnie, Sarah K.	Vancouver
McWilliams, Harold C.	Vancouver
McWilliams, Kenneth R.	Vancouver
Nakano, Isao A.	Cumberland
Naylor, Harold S.	Vancouver
Nelson, Lewis H.	Vancouver
Newlands, Patricia	Oswego, Oregon
Nicholson, Laurence J.	Vancouver
Nomoto, Kyuichi	Vancouver
North, Walter E.	Armstrong
Oates, Creswell J.	Vancouver
O'Connor, Aileen J.	Britannia Beach
Osborne, Rhuna	Vancouver
Owens, Frances M. M.	Vancouver
Palmer, Arthur B.	Vancouver
Palmer, Donald D.	Vancouver
Palmer, E. Irene	Vancouver
Papin, Patricia L. F.	New Westminster
Parker, Clifford F.	Vancouver
Parker, Eric G.	Vancouver
Parker, Hugh	Vancouver
Parker, Jack R.	Vancouver
Parker, Jerrold	Vancouver
Parkin, Gertrude E.	North Vancouver
Parnham, Helen R.	Cumberland
Parr, John W.	New Westminster
Parsons, George R.	Vancouver
Parsons, Phyllis B. M.	New Westminster
Partridge, Margaret E.	Vancouver
Paterson, Marjorie F.	Vanderhoof
Paulson, P. Edwin	New Westminster

Name.	*Home Address.*
Pearson, Jack M.	Vancouver
Peel, Marjorie F.	Vancouver
Pennykid, Archibald W.	Burnaby
Petrie, Isabel	Vancouver
Philpott, Margaret S.	New Westminster
Pigott, Arnold D.	Vancouver
Pigou, Elfrida M.	North Vancouver
Pike, Albert E.	Vancouver
Platt, Dorothy	Vancouver
Poole, Louise E.	Port Hammond
Preston, Madeleine E. M.	Vancouver
Pritchard, Hubert D.	Grindrod
Pronick, Natalia A.	Vancouver
Purdy, Frances I.	Vancouver
Read, John R.	Vancouver
Reid, Katherine B.	Vancouver
Retallack, Henry R.	Vancouver
Ricardo, W. Crawley	Vernon
Richardson, Jack	Vancouver
Richardson, Laurence R.	Vancouver
Rigney, Irene B.	Vancouver
Rindal, Kaare	Vancouver
Ritchie, Agnes C.	Vancouver
Roberts, Hesketh	Vancouver
Robertson, Bessie T.	Vancouver
Robinson, E. Lapage	Vancouver
Robinson, Frances E.	New Westminster
Rosenbaum, Dorothy A.	Vancouver
Ross, John F.	Vancouver
Ross, Kathleen M.	Vancouver
Rossiter, Philip D.	Oliver
Royce, Gladys	Vancouver
Rutherford, Donald H.	Vancouver
Rutherford, J. Murdoch	Revelstoke
Rutledge, Howard A.	Vancouver
Samis, Bruce C.	Vancouver
Sanders, Gislie E.	Vancouver
Sangster, Marion C.	Vancouver
Sangster, Robert C.	Vancouver
Savage, John P.	Vancouver
Savage, William F.	Vancouver
Selby, Cyril C.	Kimberley
Selfe, Olive F.	Vancouver
Shilvock, Winston A.	Vancouver
Sievers, Harland L.	Victoria
Simmonite, Stella A.	North Vancouver
Sinclair, Hilda M.	Vancouver
Skinner, Doris	Vancouver
Smeltzer, Gladys	Vancouver
Smith, Alice M.	Vancouver
Smith, Cyril H.	Matsqui
Smith, Frank A.	Vancouver
Smith, Marion W.	Vancouver
Smith, Maxine E.	Vancouver
Smith, Norma F.	Vancouver

Name.	*Home Address.*
Smith, Phyllis G. B.	Vancouver
Smith, Ronald N.	Vancouver
Smith, W. Cameron	Vancouver
Smith, Wilbert B.	Vancouver
Smyth, Roberta L.	Vancouver
Snedden, Kathleen M.	Vancouver
Stanley, Beatrice M.	Vancouver
Staples, Edwin P.	Creston
Stearman, Renita M.	Vancouver
Stelmaschuk, Michael	Vancouver
Stevens, Sylvia M.	Vancouver
Stewart, Beatrice J.	Vancouver
Stewart, Doris W.	Vancouver
St. John, David M.	Vancouver
Strachan, Adeline J.	Vancouver
Straight, Harold L.	Vancouver
Streight, Jack M.	New Westminster
Sugamori, Patricia H.	Aldergrove
Summers, Muriel L.	Vancouver
Sutherland, Donald F.	Vancouver
Sutherland, Dorothy E.	Vancouver
Sutherland, Lillian M.	Victoria
Swain, Lyle A.	Vancouver
Sweeting, Alma T.	Vancouver
Tamura, Kathuno	Port Haney
Taylor, John R.	Vancouver
Teeple, Charles C.	Vancouver
Telford, Jean R.	Vancouver
Terry, Norman K.	Vancouver
Thompson, E. Roland	New Westminster
Thompson, G. Morrin	Vancouver
Thompson, Phyllis P.	Cranbrook
Timmins, Talosa V.	Vancouver
Tingley, Rettie	Vancouver
Tipping, Vera L.	Vancouver
Toll, Harold J.	New Westminster
Tough, William J.	Vancouver
Tourtellotte, Lois M.	Vancouver
Trites, Helen L.	Vancouver
Turin, Alexandra	Vancouver
Turner, George H. R.	Vancouver
Utsumi, Kiku	Mission City
Van Allen, Harry M.	Vancouver
Vance, Earl J.	Vancouver
Vandervoort, Walter D.	Vancouver
Vollum, Clarence	Vancouver
Wakely, C. Verna L.	Vancouver
Wallace, William D.	Fernie
Ward, Gordon O.	Vancouver
Webb, Kathleen S.	Heffley Creek
Wentworth, Charles F.	Brookline, Mass.
Westmacott, Tom R.	Vancouver
Whalen, John J.	Vancouver
Wheeler, Marjorie A.	Vancouver
Whyte, Jean	Vancouver

Name.	*Home Address.*
Wilders, Donald C. L.	Vancouver
Wilders, Isobel	Vancouver
Wiles, Gordon A.	Burnaby
Wilson, F. Lloyd	Vancouver
Wilson, James R.	Vancouver
Wilson, John A.	Vancouver
Wilson, W. George	Vancouver
Wolfe, Paul B.	Vancouver
Wong, W. Yin	Vancouver
Woodbury, Charles P.	Vancouver
Wright, Vernon S.	Vancouver
Wylie, Dorothy E.	Vancouver
Wyness, Enid S.	Vancouver
Yasuda, Toyoyoshi	Vancouver
Yip, K. Dock	Vancouver
Young, Alfred B.	Burnaby
Young, John T.	Vancouver
Young, William D.	Vancouver
Zarrelli, Elvira E.	Vancouver

Conditioned

Bachman, Florence H.	Vancouver
Baird, Electa L.	Vancouver
Berry, Jean B.	Vancouver
Burns, T. Michael	Calgary, Alta.
Cameron, William F.	Vancouver
Cooke, Jean E. M.	Vancouver
Cowlard, Reginald L.	Vancouver
Coyle, Craig M.	Vancouver
Cutler, Genevieve K.	Vancouver
Dorchester, Frank D. M.	Altamont
Durkin, Peter J.	Nakusp
Evans, Alfred A.	Vancouver
Fleming, Elva Z.	Vancouver
Ford, Graydon	Vancouver
Freedman, Harry C.	Vancouver
Gill, Arthur T.	Cranbrook
Grant, Hugh	New Westminster
Harris, Thomas O. D.	New Denver
Hulbert, Ethel M.	Sardis
Hussey, Violet M.	Vancouver
Jamieson, Grace A.	Vancouver
Lee, Evelyn G.	Vancouver
Mason, John A.	Vancouver
Morrow, Alice I.	Vancouver
McCallum, William M.	Vancouver
McDonald, James T.	Vancouver
McIntyre, Theodore J.	Vancouver
McLaughlin, Nancy A. R.	Vancouver
MacLean, Angus H.	Vancouver
McLean, Edwin G.	Edmonton, Alta.
McLellan, Alice E.	Vancouver
MacNaughton, Ewart R.	Oliver
Oliver, Jean R.	Vancouver
Robertson, Douglas K.	Vancouver

Name.	*Home Address.*
Ross, Walter	Dewdney
Selder, William J.	Vancouver
Shelly, Margaret	Vancouver
Shortreed, Elva E. M.	New Westminster
Topper, E. Mabel	Mission City
Ullock, John	Vancouver
Wilson, C. Margaret A.	Vancouver

SECOND YEAR

Full Undergraduates

Acorn, Jessie I.	Vancouver
Alexander, Kenneth F.	Fernie
Archibald, Reginald M.	Vancouver
Ashby, Barbara M.	Vancouver
Baker, Maurice G.	Vancouver
Baker, Russell K.	Vancouver
Ballentine, George	Vancouver
Ballentine, Helen M.	Vancouver
Barr, Alice J.	Vancouver
Beall, Geoffrey	New Westminster
Bedford, Margaret M.	Salmon Arm
Bell, Helen V.	Hollyburn
Bennett, Ruth M.	Vancouver
Birch, Robert H.	New Westminster
Black, Mildred M. C.	Vancouver
Bolton, Lorraine D.	Vancouver
Boothroyd, Gordon G.	Surrey
Bowen, Marjorie M.	Vancouver
Bowman, E. Annie	Vernon
Brazier, Charles W.	Vernon
Brennan, W. Earle	Vancouver
Bridgman, Erica M.	North Vancouver
Broatch, Andrew L.	Calgary, Alta.
Bruce, Winnie M.	Vancouver
Burch, Arthur F.	Vancouver
Bush, Dora M.	Chilliwack
Campbell, Marion I.	Abbotsford
Campbell, Mary E.	Vancouver
Chalmers, Thomas M.	Burnaby
Chapman, Maxine F.	Trail
Chappell, John G.	Vancouver
Clayton, John N. C.	Vancouver
Coates, A. Carol	Vancouver
Colledge, M. Elaine	Vancouver
Collier, Sally I.	Chilliwack
Conlan, John R.	Vancouver
Connor, Earle C.	Vancouver
Coope, Margaret	Berkeley, Calif.
Cornish, Naomi H.	Hollyburn
Cornwall, George L.	Vancouver
Crawford, Muriel M.	Stewart
Creighton, George L. D.	Vancouver
Crosby, Helen J.	Vancouver
Crowe, M. Loraine	Vancouver

