

The University
OF
British Columbia



CALENDAR

FIFTEENTH SESSION
1929 - 1930

VANCOUVER, BRITISH COLUMBIA
1929

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ACADEMIC YEAR, 1929-1930

1929	}	Matriculation Supplemental Examinations begin.
Monday, August 26th.		
Sunday, September 1st.	}	ACADEMIC YEAR begins.
Monday, September 2nd.		
Wednesday, September 11th.	}	Supplemental Examinations in Arts begin.
Tuesday, September 17th.		
Wednesday, September 18th.	}	Last day for Registration of First Year Students in the Faculties of Arts and Science, and Agriculture.
Friday, September 20th.		
Monday, September 23rd.	}	First Year Students in all Faculties report at 3 p.m. in the Auditorium.
Tuesday, September 24th.		
Wednesday, September 25th.	}	Lectures begin at 9 a.m.
Monday, October 7th.		
Saturday, October 12th.	}	Last day for change in Students' courses.
Wednesday, October 16th.		
Wednesday, October 16th.	}	Meeting of the Senate.
Wednesday, October 30th.		
Monday, November 11th.	}	Armistice and Thanksgiving Day. University closed November 9th and 11th.
Friday, December 6th.		
Monday, December 9th, to	Thursday, December 19th.	} Examinations.
Wednesday, December 18th.	}	
Wednesday, December 25th.		}	Christmas Day. University closed December 24th-26th, inclusive.

1930 Wednesday, January 1st.	}	New Year's Day. University closed December 31st and January 1st.
Monday, January 6th.	}	Second Term begins.
Monday, January 20th.	}	Last day for payment of Second Term fees.
Wednesday, February 19th.	}	Meeting of the Senate.
Thursday, April 10th.	}	Last day of Lectures.
Friday, April 11th, to	Saturday, April 26th. }	Sessional Examinations.

Field Work in Applied Science begins immediately at the close of the Examinations.

Friday, April 18th.	}	Good Friday. University closed.
Monday, April 21st.	}	Easter Monday. University closed.
Thursday, April 24th.	}	Last day for payment of Graduation fees.
Wednesday, May 7th.	}	Meeting of the Senate.
Thursday, May 8th.	}	Congregation.
Thursday, May 8th.	}	Meeting of Convocation.
Saturday, May 24th.	}	Victoria Day. University closed.
Tuesday, June 3rd.	}	King's Birthday. University closed.
June 16th to June 30th.	}	Junior and Senior Matriculation Examinations. (Time-tables to be arranged.)
Tuesday, July 1st.	}	Dominion Day. University closed.
Wednesday, July 2nd.	}	Summer Session begins.
Saturday August 23rd.	}	Summer Session ends.
Friday, August 29th.	}	Meeting of the Senate.
Sunday, August 31st.	}	ACADEMIC YEAR ends.

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R. D. JAMES, B.A. (Brit. Col.), Assistant.

Department of Poultry Husbandry

E. A. LLOYD, B.S.A. (Sask.), M.S.A. (Washington State College), Professor and Head of the Department.

V. S. ASMUNDSON, B.S.A. (Sask.), M.S.A. (Cornell), Associate Professor.

W. J. RILEY, B.S.A. (Brit. Col.), Assistant.

Department of Zoology

C. McLEAN FRASER, M.A. (Toronto), Ph.D. (Iowa), F.R.S.C., Professor and Head of the Department.

G. J. SPENCER, B.S.A. (Toronto), M.S. (Illinois), Assistant Professor.

MISS VERNA Z. LUCAS, B.A. (Brit. Col.), Assistant.

HAROLD WHITE, M.D., C.M. (McGill), Medical Examiner to Students.

MRS. C. A. LUCAS, R.N., Public Health Nurse.

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.

It has become a tradition for each Graduating Class to make a gift to the University. In the spring of 1928 this gift took the form of a granite seat as a memorial to the late Dr. F. F. Westbrook.

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 few years many valuable donations have been received, especially in the form of equipment for the various Laboratories.

A very fine Ethnological collection representing the arts, handicraft and weapons of Polynesia was donated to the University by Mr. Frank Burnett, Sr.; and the late Mr. David Thom, of Hammond, B. C., bequeathed 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.

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.

In the fall of 1928 an anonymous friend of the University presented a coloured glass window, which portrays in separate panels the arms of the Dominion and of eight of its provinces. The window has been placed between the two main staircases approaching the Reading Room of the Library.

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

D. H. Snowberger, Florist, Payette, Idaho.
 William Worrell, Seeds from Australia.
 Dr. G. A. Purpus, Mexico.
 Adrian C. Thrupp, Kamloops.
 M. L. Bird, Vancouver.
 H. Foulds, Carthage, Illinois.
 G. E. Kastengren, Seattle, Washington.
 Miss J. Bostock, Monte Creek, B. C.
 Lloyd Botanic Garden, Darjeeling.
 Institute of Applied Botany, Leningrad, U. S. S. R.
 Harvard University Botanical Garden.
 Botanischen Gartens, Bremen, Germany.
 Brooklyn Botanic Garden.
 Botanic Gardens, Glasgow, Scotland.
 Mestska Botanica Skolni Zahrada, Czechoslovakia.
 Jardin Botanique, Ville de Nantes, France.
 United States Department of Agriculture, Washington, D. C.
 Jardins de la Ville de Poznan (Pologne).
 Ville de Lyons Jardin and Collections Botaniques, France.
 Royal Botanic Gardens, Kew.
 Gradina Botanica a Universitatii, Cernauti, Roumania.
 Salgues Foundation, Brignoles Botanic Station, France.
 Jardim Botanico da Universidade de Coimbra, Portugal.
 Botanic Gardens, University of Tokyo, Japan.
 Dominion Forestry Branch, Kamloops.
 (Per Prof. H. R. Christie)
 Arnold Arboretum, Cambridge, Mass.

HERBARIUM SPECIMENS

U. S. Department of Agriculture, Washington, D. C.
 Mrs. J. P. MacFadden, New Denver, B.C., Collection of Mosses.
 Mrs. R. Foord, Faulkner, Manitoba, Pitcher Plants.
 Man Yuen Chong Co., Vancouver.
 H. D. Snowberger, Florist, Payette, Idaho.
 John M. Fogg, Jr., University of Pennsylvania, Collection
 of Plants from Selkirk Mountains.

FOR BIOLOGY

B. O. Iverson, Skulls of Beaver and Weasel.

Department of Civil Engineering

Mrs. A. E. B. Hill and Miss Hill—Minutes of the Proceedings of the Society of Civil Engineers, England, from the library of the late Arthur E. B. Hill, B.A.Sc.

Department of Forestry

Dominion Forest Service—Forestry publications.
 United States Forest Service—Forestry publications.
 United States National Museum, Washington, D. C.—Collections of specimens of native and foreign woods.
 New York State College of Forestry, Syracuse, N. Y.—Forestry publications.
 Illinois Department of Forestry and Natural History Survey—Forestry publications.
 Capilano Timber Company Limited, North Vancouver—Samples of B. C. woods.
 F. Temple Keeling, New Westminster—Collection of hand specimens of North American and foreign woods.
 R. W. Irwin—Samples of B. C. Woods.
 Fred Elley, Victoria, B. C.—Samples of black spruce.

Department of Geology

Reginald Brook—Large boulder of gold quartz which gave the name to the Boulder Vein, Engineer, B. C.
 G. W. Waddington—Collection of minerals from Iron Mask Mine, B. C.
 D. M. Pierce—Collection of bird skins from Coronation Gulf.
 Prof. G. J. Spencer—Mineral specimens and photographs from Nashwauk, Minn.
 Edward Mahon—Head and antlers, in an excellent state of preservation, of the extinct *Megaceros Hibernicus* (Irish Elk), found in Peat Bog, Ireland.
 Dr. S. J. Schofield—Suite of rocks, Salmon River District, Portland Canal.
 Suite of rocks, Van Roi Mine, Slokan District, B. C.
 Suite of rocks, Lynn Creek Zinc Mine, Lynn Creek, B. C.
 Suite of rocks, Kootenay King Mine, East Kootenay, B. C.
 Dr. G. F. Barnwell—Ethnological collection from Java.
 Chotaro Tsuyuki—Suite of specimens and photographs illustrating the silk industry of Japan.