Name	*Home Address*
Cupit, Ernest H.	Vancouver
Curtis, James D.	North Vancouver
Daniels, Dorothy L.	Sardis
Davis, Beatrice E.	Vancouver
Dawley, George E.	Victoria
Dee, Isabel M.	Victoria
Dewar, Dorothy G.	Revelstoke
Dickinson, Farley B.	Chilliwack
Dow, Marion E.	Vancouver
Dowler, David R.	Vancouver
Downing, Dorothy M.	Vancouver
Duckering, Margaret G.	Vancouver
Duncan, Campbell	Vancouver
Dunn, James	New Westminster
Edwards, Howard I.	Vancouver
Elliott, E. N. Rhodes	West Summerland
Fawcett, Fairvan C.	Vancouver
Fenner, J. May	Vancouver
Fish, C. Morrison	Langley Prairie
Fisher, John F.	Eburne
Freeman, Harry	Vancouver
Garesché, Cecilia M.	Victoria
Garratt, H. Jean	Vancouver
Gaudin, Melvin L.	New Westminster
Gilbert, Ernest W.	Ladner
Gilley, H. Frances	New Westminster
Goard, Dean H.	Vancouver
Grant, Jessie M. C.	Vancouver
Grant, Marion R.	Vancouver
Gray, Kenneth R.	Vancouver
Gray, Roland C. V.	New Westminster
Grossman, Peter F.	Chilliwack
Hale, John S.	North Vancouver
Hall, Gordon W.	Kelowna
Hallonquist, Frank W.	New Westminster
Hanes, F. E. Evelyn	North Vancouver
Hardy, Ella	New Westminster
Hardy, Walter T.	Vancouver
Harris, Irene M.	West Summerland
Hart, Harold W.	Vancouver
Hartley, Basil S. S.	Vancouver
Harvey G. Lloyd	Vancouver
Harvie, M. Muriel	Vancouver
Hay, Letitia A.	Vancouver
Helliwell, Hilary R. B.	Vancouver
Henderson, E. Ruth	Vancouver
Henderson, Jean A. B.	Vancouver
Hickman, W. Henry	Lavington
Hill, Dorothy R.	Vancouver
Holland, Virginia	Vancouver
Holliday, Elizabeth M.	Armstrong
Holloway, M. Emily	Vancouver
Holmes, A. Constance	Vancouver
Horn, Howard J.	Vancouver
Horton, Ruby J.	Vancouver

Name.	*Home Address.*
How, Lilian K.	Vancouver
Hughes, Norah L.	Abbotsford
Inglis, Hugh F.	Gibson's Landing
Ingram, Dorothy H.	North Vancouver
Ireland, Elizabeth B. W.	Vancouver
Irvine, Margaret C.	New Westminster
Irvine, Margaret S.	Fernie
Itter, Stuart	Vancouver
Jenkins, Ernest A.	Vancouver
Johnsen, Clara E.	Vancouver
Johnson, Daniel E.	Ocean Falls
Johnson, Thelma H. C.	Vancouver
Johnston, A. Elizabeth	Vancouver
Keeling, F. Temple	New Westminster
Keillor, Dorothy E.	Vancouver
Kelly, Eric	Vancouver
Kennett, William T. E.	Vancouver
Kidd, Kathleen M.	Burnaby
King, Everett H.	Shaw P. O.
Kinninmont, Russell J.	North Vancouver
Kirk, Ada W.	Vancouver
Kirk, Marjorie S.	Vancouver
Kolle, William J.	Vancouver
Langridge, Marion H.	Vancouver
Lauriente, Miranda	Trail
Leach, Jean F. M.	Vancouver
Leslie, Jean O.	Los Angeles, Calif.
Linfield, Arthur G.	Vancouver
Little, Thomas	Victoria
Loch, Margaret S.	Vancouver
Logan, Margaret C.	Vancouver
Madigan, Stephen E.	Vancouver
Mahon, Thelma H.	Vancouver
Malcolm, Olive M. C.	Vancouver
Marchbank, Wellwood A.	Errington
Mathers, Alice S.	Vancouver
Maxwell, Angus A.	Port Hammond
Menten, R. Claire	New Westminster
Meredith, J. Laurence R.	Vancouver
Millerd, Muriel F.	Vancouver
Mitchell, Alexander S.	Prince Rupert
Mitchell, Robert F.	Rossland
Morell, Douglas L.	Vancouver
Morgan, J. George	Vancouver
Morrison, Clarke V.	Vancouver
Mulholland, Georgina R.	Vancouver
Muncey, Neenah M.	Vancouver
Munn, R. Russell	Summerland
McCallum, Malcolm C.	Vancouver
McDiarmid, Donald S.	Trail
Macdonald, Douglas	North Vancouver
MacDonald, Helen L.	Vancouver
MacDonald, Margaret I.	Vancouver
McDowell, Ethel F.	Vancouver
McGougan, Jean	North Vancouver

Name.	*Home Address.*
McGregor, Malcolm F.	Vancouver
MacIntosh, Jean	Vancouver
McKay, Georgie A.	Vancouver
McKay, Marjorie D.	Upper Lynn
McKellar, Andrew	Vancouver
McKenzie, Betty	Vancouver
McKeown, Olive E.	New Westminster
McLean, Margaret F.	Prince Rupert
McMillan, Donald C.	Vancouver
McMorris, May A.	Vancouver
McNeill, Douglas F.	Vancouver
McQuarrie, Mary F. C.	New Westminster
Neelands, Rosella L.	Vancouver
Negoro, Tsuyuko	Vancouver
Nichols, W. Kimball	Prince George
O'Hagan, K. Eileen	Vancouver
Oldfield, Frederick A.	Vancouver
Palmer, V. Elvira	Vancouver
Paul, G. Harold G.	Vancouver
Petrak, Milshie	Vancouver
Phillips, Paul	Vancouver
Pilkington, Roderick A.	Vancouver
Plummer, Theodore S.	Vancouver
Poole, Irene A.	Vancouver
Pound, Dorothy R.	Vancouver
Pretty, J. Malcolm	Vancouver
Rankin, Emma A.	Vancouver
Rees, Lloyd E.	New Westminster
Reynolds, Frances E.	Vancouver
Richards, Margaret E.	Vancouver
Riggs, Margaret I.	Vancouver
Risk, Sydney J.	Vancouver
Ruark, Ruth C.	North Bend
Salter, Jean R. G.	Vancouver
Sanderson, Thomas J.	Burnaby
Savage, Dorothy E.	Ladner
Savage, Edna M.	Vancouver
Savage, Gertrude M.	Vancouver
Saville, John W.	Vancouver
Scott, Eileen K.	Salmon Arm
Sedgwick, Harvey J.	Vancouver
Siddall, Kathleen Y.	Ladner
Sinclair, Isabelle T.	Vancouver
Smith, Donald S.	Vancouver
Smith, W. George	Vancouver
Solloway, Kathleen P.	Vancouver
Sproule, Marion A.	Vancouver
Stedman, Cecil K.	Vancouver
Stevenson, John S.	Vancouver
Stewart, John M.	Vancouver
Stinson, Verna C.	Vancouver
Sutherland, Helen E.	Vancouver
Thomas, Olwen E.	Vancouver
Thorlakson, S. Edward	Vernon
Tobin, Bernard	Vancouver

Name.	*Home Address.*
Todd, Lois	Vancouver
Truax, Clarence W.	Grand Forks
Tullett, Alice V.	Vancouver
Underhill, H. Fabian	Burnaby
Urquhart, Catherine M.	Rossland
Ward, Kathleen J.	Vancouver
Webber, G. Cuthbert	Vancouver
Whipple, Annie A.	Vancouver
White, Harry E.	Vancouver
Whiteford, Florence E.	Nicola
Whiteside, Elizabeth M.	New Westminster
Whittaker, William R.	Kaslo
Wilson, Arthur R.	Belmont, N. S.
Wilson, Muriel T.	Vancouver
Wilson, Roger	Victoria
Wilson, William M. G.	Vancouver
Winch, Eileen	New Westminster
Wood, B. Montgomery	Vancouver
Woodworth, Jean D.	Vancouver
Wright, Basil O.	West Summerland
Wright, Margaret J.	Vancouver
Young, Allan C.	Vancouver
Young, Doris I.	Vancouver
Young, Eileen F. M.	Revelstoke

Conditioned

Balkwill, Mildred C.	Vancouver
Benson, Thelma I.	Vancouver
Bolton, Dorothy G.	Vancouver
Brock, David H.	Vancouver
Campbell, Cherry	Stewart
Carl, G. Clifford	Vancouver
Carswell, Ernest R.	Vancouver
Chapman, Robert J.	New Westminster
Clark, Gordon A.	Port Moody
Coleman, John U.	Vancouver
Coles, Albert E.	Vancouver
Creelman, Arthur G.	North Vancouver
Cull, F. Edna	Vancouver
Etherington, Dorothy E.	Vancouver
Fleck, William J.	New Westminster
Gaitskell, C. Dudley	Thetis Island
Gerry, Edith M.	Kamloops
Gordon, J. Eleanor C.	Vancouver
Henderson, Percy H.	Vancouver
Humphreys, Alfred N.	Rossland
King, Ellis G.	Vancouver
Kirby, W. J. Cameron	Rocky Mountain House, Alberta
Kostman, Harry L.	Vancouver
Litch, John B.	Vancouver
Lyle, L. Margaret	Chilliwack
Manning, Cyril M.	Vancouver
Moss, Joseph M.	New Westminster
McAfee, Jessie	Georgetown Mills

Name.	*Home Address.*
McCormack, D. Gordon	New Westminster
McCreery, Frances E.	Vancouver
McIntosh, Veronica A.	Vancouver
McKee, M. Ruth	Vancouver
MacKenzie, Helen J.	Vancouver
McMullan, D. Lawrence	Salmon Arm
McRae, Donalda E.	Vancouver
McSweyn, Edward M. L.	Vancouver
Parker, John A.	Vancouver
Paulding, Harold	New Westminster
Price, Reginald C.	New Westminster
Reece, Frances C.	Vancouver
Roberts, Berniece M.	Vancouver
Robertson, Barbara M.	Vancouver
Robson, Lawrence A.	New Westminster
Shore, Julius	Vancouver
Silbernagel, Benedict L.	Vancouver
Solly, Nicolas O.	West Summerland
Stewart, James D.	Vancouver
St. Pierre, Ella M.	Vancouver
Taylor, Murray N.	Kelowna
Turner, Ronald A.	Nanaimo
Walker, Kathleen	Vancouver
White, Oscar A.	New Westminster
White, William H.	Penticton
Wong, Wing Yuen	Vancouver
Woodward, Geoffrey G.	Vancouver