Department of Mechanical and Electrical Engineering

I. T. E. Circuit Breaker Co., Philadelphia, per N. G. Blagdon Phillips:
 1—60-amp. auto urelite 3 pole, overload, Dalite, no voltage bellringer; 220 volts A.C., 3-phase 60 cycles, equipped with slip on rear connections with cover and base strip features.
 1—100 amp. L L 3-pole, 2-coil, R A overload auto, Dalite. No voltage bellringer, 220 volts, 3-phase, 60 cycles.
 1—Framed photograph of 45,000 amp. breaker.

Department of Zoology

H. Hook and Mrs. E. Jackson, Cowichan Bay—An extensive-arranged collection of insects of all orders, with smaller though representative collections of Crustacea, mounted birds skins and birds' eggs and mounted skins and skulls of mammals. The insects are representative of Great Britain, Canada and, to some extent, of Japan; the birds and mammals are representative of Britain and Canada. The collections are contained in uniform mahogany cases and are accompanied by accession catalogues with numbers running to nearly four thousand named species. They were made by Mr. Hook, his three sons and daughter, Mrs. E. Jackson, and were presented to the University as a memorial to the three boys who were killed in the war.
 R. C. Cummings, South Vancouver; Ian McTaggart Cowan, North Vancouver; Dr. M. Y. Williams, U. B. C.; Miss F. Spencer, South India: Collections of external and internal parasites of birds.
 Miss F. Spencer, Bangalore, South India—A collection of Phasmidae, Mantidae, two cobras, one viper and one tree snake.
 Several sources in British Columbia—Small collections of local insects.
 D. M. Pierce, Hudson's Bay Company, Coronation Gulf—A collection of local birds from Coronation Gulf, representative of the Arctic Circle.

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 72,000 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 550 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 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. Such persons are known as "Extra-mural Readers." By order of the Board of Governors, a fee of \$1.00 per calendar year is charged such readers. In addition, they pay necessary mailing costs, a deposit being required from those unable to call personally for books loaned.

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.

LOCATION AND BUILDINGS

LOCATION

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 approximately 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 allotted 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 paterae 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 CO₂ 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 alternator 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.

1929-30

GENERAL INFORMATION

The Session

The academic year begins on the First of September and ends on the last day of August. The Winter Session is divided into two terms—the first, September to December; the second, January to May. The Summer Session consists of seven weeks' instruction in July and August, for which preparatory reading is required except in certain cases. (See Summer Session "Announcement.") For "Admission to the University" see Page 42, and for "Registration and Attendance" see Page 45.

Courses of Study

For the Session of 1929-30 the University offers instruction in 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.

Infectious Diseases

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.

Students *exposed* to any infectious disease must immediately report to the Medical Health Officer. Such students may be permitted, by special order of the Medical Health Officer, to attend the University for a prescribed period, despite the exposure.

Such students shall report daily (or oftener, at the discretion of the Medical Health Officer), to the Public Health Nurse for such prescribed period. Failure to so report will result in immediate exclusion from the University.

University Employment Bureau

The objects of the Employment Bureau are to provide students with summer employment, to provide part-time work for students during the Winter Session, and to help students in obtaining positions after graduation. This service is for employers seeking help and for students desiring employment. Those who know of positions vacant are requested to notify the Bureau. Correspondence should be addressed to the Employment Bureau, Registrar's Office.

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. Women students under twenty-five years of age are permitted to occupy suites in apartment houses only when accompanied by some older person. Any such arrangement must be made in consultation with the Dean of Women. 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. Students over 18 years of age with full "Normal Entrance" standing who hold Normal School certificates are admitted to the University as having full Junior Matriculation standing. 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, obtained in 1927 or subsequently, 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

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

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 "Programme of Studies for the High and Technical Schools," issued by the Department of Education.

1929-30

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 18th, and for all other undergraduate students, Friday, September 20th, 1929. (See regulations in reference to "Admission to the University," page 42).

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 defects in their standing which do not prevent their entering a higher year under the regulations governing "Examination 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, who are not proceeding to a degree, 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. 7th.....	\$50.00
Second Term, payable on or before Jan. 20th..	50.00
	\$100.00

In Teacher Training Course—

First Term, payable on or before Oct. 7th.....	\$30.00
Second Term, payable on or before Jan. 20th..	30.00
	\$ 60.00

In Applied Science—

First Term, payable on or before Oct. 7th.....	\$75.00
Second Term, payable on or before Jan. 20th..	75.00
	\$150.00

In Nursing and Public Health—

First Term, payable on or before Oct. 7th.....	\$50.00
Second Term, payable on or before Jan. 20th..	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 7th.