THIRD YEAR

Full Undergraduates

Abramson, Nicolas H.	Vancouver
Anderson, O. Elmer	Burnaby
Anderson, Robert N.	Rossland
Andrew, Jean E.	Vancouver
Arbuthnot, Eva V.	Eburne
Armstrong, Shiela M.	Vancouver
Bailey, Jean G. K.	Vancouver
Baker, H. Gordon	Vancouver
Bell, Frances E.	Victoria
Berto, Thomas V.	Vancouver
Billings, John M.	Vancouver
Boggs, Teddy R.	Vancouver
Bowen, Dorothy F.	Vancouver
Bowes, Muriel M.	Victoria
Burdett, Mildred E.	Kimberley
Butler, Francis A.	New Westminster
Carter, Mary J.	Vancouver
Chandler, Thomas A.	Vancouver
Chilton, Eleanor G.	Hollyburn
Christie, Daisy	Vancouver
Christison, May H.	Shawnigan Lake
Clark, Mary E.	Vancouver
Clark, Norman	Cassidy
Cliff, Evelyn E. S.	Vancouver

Name	*Home Address*
Cole, Irene R.	Vancouver
Colledge, Thelma M.	Vancouver
Crompton, Doris I.	Vancouver
Crossman, Margaret L.	New Westminster
Cruickshank, Dorothy M.	Victoria
Cruise, M. Evelyn G.	Vancouver
Daniels, H. Muriel E.	Vancouver
Dee, Ethelwyn M.	Victoria
DesBrisay, Maurice P.	Vancouver
Dobson, Lily C.	Vancouver
Douglas, Elizabeth M.	Vancouver
Dow, Elizabeth	Vancouver
Dowler, Jean M.	Vancouver
Downes, Dorothy H.	Victoria
Duffell, Stanley	Vancouver
Eagleson, Charlotte E.	Vancouver
Eddy, Esther	Vancouver
Edwards, Marjorie L.	Vancouver
England, Arthur W.	Nelson
Farris, Ralph K.	Vancouver
Fisher, M. Jean	Ladner
Fleming, Richard H.	Victoria
Foote, W. Rodgers	Kamloops
Fowler, Frances L.	Riondel
Fraser, James A.	Vancouver
Freeman, Phyllis M.	Vernon
Freshwater, Norman G.	Vancouver
Fuller, Evelyn	Vancouver
Fullerton, Harold W.	Vancouver
Genser, Joseph H.	Vancouver
Gillespie, F. Margaret	Vancouver
Glasgow, Mary Helen	Salmon Arm
Gold, Norman L.	Vancouver
Gourlay, Margaret T.	Victoria
Grant, Margaret I.	Vancouver
Green, Kathleen B.	Vancouver
Greenlees, Margaret M.	Vancouver
Groves, Elizabeth A.	Vancouver
Hall, Winifred H.	Vancouver
Harrell, Milton M.	Vancouver
Hart, Josephine F. L.	Victoria
Hartness, Dunmail H.	Vancouver
Healy, Eleanor J.	Vancouver
Helmer, Dorothy E.	Vancouver
Holroyd, Nora M.	Vancouver
Honeyford, C. Douglas	Vancouver
Horne, James W.	Victoria
Horton, Edward W.	Vancouver
Hull, Ralph	Mt. Vernon, Wash.
Hyndman, Ernest E.	Vancouver
Jackson, Elaine M.	Kamloops
Jackson, Lylian G.	Cranbrook
Jackson, Suzanne C.	Vancouver
Jenkins, N. Joyce	New Westminster
Johns, Harold P.	Victoria

Name.	*Home Address.*
Johnson, Margaret C.	Vancouver
Kajiyama, Toshio	Cumberland
Keenlyside, Robert W.	Vancouver
Keyserling, Robert H.	Vancouver
Killam, Elizabeth	Vancouver
King, Harold F. A.	Vancouver
King, Norma	Vancouver
Kirk, Thomas D.	Vancouver
Korenaga, George J.	Vancouver
Laing, Lionel H.	Victoria
Lamb, Robert S.	Vancouver
Lang, Barbara	Trail
Madeley, E. Frances	Vancouver
Marshall, H. Borden	New Westminster
Marshall, Hilda A. J.	Victoria
Mathers, Lillian	Vancouver
Maxwell, Duncan A.	Vancouver
Mellish, Ellen F.	Vancouver
Mennie, Jessie R.	Burnaby
Millar, Helen H.	Field
Moffat, Margaret	Vancouver
More, Kenneth R.	Vancouver
Morsh, Joseph E.	Peachland
Mouat, Olivia D.	Vancouver
Murphy, Denis	Vancouver
Murphy, Paul	Vancouver
Murray, John V.	Nanaimo
Macdonald, David W.	Vancouver
McDonald, Ileen M.	Vancouver
McInnes, M. J. Vera	North Bulkley
MacKay, Ronald D.	Vancouver
McLuckie, Alan J.	Vancouver
McPhail, Murchie K.	New Westminster
McPhee, Muriel I.	Courtenay
McRae, Alida B.	Vancouver
McTavish, Constance C.	Vancouver
Nicholson, Howard G.	Vancouver
Ormsby, Margaret A.	Vernon
Oswald, Drummond W.	New Westminster
Owen-Jones, E. E. Doanie	Vancouver
Parr, A. Paul	New Westminster
Partridge, Earl D.	Cumberland
Patterson, Dorothy J.	Vancouver
Pearce, Denis W.	Vancouver
Poole, Albert R.	Port Hammond
Rae, George G.	Vancouver
Reid, John S.	New Westminster
Ricketts, Mary	Vancouver
Riggs, A. Eleanor C.	Vancouver
Robinson, Audrey	Vancouver
Rogers, Donald D. M.	Sullivan
Rouvier, Frank E.	Nanaimo
Rowland, Greville J.	Vancouver
Ryall, Grace A.	Mt. Tolmie
Sansum, Victor H.	Vancouver

Name	*Home Address*
Simpkins, E. Grace	Vancouver
Smith, Helen E.	Eburne
Sparks, Jack	Vancouver
Sparling, J. Frederick	Port Hammond
Stangland, Louella M.	New Westminster
Starr, Jean C.	Vancouver
Steele, David A.	Vancouver
Sutherland, Helen M.	Victoria
Sutton, Arthur	Vancouver
Switzer, John G.	North Vancouver
Tait, Claudine P.	North Vancouver
Tamura, Miyoko	Port Haney
Taylor, James A.	Cranbrook
Tervo, Winnifred	Victoria
Thurston, Kenneth T.	Port Moody
Todd, Alan L.	Vancouver
Todd, John R.	Vancouver
Tolmie, J. Ross	Vancouver
Trent, George D. J.	Vancouver
Unsworth, Edith	Vancouver
Watts, Mary H.	Vernon
Whitaker, A. Geraldine	Vancouver
White, Alice M. G.	Vancouver
Wilson, Isabel M.	Vancouver
Wilson, Reginald A.	Vancouver
Wilson, Ruth	Vancouver
Worthington, Iola A.	Victoria
York, Gladys	Abbotsford
Young, Maurice T.	New Westminster

Conditioned

Adam, Jean H.	Nanaimo
Bailey, Dora M.	Parksville
Barton, Mary K.	Vancouver
Brealey, Daisy J.	Hollyburn
Brooke, Melville C.	Steveston
Carlaw, D. Jeanne	Vancouver
Carrick, R. Bruce	Vancouver
Caufield, Rose F.	Fernie
Davis, A. Iola	Vancouver
Erickson, Evart A.	Silverton
Garner, Frederick O. R.	Duncan
Gordon, Roth G.	Prince Rupert
Griffis, Robert S.	Vancouver
Hulbert, John E. B.	Sardis
Kay, William	Vancouver
Knott, W. Widnell D.	Victoria
Kosowski, Mary	Vancouver
Lanning, Marjorie G.	Vancouver
Lloyd-Jones, D. Alan	Kelowna
Loomer, John C.	Hedley
Mahon, Harold S.	Vancouver
Maikawa, Fred H.	Vancouver
Manson, James N.	Vancouver
Mathers, M. Kathleen L.	Burnaby Lake

Name	*Home Address*
Moloney, Mamie P.	Vancouver
McSweyn, Edith L.	Vancouver
Oulton, Reta	Penticton
Pendray, Gladys	Vancouver
Plommer, J. Wilfred	Vancouver
Shields, Gordon J.	Vancouver
Stewart, Neil A.	Vancouver
Teetzel, Grace E.	Vancouver
Waterfield, Jean K. M.	Nakusp

FOURTH YEAR

Full Undergraduates

Allan, Donald S.	Vancouver
Allan, Kathleen	Vancouver
Baird, Kathleen P.	Vancouver
Bamber, Irene	Vancouver
Barnett, Thomas P.	Vancouver
Barr, Bruce A.	Hatzic
Beattie, Arthur H.	Vancouver
Berry, Ethel	Vancouver
Brooks, Leslie D. G.	Vancouver
Brown, H. Leslie	Vancouver
Brown, J. Everett	Victoria
Brown, William M.	Vancouver
Bryson, Lawrence E.	New Westminster
Buckley, Laurence M.	Vancouver
Bulger, Russell J.	Prince Rupert
Bull, Ernest B.	Vancouver
Burritt, Flora	Vancouver
Burton, Helen J. M.	Vancouver
Cameron, Eugene F.	Vancouver
Carter, Elizabeth B.	Vancouver
Clarke, Sidney V.	Vancouver
Cole, Mary R.	Vancouver
Coles, Emma A.	Salmon Arm
Corlette, Anita M.	Vancouver
Craig, L. Margaret	Vancouver
Currie, John H.	Vancouver
Davidson, George F.	New Westminster
Davies, Dermot	Vancouver
DeCew, Dorothy M.	Vancouver
Delbridge, Clayton	Vancouver
Donley, Wilfred G.	New Westminster
Douglass, Isobel G.	Vancouver
Dyer, Eleanor G.	Vancouver
Eaton, G. Howard	Vancouver
Elliott, Philip L.	Vancouver
Estey, Margaret J.	Vancouver
Farris, Donald	Vancouver
Frith, Mary K.	Powell River
Gammie, Margaret H.	Vancouver
Gardiner, Pauline V.	Victoria
Gibbs, Enid A.	Vancouver
Gough, John	Victoria

Name.	*Home Address.*
Gould, Charles E. G.	Vancouver
Greig, Margaret L.	Vancouver
Gwyer, Patricia E. K.	Penticton
Haddock, Nora	Vancouver
Hallonquist, Earland G.	New Westminster
Hatfield, Harley R.	Penticton
Hedley, Isabel B.	Victoria
Hendry, Harry A.	Dundas, Ont.
Heritage, Olive W.	Victoria
Hill, Vernon R.	Vancouver
Hillas, Gertrude	Vancouver
Hipperson, Dorothy C.	Nelson
Hogg, Robert W.	Winnipeg, Man.
Hornsby, Ruth M.	Prince George
How, H. Jessie	Vancouver
Hudson, Vivienne G.	Vancouver
Hurst, Flora E.	Vancouver
Jackson, W. Allin	Vancouver
James, Ralph D.	Vancouver
Johnson, Juliet P.	West Vancouver
Kask, John L.	Vancouver
Kelly, Gordon E.	Silverton
Kendall, Elizabeth V.	Vancouver
Kennedy, Dorothy N.	Vancouver
Kerlin, Donald E.	Vancouver
Kerr, Ruby E.	Vancouver
Kilpatrick, Heather	Vancouver
Lamb, Helen A.	Vancouver
Lane, Joseph H.	Nanaimo
Lane, Mary E.	New Westminster
Law, Margaret J.	Sidney
Lee, Gerald H.	Bonnington Falls
Leeming, H. Hope	Victoria
Logie, Russell M.	Vancouver
Lowe, Miriam S.	Sidney
Lucas, Verna Z.	Vancouver
Lyons, Hermiena M.	Penticton
Mann, Doris E.	New Westminster
Marshall, M. Alexander	West Summerland
Masterson, William J.	New Westminster
Matheson, Helen D.	Vancouver
Matheson, Jean U.	New Westminster
Matheson, Priscilla L.	Penticton
Mattice, Clarence R.	Keremeos
Mellor, Margaret B.	Victoria
Milley, Elva	Vancouver
Mitchell, H. Inez	Victoria
Munro, Ferdinand L.	Vancouver
Murphy, Lorna M.	Vancouver
Musgrave, Gwendolen M.	Cowichan Station
McAlpine, Gladys C.	North Vancouver
McBain, Wilberta J.	Vancouver
McCharles, John A.	Vancouver
McDonald, Louise D.	Vancouver
MacDonald, Margaret C.	Vancouver

Name.	*Home Address.*
MacDonald, Norman D.	New Westminster
Macdonald, Ruth E.	Vancouver
McFarlane, Meredith M.	Vancouver
McGill, Esther M.	Vancouver
McGugan, Donald M.	Vancouver
MacInnes, W. Edmund	Vancouver
MacIver, Dolina C.	Vancouver
MacKay, Muriel A.	Vancouver
McLaughlin, Grace V.	Vancouver
Maclean, Edwin U.	Vancouver
MacLean, J. Beattie	Vancouver
McLennan, Edna C.	Vancouver
McLuckie, Kathleen L.	Vancouver
McMillan, John A.	Vancouver
McQuarrie, George R.	New Westminster
Macqueen, M. Evelyn	Victoria
Neill, Ruth A.	Vancouver
Nicol, Grace A. M.	Vancouver
Noble, Kenneth F.	Vancouver
Noble, Robertson D.	Vancouver
Nordberg, Elsie	New Westminster
Northey, Helen G.	Vancouver
Oberg, Kalervo	Tofino
O'Neil, Margaret V.	Vancouver
Osterhout, Victor H.	Vancouver
Paterson, Ethylwyn A.	Vancouver
Patrick, W. Beverly	Vancouver
Petrie, Robert M.	Victoria
Phillips, R. Gaundry	Vancouver
Pilkington, Francis C.	Vancouver
Pollock, Mary E.	Vancouver
Poole, F. Abner	Port Hammond
Ralph, Kathleen M.	Vancouver
Reid, Marjorie S.	Vancouver
Reid, William T.	Vancouver
Robertson, Muriel A.	Vancouver
Robson, Annie O.	Vancouver
Ross, Lucy K.	Vancouver
Salisbury, Dorothy E.	Vancouver
Simpson, Samuel L.	Massett
Skelton, Jean W.	Victoria
Smith, Margaret S.	Vancouver
Spencer, Myrtle A.	Vancouver
Stephens, Harriette G.	Vancouver
Stevenson, Alan M.	North Vancouver
Stewart, C. Jean	Vancouver
Sugarman, Howard W.	Vancouver
Swanson, Gladys E.	Vancouver
Swanson, John D.	Kamloops
Swanson, Marion L.	Kimberley
Taylor, Annie	New Westminster
Taylor, Grace E.	Vancouver
Taylor, William H.	Vancouver
Telford, Douglas	Vancouver
Thompson, Alfreda E.	Vancouver

Name.	*Home Address.*
Thompson, G. Hester	Cranbrook
Thomson, Margaret M.	Vancouver
Thomson, William E.	Vancouver
Todd, Duncan K.	Vancouver
Tolmie, M. K. Jean	Vancouver
Tufts, Evelyn E.	Vancouver
Vosper, V. Lorine	Vancouver
Waddington, Guy	Victoria
Washington, Norma R.	Vancouver
Watson, Neil M.	Vancouver
Weaver, Alice L.	Vancouver
White, Helen A.	Vancouver
Whiteley, Albert S.	Victoria
Williams, John H.	Kelowna
Williamson, Marien A.	Vancouver
Wilson, Jean K.	Cranbrook
Wodlinger, David B.	Vancouver
Woods, Doris J.	Vancouver
Wright, Robert H.	Vancouver
Yerburgh, Richard E. M.	Victoria

Conditioned

Bride, William W.	West Vancouver
Crawford, Alan M.	Vancouver
Graham, Mona N.	Vancouver
Litch, Edith S.	Vancouver
McKay, Dorothy C.	New Westminster
McLennan, Reid L.	Prince Rupert
McPhee, Angus L.	Vancouver
McWilliams, Harold G.	Vancouver
Newall, Nathan	Vancouver
Ruttan, Beatrice M.	Oak Bay
Scouse, Nancy A. H.	Steveston
Sostad, Odin S.	Vancouver
Thompson, J. Harold	Vancouver

PARTIAL

Abraham, Francis J.	Vancouver
Addyman, Charles	Vancouver
Alexander, Charles F.	Vancouver
Anders, Charles H.	Vancouver
Bains, Chanan Singh	Punjab, India
Barratt, Philip S.	Vancouver
Brown, Robert C.	North Vancouver
Bryson, Margaret A.	Ashcroft
Campbell, Harold L.	Victoria
Clegg, E. Beatrix	Vancouver
Crisp, Adam	England
Dick, Margaret B.	Vancouver
Duroff, Antonin N.	Vancouver
Edwards, Byron	Vancouver
Fournier, Frank L.	Vancouver
Gilmour, Hazel S.	Vancouver
Gorelkina, Ida	Los Angeles, Cal.
Harkness, John A. C.	Burnaby

Name.	*Home Address.*
Harrison, William E.	Victoria
Heelas, John C.	Vancouver
Ikuta, Katsutaro	Vancouver
Ivanitsky, Oleg N.	Vancouver
Keenleyside, E. W. Irvine	Vancouver
Leach, D. John	Vancouver
Lucas, Richard B.	Vancouver
Moses, Robert	Vancouver
MacGregor, Flora	Vancouver
Maclean, Donald N.	Vancouver
MacRae, Nellie M.	Hollyburn
Rendell, Victoria J.	Dawson, Y. T.
Robins, Frederick J.	New Westminster
Rogers, Philip T.	Vancouver
Sanders, Frederick H.	Esquimalt
Turner, David B.	Edmonton, Alta.
Waterman, Mary	Vancouver
Weir, Elizabeth	Vancouver
Werts, F. Rex	New Westminster
Winther, Kurt	Copenhagen, Denmark
Yashanoff, Boris A.	Vancouver

FACULTY OF APPLIED SCIENCE

FIRST YEAR

Full Undergraduates

Aalbersberg, Willem J. G.	Vancouver
Alpen, Robert R.	Vancouver
Andersen, George C.	Vancouver
Anderson, Roderick V.	Vancouver
Bain, Kenneth M.	Vancouver
Barnes, Elmer G.	Vancouver
Barratt, Herbert J.	Vancouver
Bews, Kenneth F.	New Westminster
Black, Ross M.	Kelowna
Brookes, Norman F.	Ladner
Buckland, Francis C.	Vancouver
Callan, Lawrence A.	Vancouver
Camozzi, R. Oliver	Bellingham, Wash.
Carey, Davis M.	Victoria
Carre, Stephen	Vancouver
Christie, Thomas L.	Victoria
Conklin, J. S. Armit	Vancouver
Crawford, Harold W.	Victoria
Cross, Frank	New Westminster
Cruise, Kenneth A.	Vancouver
Cumming, John E.	Saskatoon, Sask.
Dirom, Gavin A.	Duncan
Dobson, W. Kenneth A.	Oyama
Dunham, Charles B.	Vancouver
Estabrook, Alan D.	Vancouver
Evans, George E.	Wellington
Fraser, Stewart T.	Vancouver
Golby, Humphrey	Victoria
Green, J. Lloyd	New Westminster

Name.	*Home Address.*
Green, Maxwell L.	New Westminster
Gustafson, Y. Eric	Penticton
Haggerty, Wilmer P.	Vancouver
Halet, Robert A.	Victoria
Hall, J. Crofton	Nelson
Hall, William	Victoria
Halley, John K.	North Salt Spring Is.
Hamilton, Rognvald T.	Vancouver
Harris, Malcolm A. A.	Cranbrook
Hemsworth, Frederic J.	Vancouver
Henderson, Arnold E.	Vancouver
Jackson, Roscoe A.	West Vancouver
Johnson, James R.	Revelstoke
Kemp, William E. G.	Northfield
Kershaw, Ernest M.	Ladner
Klinck, Ronald W.	Vancouver
Latta, William S. B.	Victoria
Legg, Maxwell	New Westminster
LePage, David H.	Victoria
Loggie, John M.	North Vancouver
Lovitt, Edward H.	Vancouver
Madsen, Christy	Vancouver
Martin, Kenneth W.	Vancouver
Mason, Ralph P.	Dundarave
Matheson, William M.	Vancouver
Merrett, Edward J.	Victoria
Mitchell, James A.	Wellington
Monroe, J. Lewis	Vancouver
Moscrop, Harold J.	Vancouver
Moulder, Leslie J.	Kamloops
Munn, Thomas H.	Vancouver
Murray, Walter A.	Vancouver
McAllister, Kenneth	Victoria
McCallum, John L. G.	Grand Forks
McDowall, Vere Y.	Vernon
MacLaurin, Donald J.	Victoria
Newberry, John D.	Vancouver
Nixon, George R. W.	Victoria
Patterson, Albert H.	Britannia Beach
Plant, John L.	Victoria
Player, Elliott G. N.	Victoria
Read, Verne	Erie
Reid, Harold A.	Vancouver
Rudkin, Gerard H.	Vancouver
Saiga, Sakaru	Vancouver
Sanderson, Adrian B.	Vancouver
Scott, Norman V.	Vancouver
Shayler, Stanley V.	Vancouver
Sidhu, Nahar Singh	Punjab, India
Smith, Irving C.	Vancouver
Smith, James W.	New Denver
Smith, William W.	Ladner
Speck, S. Lloyd	New Westminster
Stafford, David E.	Headquarters
Swannell, Lorne F.	Victoria
Thomas, Melvin A	Vancouver

Name	*Home Address*
Trant, Geoffrey A.	Vancouver
Tull, E. Harold	Courtenay
Watson, Howard D.	Vancouver
Webster, Alan	Burnaby
Williams, Lloyd	Vancouver
Wood, Wellesley A.	Victoria
Yolland, Clifford A. C.	Summerland