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. 7th.....	\$50.00
Second Term, payable on or before Jan. 20th..	50.00
	\$100.00

Alma Mater Fee—Payable on or before Oct. 7th.....\$ 10.00

Caution Money—Payable on or before Oct. 7th..... 5.00

FOR PARTIAL STUDENTS

<i>Fees per "Unit"</i> —Payable on or before Oct. 7th.....	\$ 10.00
<i>Alma Mater Fee</i> —Payable on or before Oct. 7th.....	10.00
<i>Caution Money</i> —Payable on or before Oct. 7th.....	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 7th and January 20th, 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 7th shall pay their fees at the time of registration, failing which they become subject to the provisions of Regulation 2.

FOR SUMMER SESSION STUDENTS

Fees are payable on registration, otherwise an additional fee of \$2.00 will be exacted.

For students registering in October for preparatory work one-half of the fees is payable on registration, and the balance at the beginning of the Summer Session in the following July.

For Saturday Morning, Late Afternoon and Evening Classes one-half of the fees is payable on registration, and the balance in January of the following year.

Minimum fee	\$20.00
For three units (at the rate of \$13 for 1½ units)	26.00
For six units	52.00
For Commercial Course	20.00
Summer Session Association	1.00

Students borrowing books from the University Library for Preparatory Reading courses, will be required to make the usual deposit of two dollars (\$2.00), with the Librarian to cover mailing cost.

SPECIAL FEES

Regular supplemental examination, per paper	\$ 5.00
Special examination, per paper	7.50
Re-reading, per paper	2.00
Graduation	20.00

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

**MEDALS, SCHOLARSHIPS, PRIZES, BURSARIES AND
LOANS FOR 1929-30****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 1929-30 to a returned soldier student in attendance at the University of

British Columbia. Applications may be made by returned soldier students who intend doing work in the Second or any later year 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 post-graduate 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 late 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 has been given a gold medal, the permanent possession of the successful candidate. These scholarships will be open to graduates of The University of British Columbia. The fifth scholarship having been awarded in May, 1929, there will be no further award in 1930, except by way of renewal.

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 1930 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, 1929.

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 all years but the final, 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 51)

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.

*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.

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 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 Beverley Cayley Scholarship

A scholarship of \$100.00, given by His Honour Judge Cayley and Mrs. Cayley in memory of their son, Beverley Cay-

ley, Arts '18, will be awarded to the male 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 Fourth Year in Applied Science and proceeding to the work of the Fifth Year.

University Scholarship

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

Royal Institution Scholarship

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

*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.

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.

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, will 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 1929-30 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, 1929, 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.

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 Fifth 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 Fifth 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 Fourth Year of the

Faculty of Applied Science, who are registered as Engineering Pupils of 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 1929-30 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 1929-30 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 Bursary

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 Fund

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.

1929-30

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 8.....	S 800	Education.....	Ap 204	Economics 8.....	S 300
	Education.....	Ap 204	English 1 b.....	A 100	Education.....	Ap 204
	English 1 a.....	A 103,	Secs. 1, 2, 3, 4, 5, 6.....	106, 205,	English 1 a.....	A 103,
	Secs. 7, 8, 9, 10, 11, 12.....	106, 205,		206, 207,	Secs. 7, 8, 9, 10,	106, 203,
		203, 206,		208	11, 12.....	205, 206,
		207	French 2.....	A 101,		207
	English 13.....	A 100	Secs. e, f, g.....	104, 105,	English 13.....	A 100
	French 2.....	A 101,	Geology 5 and 12.....	Ap 102	French 2.....	A 101,
	Secs. a, b, c, d.....	104, 105,	Latin 2, Sec. 1.....	A 103	Secs. a, b, c, d.....	104, 105,
		108	Latin 6.....	A 102		108
	Geology 8 and 4.....	Ap 102	Mathematics 1.....	.....	Geology 8 and 4.....	Ap 102
	Greek 1.....	A 102	Sec. 1.....	A 203	Greek 1.....	A 102
	Greek 9.....	A 202	Mathematics 16.....	Ag 101	Greek 9.....	A 202
	Mathematics 8.....	A 204	Physics 2, Sec. 1.....	S 200	Mathematics 8.....	A 204
	Mathematics 10.....	A 208	Zoology 2.....	Ap 101	Mathematics 10.....	A 208
	Mathematics 17.....	A 201	Zoology 3.....	Ap 101	Mathematics 17.....	A 201
	Philosophy 1, Sec. 1.....	Ap 100			Philosophy 1, Sec. 1.....	Ap 100
Physics 1, Sec. 1.....	S 200			Physics 1, Sec. 1.....	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, b and d.....	Ap 101
	Chemistry 8.....	S 417	Chemistry 9.....	S 417	Chemistry 8.....	S 417
	Economics 1, Sec. 1.....	A 103	Economics 1.....	.....	Economics 1, Sec. 1.....	A 103
	Education.....	Ap 202	Sec. 3.....	A 103	English 1, Sec. 13.....	A 204
	English 1, Sec. 13.....	A 204	Economics 4.....	A 100	English 9.....	A 100
	English 9.....	A 100	Education.....	Ap 202	French 3 b.....	A 104
	French 3 b.....	A 104	English 17.....	A 203	French 4 b.....	A 105
	French 4 b.....	A 105	French 4 a.....	A 104	Geology 1.....	Ap 100
	Geology 1.....	Ap 100	Geology 2.....	.....	Geology 7.....	.....
	History 20.....	A 101	German 1.....	A 201	History 20.....	A 101
	Mathematics 1.....	A 106	Government 1.....	A 108	Mathematics 1.....	A 106,
	Secs. 8, 9, 10, 11,	108, 203,	Greek 2.....	A 102	Secs. 8, 9, 10, 11,	108, 203,
	12, 13.....	205, 206,	History 14.....	A 101	12, 13.....	205, 206,
		207	Latin 2, Sec. 2.....	A 202		207
	Philosophy 1,		Mathematics 1.....	A 105,	Philosophy 1, Sec. 3.....	A 208
	Sec. 3.....	A 208	Secs. 2, 3, 4, 5, 6, 7.....	106, 205,	Philosophy 3, Sec. 2.....	S 400
	Philosophy 3.....	S 400		206, 207,	Physics 1, Sec. 2.....	S 200
	Physics 1, Sec. 2.....	S 200	Philosophy 2.....	208	Physics 3.....	S 210
	Physics 3.....	S 210	Physics 2, Sec. 2.....	A 304		
			S 200			
11	Agricultural		Botany 1.....	Ap 101	Agricultural	
	Economics.....	Ag 104	Botany 6 b.....	Ap 235	Economics.....	Ag 104
	Biology 1.....	Ap 100	Chemistry 1, Sec. 3.....	S 800	Biology 1.....	Ap 100
	Chemistry 7.....	S 417	Chemistry 4.....	S 417	Botany 6 b.....	.....
	Economics 1,		Economics 1, Sec. 4.....	Ap 100	Chemistry 7.....	S 417
	Sec. 2.....	S 400	Education.....	A 206	Economics 1,	S 400
	Economics 7.....	S 200	French 1.....	A 104,	Sec. 2.....	S 200
	Education.....	Ap 202	Secs. e, f, g, h.....	105, 108,	Education 7.....	Ap 202
	English 14.....	A 203		205	English 14.....	A 203
	French 1.....	A 105,	French 3 a.....	A 100	French 1.....	A 105,
	Secs. a, b, c, d.....	108, 204,	French 4 d.....	A 202	Secs. a, b, c, d.....	108, 204,
		207	Geology 6.....	Ap 102		207
	French 3 c.....	A 208	Government 2.....	A 102	French 3 c.....	A 208
	French 4 d.....	A 104	History 4.....	A 106	French 4 d.....	A 104
	Geology 8.....	Ap 102	History 12.....	A 101	Geology 8.....	Ap 102
	German, Beg. A.....	A 205	Latin 1, Secs. 3, 4.....	A 103,	German, Beg. A.....	A 205
	History 2.....	A 100		207	History 2.....	A 100
	History 11.....	A 202	Mathematics 2.....	.....	History 11.....	A 202
	History 15.....	A 101	Sec. 2.....	A 208	History 15.....	A 202
	Latin 1, Secs. 1, 2.....	A 103,	Philosophy 3, Sec. 1.....	A 205	Latin 1.....	A 101
	206	Zoology 4.....	Ap 101	Secs. 1, 2.....	A 103, 206	
Mathematics 2,		Zoology 7.....	Ap 101	Mathematics 2,		
Sec. 1.....	A 106			Sec. 1.....	A 106	
Philosophy 4.....	A 102			Philosophy 4.....	A 102	
Physics 4.....	S 210			Physics 4.....	S 210	
Zoology 1.....	Ap 101			Zoology 1.....	Ap 101	