Conditioned

Baldwin, L. Ambris	Medicine Hat, Alta.
Baynes, George E.	Vancouver
Bruce, Stanley G.	Vancouver
Cameron, Cecil J.	Calgary, Alta.
Cameron, James E.	Vancouver
Cameron, W. Manly	Vancouver
Campbell, J. Kenneth	Prince George
Campbell, Robert K.	Grand Forks
Crawford, Elmer J.	Oyama
Fairley, John J.	Vancouver
Green, Andrew	North Vancouver
Inouye, Kuramitsu	Vancouver
Kuwabara, Hiro	Vancouver
Miles, Leonard C.	Vancouver
McKenzie, Ralph B.	Lethbridge, Alta.
Nesbitt, M. Cullum	Victoria
Ratledge, Leo J.	Quesnel
Saunders, Milton E.	Vancouver
Schultz, Charles D.	North Vancouver
Stewart, Kenny N.	Fernie
Stoddart, James	Vancouver
Symons, Harold E.	Vancouver
Thorne, Henry L.	Calgary, Alta.
Watson, G. Fraser S.	Whitehorse, Y. T.
Wilson, Norman O.	Vancouver

SECOND YEAR

Full Undergraduates

Abernethy, Emerson	Vancouver
Adam, Ian M.	Vancouver
Craster, James E.	Vernon
Cross, Gordon P.	Lynn Creek
Dalton, John	North Vancouver
Deans, Charles W.	Victoria
Foerster, Fred S.	Vancouver
Fraser, W. A. Schubert	Victoria
Graham, Roy	Langley Prairie
Hadwin, Thomas F.	Hollyburn
Harrower, George A.	New Westminster
Hay, Edward C.	Vancouver
Hedley, Mathew S.	Vancouver
Hill, Henry L.	Vancouver
Holland, Stuart S.	Vancouver
Leek, Walter E.	Vancouver
Lewis, Frank A.	Kelowna
Locke, Charles W. E.	Victoria

Name	*Home Address*
Lunn, Edward O.	Hollyburn
Matheson, Don N.	Prince Rupert
Macdonald, Alan J.	Vancouver
Pike, James A.	Vancouver
Rayner, George E.	Naramata
Rhodes, Audsley V.	Victoria
Ridington, Bernard C.	Vancouver
Roberts, James C.	Cranbrook
Selby, William R.	Kimberley
Smith, Robert H.	Victoria
Thornber, William	Summerland
Todd, Harold J.	Victoria
Unsworth, Arthur	Vancouver
Willis, Philip E.	Victoria
Wong, Charles	Vancouver
Woodland, Harold E.	Grand Forks
Workman, William R.	Fernie

Conditioned

Barclay, Guy	Lumby
Bebb, Elon	Portland, Ore.
Chapman, Ray E.	Vancouver
Cunliffe, Jack A.	Vancouver
Horwood, H. Clare	Kingston, Ont.
Kelly, F Harold	Ladner
Leask, John R.	Cranbrook
Mathews, L. Gerard	Vancouver
McDonald, Hugh J.	Vancouver
McKechnie, Neil D.	New Westminster
Nelems, Harry E.	Chilliwack
Shiels, Thomas	Vancouver
Sparks, Wilbur H.	Vancouver

THIRD YEAR

Full Undergraduates

CHEMICAL ENGINEERING

Carpenter, R. Burton	Vancouver
Fell, Arthur T.	Victoria
Hall, Wilfred N.	Vancouver
Legg, John H.	New Westminster

CHEMISTRY

Todd, Eric E.	Vancouver

CIVIL ENGINEERING

Duckering, Charles E.	Vancouver
McDonald, Walter V.	Vancouver
Peebles, Archie	Vancouver
Terhune, Stuart J.	Rossland

Name	*Home Address*
ELECTRICAL ENGINEERING	
Baker, John A.	Eburne
Bergquist, Rubert A.	Vancouver
Blackett, Harold W.	Victoria
Dhami, Bhagat S.	Punjab, India
Emery, Donald J.	New Westminster
McKeever, James L.	Penticton
Rudnicki, Alois H.	Fernie
FOREST ENGINEERING	
Gormely, Marcus W.	Vancouver
Ogawa, Thomas T.	Vancouver
GEOLOGICAL ENGINEERING	
Lord, Clifford S.	New Westminster
McKeown, Merle	Saskatoon, Sask.
Warden, Thomas	Vancouver
MECHANICAL ENGINEERING	
Bishop, Joseph W.	Vancouver
Jagger, Albert E.	Vancouver
Richmond, W. Osborn	Chilliwack
MINING ENGINEERING	
Arland, Andrew J.	Cloverdale
Odlum, Victor E. C.	Vancouver
Wallis, John C.	Britannia Mines

Conditioned

CHEMICAL ENGINEERING	
Blankenbach, William W.	Victoria
Hunt, Basil G.	North Vancouver
Robertson, F. McGregor	North Vancouver
Stanley, Thomas R.	Vancouver
CIVIL ENGINEERING	
Carver, Stanley C.	Victoria
Cornish, Charles R.	North Vancouver
Pretious, Edward S.	West Vancouver
ELECTRICAL ENGINEERING	
Andresen, Sigurd	Vancouver
Hubner, Rudolph	Trail
Morrison, Robert L.	Vancouver
FOREST ENGINEERING	
Hunter, George G.	Cranbrook

FOURTH YEAR

Full Undergraduates

CHEMICAL ENGINEERING	
Thomson, William G.	Vancouver

Name	*Home Address*
CIVIL ENGINEERING	
Bell, Douglas E.	Vancouver
Jones, Allan J.	Nanaimo
Logan, Gordon V. E.	Vancouver
Marin, Joseph	Vancouver
Morris, Wilfred H.	Vancouver
Mackay, J. Malcolm	Vancouver
McQuarrie, Hector N.	North Vancouver
Stewardson, Alan	New Westminster
Sutherland, James B.	Vancouver
Wolfe-Merton, Adrian W.	North Vancouver
ELECTRICAL ENGINEERING	
Crawford, Lionel G.	Merritt
Duncan, John D.	Vancouver
Harvie, Ralph A.	Vancouver
Mooyboer, Abram P.	Grand Forks
Newmarch, Gerald	Vancouver
Tokunaga, Tadashi	Vancouver
FOREST ENGINEERING	
Hodgins, Hugh J.	Vancouver
Touzeau, Ernest G.	Vancouver
GEOLOGICAL ENGINEERING	
Goranson, Edwin A.	New Westminster
MECHANICAL ENGINEERING	
Sinclair, James	Vancouver
Tupper, Bert R.	Vancouver
MINING ENGINEERING	
Farrington, John L.	Vancouver
Gibson, Swanston	Vancouver
Conditioned	
CHEMICAL ENGINEERING	
Rees, Arthur F.	New Westminster
MECHANICAL ENGINEERING	
Gustafson, Carl E.	Vancouver
PARTIAL	
Fraser, James S. C.	Victoria
Hrennikoff, Alexander	Moscow, Russia
McLean, Alexander	Vancouver
Okulitch, George	Abbotsford
Okulitch, Vladimir	Abbotsford
Panesar, Wattan Singh	Punjab, India
Parsons, Harold E.	Vancouver
Somerton, Thomas W.	Prince George
Wilson, John D.	Vancouver
Wright, Howard R.	Vancouver
Young, Robert B.	Compeer, Alta.

NURSING

FIRST YEAR

Full Undergraduates

Name	*Home Address*
Cumming, Jean I.	Saskatoon, Sask.
Dezall, Ivy C.	Cranbrook
Elliott, Ethel L.	Vancouver
Gowen, W. Mary	Vancouver
Miles, Marion C.	Cranbrook
McKenzie, Evelyn M.	Vancouver

Conditioned

Baynes, Margaret A.	Vancouver

SECOND YEAR

Full Undergraduates

Hillas, Hedwig	Vancouver
Homfray, Geraldine E.	Kamloops
MacKenzie, Dorothy E.	New Westminster
Smith, Muriel R.	Vancouver
Sutherland, Margaret F.	Vancouver
Tisdall, Sheila M.	Duncan
Young, M. Fyvie H.	Victoria

Conditioned

O'Neill, Dorothy E.	Vancouver

THIRD YEAR

Full Undergraduates

Armstrong, Mary	Vancouver
Cardwell, Marion T.	Vancouver
Henderson, Isobel	Vancouver
McPhee, Mary	Vancouver
Ross, Mary	Victoria

Conditioned

Hilton, Grace I.	Vancouver
Kilpatrick, M. Elspeth	Vancouver

FOURTH YEAR

Full Undergraduates

Anderton, Evelyn	Cranbrook
Aske, Jessie	Vancouver
Dorsett, Margaret	Vancouver
Henderson, Mary	Vancouver
Tisdall, Edith W.	Vancouver
Upshall, E. Muriel	Vancouver

FIFTH YEAR

Full Undergraduates

Harvey, Myrtle E.	Kamloops
Johnston, Mabel	Vancouver
MacKechnie, Flora	Vancouver
Yates, Anne	Vancouver

PARTIAL

Swencisky, Victoria M.	New Westminster

FACULTY OF AGRICULTURE

First Year

Full Undergraduates

Name	*Home Address*
Cato, John S.	Vancouver
Cianci, Joseph A.	Vancouver
Ellis, Bert W.	Vancouver
Falls, Herbert D.	Vancouver
Harbord, Patrick R. D.	New Westminster
Ingledew, Norman H.	Vancouver
Leach, Thomas A. L.	Vancouver
Mayers, R. J. Neville	Vancouver
Peden, Ernest E.	Victoria
Stuart, Ruth A. K.	Kelowna
Tait, Wilfred J. C.	Van Anda
Taylor, William A.	New Westminster
Winram, J. Mills	Vancouver
Woolliams, Russell H.	Cloverdale

Conditioned

Clarke, Benjamin W.	Vancouver
Cliffe, Harold L.	Sandwick

Second Year

Full Undergraduates

Name	*Home Address*
Aspinall, Thomas E.	Fauquier
Christmas, Irene M.	Cloverdale
Grauer, Frederick W.	Vancouver
Preston, Shirley G.	Vanderhoof

Conditioned

Currie, Lyall A.	Cloverdale
Dekema, Wouter	Vancouver
Spilsbury, Richard H.	North Vancouver

Third Year

Full Undergraduates

Black, Lindsay M.	Vancouver
Odlum, Roger M.	Vancouver
Swanson, Jack R.	Vancouver

Conditioned

Brooke, Ralph E.	Salmon Arm
Charlton, Gerald W.	Port Haney
Ink, Joseph C.	Kootenay Bay
Lott, Thomas B.	Kamloops
Yarwood, Cecil E.	Huntingdon

Fourth Year

Full Undergraduates

Asher, C. Richard	Vancouver
Boyes, Edgar D.	Vancouver
Brown, William C.	Hammond
Eden, Allan H.	Vancouver
Moffatt, Kenneth F.	Vernon
MacKenzie, James C.	New Westminster
Noble, Grace I.	Hatzic
Thorneloe, Keith	Vancouver

PARTIAL

Name.	*Home Address.*
Berlet, Roy F.	Vancouver
DesBrisay, Eileen	Vancouver
Dial, Puran Singh	Punjab, India
Kabalkin, Jacob	Harbin, China
Koga, Vernon	Bowen Island
Labzoffsky, Nicholas	Urga, Mongolia
Lerner, Isadore M.	Harbin, China
McIntyre, Douglas C.	Vancouver
McKay, Leslie W.	Vancouver
MacKenzie, C. Duncan	New Westminster
Roberts, Bertram B.	New Westminster
Zaitzeff, Anatoly	Harbin, China

GRADUATES

FACULTY OF ARTS AND SCIENCE

Abercrombie, Clinton W.	Vancouver
Allen, J. Stanley	Vancouver
Armstrong, Francis A.	Vancouver
Ball, Ralph H.	Kelowna
Bonsall, Henry B.	Vancouver
Boyes, Winifred E.	Vancouver
Cameron, William M.	Vancouver
Campbell, Mildred H.	Vancouver
Craig, James H.	Vernon
Elliott, Frank W.	Vancouver
Elsey, C. Roy	Brandon, Man.
Forster, Eric	Vancouver
Gallaugher, Arthur F.	Vancouver
Gibbard, Charles A.	Mission City
Gretton, Ronald H.	New Westminster
Guernsey, Elizabeth	Vancouver
Handford, Freda M.	Vancouver
Heaslip, Leonard W.	Vancouver
Hensley, C Arthur E.	Winnipeg, Man.
Johnston, Frederick B.	Vancouver
Kask, Marie K.	Vancouver
Lamb, W. Kaye	Vancouver
Lang, Arthur H.	Vernon
Levirs, Franklin O. P.	Creston
Lopatin, Ivan A.	Olochi, Russia
Mellish, A. Preston	Vancouver
Millward, Louis G.	Vancouver
Morell, A. Ernest	Vancouver
Morrison, Edmund	Vancouver
Patten, C. Gordon	Armstrong
Piggott, Eleanora	Armstrong
Pillsbury, Richard W.	Prince Rupert
Portsmouth, K. Madge	Mission City
Smith, Harold D.	Vancouver
Smith, H. Bertram	Victoria
Smith, James E.	New Westminster
Sparks, Frederick P.	Vancouver
Stedman, Ralph E.	Vancouver
Stevens, Francis H.	Vancouver

Name	*Home Address*
Streight, H. R. Lyle	New Westminster
Telford, Gordon D.	Vancouver
Tipping, Wessie M. M.	Vancouver
Wallace, Bryce H.	Cranbrook
Woodrow, Jean	Vancouver

FACULTY OF APPLIED SCIENCE

Kania, Joseph E. A.	Trail
Nunn, E. Hazen	Vancouver

FACULTY OF AGRICULTURE

Atkinson, Lyle A.	Vancouver
Biely, Jacob	Vancouver
Laing, Arthur	Eburne
Mallory, Lester D.	Sardis
McDermott, Andrew M.	New Westminster

TEACHER TRAINING COURSE

Bailey, Albert E.	Victoria
Ballard, Ernest R.	Vancouver
Berezovsky, Pauline	Buchanan, Sask.
Biermann, Bernard	Vancouver
Black, Albert F.	New Westminster
Black, Bishop	New Westminster
Blatchford, Annie L.	Vancouver
Broad, Charles N.	Summerland
Bumstead, Viola G.	Vancouver
Cameron, Maxwell A.	Calgary, Alta.
Chislett, Charlotte	Vancouver
Cleveland, Hester C.	Vancouver
Coade, Lillian M.	Vancouver
Coles, Hilda	Vancouver
Cottingham, Mollie E.	Vancouver
Cowx, Joseph G.	Vancouver
Denman, Ester O.	Vancouver
Dimock, Marjorie C.	Armstrong
Dwinnell, Edith L.	Vancouver
Eastman, Charlotte E.	Vancouver
Farrand, Charles J. S.	Vancouver
Galbraith, Gladys E.	Vancouver
Goff, Dorothy H.	Winnipeg, Man.
Harding, Cora L.	Vancouver
Hemsworth, Phyllis M.	Vancouver
Henderson, Robert A.	Vancouver
Holland, Florence J.	Vancouver
Johnston, Mary H.	Vancouver
Kerr, Ida M.	Vancouver
Lamont, Katherine M.	Vancouver
Liersch, John E.	North Vancouver
Marrion, Robert F. C.	Vancouver
Musgrave, Jean I.	Vancouver
McCurdy, Leonora	Malahat
McCurdy, Margaret A. F.	Vancouver
McDiarmid, Margaret A.	Ladner
Mackay, Phyllis I.	Vancouver

Name.	*Home Address.*
Mackenzie, Anne	Vancouver
MacKenzie, Donald	Vancouver
McKie, Archie	Vancouver
McMeans, Beatrice K.	Vancouver
MacNeill, Lorne C.	Vancouver
McQuarrie, Clare N.	Vancouver
Niedermann, Otto E.	Vancouver
Orr, Mildred C.	Vancouver
Partington, Dorothy L. R.	West Vancouver
Phillips, George L.	Vancouver
Porter, Ida S.	West Vancouver
Ralph, Isobel	Vancouver
Reid, Elsie M.	Vancouver
Robinson, George R.	Vancouver
Rudolph, Marion N.	West Vancouver
Russell, Dorothy B.	Vancouver
Smith, Marion R.	Vancouver
Strauss, A. Donalda	Vancouver
Swanson, Violet M.	Vancouver
Thorpe, Robert S.	Victoria
Underhill, Helena M.	New Westminster
Wagg, E. Blanche	Vancouver
Walker, Day	North Vancouver
Walmsley, Sheridan E.	New Westminster
Wellington, Beatrice M.	Nanaimo
Wells, Harry N.	Vancouver

REGISTRATION FOR 1927-28

Faculty of Arts and Science

	Women	Men	Total	
First Year	275	326	601	
Second Year	144	143	287	
Third Year	106	90	196	
Fourth Year	102	82	184	
Partial	9	28	37	
				1305

Faculty of Applied Science

First Year	—	117	117	
Second Year	—	48	48	
Third Year	—	38	38	
Fourth Year	—	26	26	
Partial	—	11	11	
				240

Faculty of Applied Science (Nursing)

First Year	7	—	7	
Second Year	8	—	8	
Third Year	7	—	7	
Fourth Year	6	—	6	
Fifth Year	4	—	4	
Partial	1	—	1	
				33

FACULTY OF AGRICULTURE				
First Year	1	15	16	
Second Year	1	6	7	
Third Year	—	8	8	
Fourth Year	1	7	8	
Partial	1	10	11	
				50
GRADUATES				
Arts and Science	9	35	44	
Applied Science	—	2	2	
Agriculture	—	5	5	
				51
TEACHER TRAINING COURSE				
Teacher Training Course	41	21	62	
				62
				1741

Summer Session, Arts	487
Public Health Nursing	5
Occupational Course in Agriculture	13
Short Courses in Agriculture	116
Evening Class in Botany	37

DEGREES CONFERRED

MAY, 1927

Faculty of Arts and Science

THE DEGREE OF MASTER OF ARTS

(*Names in alphabetical order*)

Allen, G. A., B.A.	Major:	Economics
	Minor:	Government
Ball, Robert Wm., B.A.	Major:	Chemistry
	Minor:	Mathematics
Chalmers, Wm., B.A.	Major:	Chemistry
	Minor:	Physics
Davidson, Jean Elizabeth, B.A.	Major:	Botany
	Minor:	Zoology
Gordon, Margaret, B.A.	Major:	History
	Minor:	Philosophy
Mawdsley, M. Dorothy, B.A.	Major:	English
	Minor:	French
Rae, Hugh McC., B.A.	Major:	Philosophy
	Minor:	History
Reith, Helen Wilma, B.A.	Major:	English
	Minor:	French
Thompson, Homer A., B.A.	Major:	Latin
	Minor:	Greek
Winter, Alice Greta, B.A.	Major:	Chemistry
	Minor:	Mathematics

THE DEGREE OF BACHELOR OF ARTS

With Honours

(*Names in alphabetical order*)

Allen, J. Stanley (2nd class honours in Chemistry)
Boyes, Winifred E. (2nd class honours in Latin and French)
Calvert, Donald E. (1st class honours in English Language and Literature)
Dowsley, Gertrude O. (1st class honours in Bacteriology and Biology)
Grantham, Herbert H. (2nd class honours in Chemistry)
Howay, Undine L. (1st class honours in French)
Howlett, Leslie E. (1st class honours in Physics)
Johnston, Frederick B. (1st class honours in Chemistry)
Keillor, Margaret G. (1st class honours in Biology—Zoology option)
Kerr, Ida M. (1st class honours in French)
King, Hubert B. (2nd class honours in Economics and Mathematics)
Lamb, Wm. Kaye (1st class honours in History)
Lang, Arthur H. (1st class honours in Geology)
Leigh, Morton D. (2nd class honours in Biology—Zoology option)
Millward, Louis G. (2nd class honours in Geology)
Morrison, Edmund (1st class honours in English Language and Literature)
Mottley, Charles (1st class honours in Biology—Zoology option)
MacNeill, Lorne C. (2nd class honours in French)
Orr, Mildred C. (2nd class honours in French)
Patten, Charles G. (1st class honours in Mathematics)
Pillsbury, Richard W. (2nd class honours in Biology—Botany option)
Selwood, Pierce W. (1st class honours in Chemistry)
Smith, Harold D. (1st class honours in Mathematics)
Stanley, John (1st class honours in Biology—Zoology option)
Stedman, Ralph E. (1st class honours in Philosophy)
Stevens, Francis H. (1st class honours in Philosophy)
Stocks, George H. (1st class honours in Mathematics)
Streight, H. R. Lyle (1st class honours in Chemistry)
Swanson, Violet M. (2nd class honours in French)
Wagenhauser, Muriel E. (1st class honours in History)
Warden, David C. (1st class honours in English and Latin)

In Pass Course

(*Names in order of merit*)

Class I

Cameron, Maxwell A.
Munro, Hector G.

Class II

(*Names in alphabetical order*)

Hurry, Margaret I.
Brown, Dorothy E.
Holland, F. Jean
Fugler, M. Ethel
Crickmay, Geoffrey W.
Dee, Henry D.
Cottingham, Mollie E.
Walker, Day
Hope, Grace E.
Dwinnell, Edith L.
Fraser, Jean H.
Gillespie, Robert M.
Piggott, Eleanora
Coombe, Dorothy L.
Lamont, K. Mary
Gretton, Ronald H.
Morell, A. Ernest
Ripstein, Horace R.
Newby, Cecil D.
McKie, Archibald
Rankin, Margaret J.
Morrison, Margaret G.
Cameron, Wm. Murray
Brown, Norman
Coles, Hilda C.
Harding, Cora L.
Stevenson, M. Ian
Groves, Kenneth P.
Freeborn, Grace M.
Duncan, James D.
Bailey, Albert E.
Reid, Elsie M.
McQuarrie, Clare N.
Musgrave, Jean I.
Partington, Dorothy
Black, Bishop
Phillips, George L.
Ballard, Ernest R.
Denman, Ester O'D.
Burton, John S.
Chislett, Charlotte
Johnston, Mary H.
Lam, George
Black, R. May
Dick, R. Norman
Robinson, G. Russell
Hood, Orlo McG.
Almond, Blanche
MacDonald, J. Josephine
Hemsworth, Phyllis M.
Buckingham, William N.
Shakespeare, Jack S.
Cleveland, Hester C.
Hill, Evelyn M.
Hockin, John MacG.

Passed

(*Names in alphabetical order*)

Black, Albert F.
Galbraith, Gladys E.
Wilkinson, John H.
McMeans, Beatrice K.
Tutill, Douglas
Coade, Lillian M.
Alihan, Milla
Gilley, Jean R. D.
Fordyce-Clark, H. Eustace
Ralph, Isobel
Lamont, Donald MacK.
Peck, Helen T.
MacTavish, Isabelle G.
Strauss, A. Donalda
Pumphrey, K. Avis
Robinson, Lillian A.
Wright, Max H. C.
Pettapiece, Edna L.
Woodworth, Charles A.
MacKenzie, Donald
Dalrymple, Thomas
Wellington, Beatrice M.
MacKenzie, Henriette D.
Porter, Ida S.
Roberts, Marion O.
Wagg, E. Blanche
Berry, Anne B.
McIntosh, Josephine H.
McSweyn, Maxine M. M.
Bumstead, V. Grace
French, Joan
Whaun, Moore
Walsh, Clara M.
McDiarmid, Margaret A.
Morriss, Mary R.
Reid, Katherine O. M.
Wilson, Isabel A.
Ingledew, Wm. Edward
Blatchford, Annie
Walmsley, Sheridan E.
Robertson, Mary S.

Passed (Unranked)

(*Names in alphabetical order*)

Argue, Charles W. (B.S.A., M.S.)
Conrad, Elsie
Cowx, Joseph G.
Esler, Mary R.
Mackenzie, Anne
Norman, Ralph O.
Osborne, D. J. F.
Parton, Marion
Riddell, J. Marie
Sheridan, Richard H.
Sparks, Fred. P.
Turnbull, Walter R.

Passed (Aegrotat)

(*Names in alphabetical order*)

Black, Mary L.
Christie, William H.
Kilpatrick, M. Elspeth
Underhill, H. Margaretta
Winter, Edyth W.

Faculty of Applied Science

THE DEGREE OF MASTER OF APPLIED SCIENCE

Jones, William Alfred, B.A.Sc. ..... Major: Petrography
Minor: Paleontology

THE DEGREE OF BACHELOR OF APPLIED SCIENCE

(*Names in order of merit*)

Chemical Engineering

Class II

Nunn, Edward Hazen
Brown, Rex Llewellyn

Passed

Hartley, James Dadwell

Civil Engineering

Class I

Oliver, John Craig, B.A.
Gordon, Arthur Illingworth Elmsly
Todd, Robert Lawrie

Class II

Rothwell, James Moscrip
Bloom, Jason
Larson, Arthur George
Phillips, Wilfred John

Electrical Engineering

Class I

Mathews, John Thomas

Class II

Mathewson, Philip Lavens
Pottinger, Alexander
North, John Terry
Wainman, Philip Richard
Gale, Stanley Cuthbert

Passed

Barnsley, Frank Richard
Clement, Bruce Dennis
Mosher, Harry Everett

Forest Engineering

Class I

Miller, George Webster — Liersch, John Edward, B.A.

Class II

Elley, Frederick Willoughby

Geological Engineering

Class I

Kidd, Desmond Fife

Class II

Lees, Everett John — Pearcey, John Guy

Mechanical Engineering

Class I

Millar, James Wallace, B.A. — Bishop, Charles Branson
D'Aoust, Joseph Gilbert — Leek, Charles William

Metallurgical Engineering

Class II

Arnold, Theodore Ernest

Passed

Farrar, Ben Kerslake

Mining Engineering

Class II

Richmond, Alexander Morton — Waddington, George Wilfred
Shannon, Jack Donald

Passed

Stevenson, Cecil Douglas

Unranked

Spargo, Thomas

Nursing

Class I

Lyne, Frances E. — Reilly, Ruby R.
Higgs, Norah L.

Class II

Stoddart, Elizabeth — Olmstead, Dorothy G.

Faculty of Agriculture

THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURE

(*Names in alphabetical order*)

Caple, Kenneth Percy ..... Major: Agricultural Economics
Minor: Education

Middlemass, James Douglas ..... Major: Dairying
Minor: Chemistry

THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

(Names in order of merit)

Class I

Milne, Helen Isabella — Berry, Jack Coulter
Ross, Herbert Holdsworth

Class II

Mallory, Lester DeWitt

Passed—(Unranked)

Luyat, Gabriel Allan — Matthews, Willoughby Walter

NOVEMBER, 1927

Faculty of Arts and Science

THE DEGREE OF BACHELOR OF ARTS

Boyden, Ashley Wilfred
Elliott, Frank William
Guernsey, Mary Elizabeth
Meagher, John Frank
McCutcheon, James Creighton, B.A.Sc.
McDermott, Andrew Miles, B.S.A.
Nixon, Myrtle
Stewart, Jean Eileen
Wells, Harry Nelson
Wilkinson, Margery Hilda

Faculty of Applied Science

THE DEGREE OF BACHELOR OF APPLIED SCIENCE

Warren, Harry Verney, B.A.

MEDALS, SCHOLARSHIPS, AND PRIZES

AWARDED MAY 1927

Open Scholarships—Post Graduate

1. The Rhodes Scholarship ..... Albert Edward Grauer
2. Nichol Scholarship—No. 3 ..... Edith E. Lucas
   No. 2 (renewed) ..... Dorothy Dallas
   No. 1 (renewed) ..... Jack L. Huggett
3. University Scholarship, $200 ..... Ralph E. Stedman
   (Special Aptitude.)
4. The Canadian Federation of University Women Scholarship ..... Phyllis M. Gregory
5. The Anne Wesbrook Scholarship, $100 ..... Geoffrey W. Crickmay
6. French Government Scholarship, 10,000 francs ..... Undine Howay

Faculty of Arts and Science

Fourth Year

1. The Governor-General's Gold Medal ..... Harold D. Smith
   (Head of Graduating Class in Arts.)
   Honorable Mention—H. R. Lyle Streight.
2. The Historical Society Gold Medal ..... W. Kaye Lamb
   (History)
3. Alliance Francaise Gold Medal ..... Undine Howay

Third Year

1. University Scholarship, $75 ..... Jean W. Skelton
(General Proficiency.)
2. University Scholarship, $75 ..... George F. Davidson
(General Proficiency.)
3. The Arts '19 Scholarship, $150 ..... M. K. Jean Tolmie
(Standing and Character.)
4. The Gerald Myles Harvey Prize, Books, $50 ..... No award
(Essays in Economics or Political Science.)

Second Year

1. The McGill Graduates Scholarship, $137.50 ..... Alice M. G. White
(First in English and French.)
2. University Scholarship, $75 ..... H. Muriel E. Daniels
(General Proficiency.)
3. University Scholarship $75 ..... Alice G. M. White,
(General Proficiency.) by reversion to Albert R. Poole
4. The Terminal City Club Memorial Scholarship, $110 ..... John Ross Tolmie
(First in English and Economics.)
5. The Scott Memorial Scholarship, $110 ..... Murchie K. McPhail
(First in Biology.)
6. The Shaw Memorial Scholarship, $137.50 ..... Nora M. Holroyd
(First in Two of English, Latin and Greek.)

First Year

1. Royal Institution Scholarship, $75 ..... Donald L. Layman
(General Proficiency.)
2. Royal Institution Scholarship, $75 ..... Helen V. Bell
(General Proficiency.)
3. Royal Institution Scholarship, $75 ..... Cecil K. Stedman
4. The Vancouver Women's Conservative Association Prize in Mathematics, $25 ..... Lloyd Williams
(Son or Daughter of Deceased Soldier.)
5. P. E. O. Sisterhood Scholarship, $75 ..... Helen V. Bell,
by reversion to Mary L. Brown
(First Woman Student in English.)

Faculty of Applied Science

Post Graduate

1. The Dean Brock Scholarship, $100 ..... Desmond F. Kidd

Fourth Year

1. The Convocation Prize, $50 ..... James W. Millar
(General Proficiency.)
2. The Walter Moberly Prize, Books, $25 ..... George W. Waddington
(Engineering Thesis.)

Third Year

1. The Dunsmuir Scholarship, $165 ..... John L. Farrington
(Highest in Mining Engineering)
2. The Professional Engineers' Prizes .....
   1. Gordon Van E. Logan
   2. Gerald Newmarch
   3. Abram Peter Mooyboer
   4. Thomas C. Gibbs
   5. Hugh J. Hodgins

Second Year

1. University Scholarship, $75.....W. Osborne Richmond
(General Proficiency.)

First Year

1. Royal Institution Scholarship, $75.....Charles W. Deans
(General Proficiency.)

Nursing

1. Vancouver Women's Canadian Club Scholarship in Nursing and Health, $100.....Myrtle E. Harvey
2. Provincial Board of Health Prizes in Public Health Nursing.....

Frances E. Lyne, $30	Elsie E. Reid, $15
Ruby R. Reilly, $25	S. Jean Leveson, $10
Nora L. Higgs, $20	

Faculty of Agriculture

Post Graduate

1. The W. C. Macdonald Scholarship, $500.....William Frederick Gough

Third Year

1. The B. C. Fruit Growers' Association Scholarship, $100.....No award
(Horticulture.)

First Year

1. University Scholarship, $75.....Thomas E. Aspinall
(General Proficiency.)

General—(Open)

1. The Captain LeRoy Memorial Scholarship, $250.....William Tennant Reid
(Returned Soldier.)
2. Khaki University and Y. M. C. A. Memorial Fund Scholarships, $75 each (ten).....

Arthur H. Beattie	Alan J. Macdonald
Albert E. Coles	David W. Macdonald
Thomas B. Lott	William Roach
Edgar C. Latimer	William Gregg Thompson
Olive M. C. Malcolm	Lloyd Williams

3. The Native Sons of Canada Scholarship—1. $350.....No award
(Thesis in Canadian History.) 2. $150.....Lionel H. Laing
4. Vancouver Women's Canadian Club Scholarship, $110 (Canadian History).....Phyllis Freeman
5. University Book Prize, $25.....Samuel L. Simpson
6. The Historical Society Prize, $25.....No award
(Essay on an Assigned Subject.)
7. The Players' Club Prize, $50.....Kaye Lamb
(Original Play.)
8. University Scholarship for Returned Soldiers.....J. A. C. Harkness
9. The Letters Club Prize, $25.....Margaret Isobel Grant

THE UNIVERSITY OF BRITISH COLUMBIA

UNIVERSITY SUMMER SESSION, 1928

Seven Weeks—July 3rd to August 23rd

The University Summer Session began in 1920 as a Summer School for teachers. Its original purpose was to provide instruction in the subjects of the First Year of the University course for teachers in service who desired to qualify for First Class certificates. In 1921 the name was changed and work was enlarged to include a number of Second Year subjects and provision was made whereby those attending might complete the work of the first two years. Since 1921 a number of Summer Session students have succeeded in obtaining the thirty units of credit prescribed for the First and Second Years and a definite demand for more advanced courses arose. To meet this demand a comprehensive scheme was passed by the University Senate in 1927.

The essential feature of the new arrangement is that students proceeding to a degree without attendance at a Winter Session may do so by taking, subject to the condition mentioned in the following paragraph, six units of work in any one Summer Session, and, subsequently to Senior Matriculation or First Year Arts, an additional three units by Afternoon and Evening Classes. In the case of Education, however, Afternoon and Evening Casses are open for credit only to students who have completed the first two years in Arts. The total number of units which can be taken without attendance at Winter or Summer Sessions is fifteen.

A student desirous of taking six units in a Summer Session is required to register on or before October 1st, and to prepare by doing prescribed work for an examination to be held

at the beginning of the Summer Session. Unless this preliminary work is satisfactorily completed only four and a half units of work may be taken in the Summer Session. (This does not apply for 1928.)

It is now possible for students who have completed the first two years in Arts to take six units in Education for credit towards the B.A. degree. Certain special courses in Education not counting for credit to the degree may also be offered.

In addition to the regular academic courses the Summer Session conducts classes in Commercial Subjects designed to assist candidates for the High School Commercial Teachers' Certificates.

For fuller information, see the Summer Session announcement.

The Summer Session Announcement, giving details of courses and particulars as to fees, etc., is issued early in the spring of each year and may be obtained free by application to the Registrar. Requests for special information should be addressed to The Director of the Summer Session, The University of British Columbia, Vancouver, B. C.

STUDENT ORGANIZATION

In order that the activities of the student body may be effectively carried on, the Alma Mater Society has been organized, with a governing executive called the Students' Council. It is the duty of the Students' Council to control all the activities of the societies subsidiary to the Alma Mater Society.

Each student on admittance to the University automatically becomes a member of the Alma Mater Society. All student activities are regulated and questions of student discipline are controlled by the Students' Council. It consists of nine members, chosen from the Third and Fourth Years. The members are elected by ballot at the close of the session preceding their term of office.

In order that the work may be carried on to the best advantage, considerable funds are necessary, and the Alma Mater fee

of $7.00, compulsory for all students, is designed to cover the expenses incurred.

Students upon entering the University have an opportunity to take part in practically all lines of sport, as well as to participate in debating and public speaking, and various other activities which are more clearly indicated below.

Publications Board

The Publications Board is best known from the Handbook, the "Ubyssey" and the "Annual." In the first of these an attempt is made to compile information valuable to the undergraduate. The "Ubyssey," the College paper, is published twice a week. The members of the Staff are Students selected as a result of voluntary competition. The "Annual," which is published at the end of the spring term, summarizes the activities of the various classes and societies.

Literary and Scientific Department

The Literary and Scientific Department co-ordinates the workings of its constituent Societies, which are indicated below.

In the Players' Club, those whose talents lie in the direction of the drama may find medium of expression.

The Musical Society, membership in which is granted as a result of competitive try-outs, consists of an orchestra and mixed chorus comprising over a hundred students under professional leadership.

For those interested in public speaking and debating there are the Men's Literary Society, the Women's Literary Society and the Agriculture Discussion Club.

The Chemistry Society, the Engineering Discussion Club, the Social Science Club, the Live-stock Club and the G. M. Dawson Discussion Club offer a field for discussion of Scientific and Social problems.

Women's Athletics

The Women's Athletic Association comprises all the women's athletic clubs of the University, the chief of which are herewith briefly described:

The Women's Basketball Club enters teams in the City League.

The Women's Swimming Club competes with the V.A.S.C., and also against Victoria during the annual trip. This year a course in life-saving has been given.

The women may join the Badminton and Tennis clubs, which are under the Men's Athletic Association.

The Grass Hockey Club, though not entered in a league, plays challenge games against the High Schools, New Westminster and Victoria.

The Women's Gymnasium Club meets once a week, under a physical instructor.

The Track Club holds, with the Men's Track Club, a joint meet which takes place annually at Brockton Point, one of the women's events being the relay for the Arts '25 Cup.

Inter-class matches are arranged in basketball, badminton, swimming, track, etc., for which points are awarded, the winning class being the holders of the Chris. Spencer Cup for the ensuing year.

Men's Athletics

The Men's Athletic Association endeavors to foster all branches of clean and manly sport.

The Rugby season opens at the beginning of the Fall Term. Practices are held once a week, and teams are entered by the Rugby Club as follows: Two teams play in the Miller Cup League for the city championship, and from these a First Team is chosen to play in the McKechnie Cup League for the provincial championship. The Third and Freshmen teams, the latter comprised entirely of Freshmen, play in the Intermediate League of the city for the Province Cup.

Basketball season follows that of Rugby. Four teams, two senior and two intermediate, are chosen and entered in the City League.

The Soccer Club enters three teams in the City leagues. The first team plays in the First Division and in the provincial championship series. The second team plays in the Second

Division, while the third team is entered in the Junior League.

The Track Club takes charge of all field events, its big features being the Western Canada Inter-collegiate Amateur Athletic Union track meet, the Arts '20 relay race, and the annual inter-class track meet.

The Men's Grass Hockey Club enters two teams in the City League.

The Rowing Club is affiliated with the Vancouver Rowing Club, and retains its identity as a University Club.

The Ice Hockey Club enters two teams each year in the city series.

The Outdoors Club takes charge of all picnics, hikes, mountain climbing, excursions, and outdoor parties.

The Tennis Tournament takes place after the opening of the Fall Term, and the championship games are played in men's and women's singles and doubles, and also mixed doubles.

The Badminton Club holds practices and games in the evenings throughout the winter.

The Boxing and the Swimming Clubs meet once a week during the winter, under capable instructors.

Fraternities

Fraternities have existed at the University of British Columbia for some years and are officially recognized as active student organizations. They are governed by an Interfraternity Council composed of representatives of each of the fraternities and a member of the Faculty. It is their endeavor both to benefit through friendship their individual members, and to work for the best interests of the university. Membership is by invitation.

Alumni Association

This organization was formed in May, 1917. It is composed of Honorary, Active, and Associate members. Honorary membership includes all members of the Faculty. Active membership includes all Associate members who have paid their

annual fee of $2.00 for town members, $1.00 for out-of-town members. All graduates of the University automatically become Associate members on graduating.

The purpose of the Association is to further the interests of the University and the Alumni. To accomplish this purpose the Association aims to keep its members interested in the University and the Alma Mater, so that they may know their college not only as it was, but as it is, and can be. To carry out these aims general meetings are held every two months during the University term. In addition, a directory of our graduates is sent to all Active members, while news bulletins are sent to both Active and Associate members.

There are four standing committees in the Association, which seek to foster interest in athletics, music, dramatics and publications among members of the Association, and throughout the Province in other organizations.

VICTORIA COLLEGE

(IN AFFILIATION WITH THE UNIVERSITY OF B. C.)

Staff

PERCY H. ELLIOTT, M.Sc. (McGill), Principal, Associate Professor of Science.
E. STANLEY FARR, B.A., LL.B. (Toronto), Assistant to Principal, Assistant Professor of History and Economics.
JOHN MARR, M.A. (Aberdeen), Registrar, Assistant Professor of Classics.
MISS JEANETTE A. CANN, B.L. (Dalhousie), Assistant Professor of English and Philosophy.
H. RUTH HUMPHREY, B.A. (Mount Allison), B.A., Oxford, Instructor in English.
MME. E. SANDERSON-MONGIN, Assistant Professor of French.
J. A. CUNNINGHAM, B.A. (Queen's), Assistant Professor of Biology.
W. H. GAGE, M.A. (Brit. Col.), Instructor in Mathematics.

The College at Victoria, B. C., gives instruction in the first two years of the course in Arts and Science. The courses offered are:

First and Second Years

The work of the first two years consists of 30 units, 15 of which must be taken in each year.

Each student must take:—

	Units
(*a*) English 1 in the First Year and English 2 in the Second Year	6
(*b*) The first two courses in a language offered for Matriculation, one course in each year	6
(*c*) Mathematics 1 in the First Year	3
(*d*) History 1 or 2 or 3, or Philosophy 1 or Economics 1	3
(*e*) Biology 1, Chemistry 1 or Physics 1 or 2	3
(*f*) Three courses—not already chosen—selected from the following:— Biology 1, Chemistry 1, Economics 1, French 1, French 2, Beginners' Greek, Greek 1, Greek 2, History 1, History 2, History 3, Latin 1, Latin 2, Mathematics 2, Mathematics 3, Philosophy 1, Physics 1, Physics 2	9

The rules and regulations governing the College are the same as those in force in the University.

UNION COLLEGE OF BRITISH COLUMBIA

(United Church of Canada)
VANCOUVER, B. C.

Registrar
REV. J. CARRUTHERS, M.A., D.D.

Principal
REV. J. G. BROWN, M.A., D.D.

(In affiliation with The University of British Columbia)

Union College offers courses of instruction in Theology leading to the degree of B.D., and for ordination to the Christian Ministry, and, under the general regulations of the University with reference to affiliated Theological Colleges, provides Religious Knowledge options, for which credit is given in the course leading to the B.A. degree. (See Page 68.)

For further information in reference to Faculty, Courses of Study, etc., see calendar of Union College.

THE ANGLICAN THEOLOGICAL COLLEGE OF BRITISH COLUMBIA

VANCOUVER, B. C.
(In affiliation with The University of British Columbia)

Principal
REV. W. H. VANCE, M.A., D.D.

Registrar
REV. C. H. SHORTT, M.A.

The Anglican Theological College offers courses in Theology leading to the Diploma of Licentiate in Theology and the Degrees of B.D. and D.D., and, under the general regulations of the University in reference to affiliated colleges, provides Theological options for which credit is given in the course leading to the B.A. degree. (See Page 68.)

For further information in reference to Faculty, Courses of Study, etc., see calendar of the College.

Buildings and Grounds of The University of British Columbia, Vancouver, B.C.