-1929-30 AND SCIENCE

Ap, Applied Science; S, Science.

MORNINGS

THURSDAY	ROOM	FRIDAY	ROOM	SATURDAY	ROOM
Botany 2.....		Botany 2.....	Ap 101	Botany 5 b Lab.....	.....
Economics 2.....	A 108	Botany 6 f.....	Ap 101	Chemistry 9 Lab.....	A 108
Education.....	Ap 204	Botany 7 a.....	S 800	Economics 2.....	Ap 204
English 1 b, Secs. 1, 2, 3, 4, 5, 6.....	A 100, 106, 205, 206, 207, 208	Economics 3.....	Ap 204	Education.....	A 100, 106, 205, 206, 207, 208
French 2, Secs. e, f, g.....	A 101, 104, 105	English 1 b, Secs. 7, 8, 9, 10, 11, 12.....	A 108, 106, 203, 205, 206, 207	English 1 a, Secs. 1, 2, 3, 4, 5, 6.....	A 101, 104, 105
Geology 5 and 12.....	Ap 102	English 13.....	A 100	French 2, Secs. e, f, g.....	A 101, 104, 105
Latin 2, Sec. 1.....	A 103	French 2, Secs. a, b, c, d.....	A 101, 104, 105, 108	Geology 10.....	A 103
Latin 6.....	A 102	Geology 3 and 4.....	Ap 102	Latin 2, Sec. 1.....	A 102
Mathematics 1, Sec. 1.....	A 208	Greek 1.....	A 102	Latin 6.....	A 208
Mathematics 16.....	Ag 101	Greek 9.....	A 202	Mathematics 1, Sec. 1.....	A 208
Physics 2, Sec. 1.....	S 200	Mathematics 3.....	A 204	Mathematics 16.....	Ag 101
Zoology 2.....	Ap 101	Mathematics 8.....	A 208	Physics 2, Sec. 1.....	S 200
Zoology 3.....	Ap 101	Mathematics 10.....	A 201		
		Mathematics 17.....	Ap 100		
		Philosophy 1, Sec. 1.....	S 200		
		Physics 1, Sec. 1.....			
Botany 3.....	Ap 101	Botany 5 a.....	Ap 101	Botany 5 b Lab.....	.....
Botany 6 c.....	Ap 101	Chemistry 2.....	S 800	Chemistry 9 Lab.....	.....
Chemistry 9.....	S 417	Economics 1, Sec. 1.....	A 103	Economics 1, Sec. 3.....	A 103
Economics 1, Sec. 3.....	A 103	Education.....	Ap 202	Economics 4.....	A 100
Economics 4.....	A 100	English 1, Sec. 13.....	A 204	Education.....	Ap 202
Education.....	Ap 202	English 9.....	A 100	English 17.....	A 208
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.....	A 101	German 1.....	A 201
German 1.....	A 201	History 20.....	A 106,	Government 1.....	A 108
Government 1.....	A 108	Mathematics 1, Secs. 8, 9, 10, 11, 12, 13.....	108, 203, 205, 206, 207	Government 1.....	A 102
Greek 2.....	A 102	Philosophy 1, Sec. 3.....	A 208	Greek 2.....	A 101
History 14.....	A 101	Philosophy 8, Sec. 2.....	S 400	History 14.....	A 202
Latin 2, Sec. 2.....	A 202	Physics 1, Sec. 2.....	S 200	Latin 2, Sec. 2.....	A 105,
Mathematics 1, Secs. 2, 3, 4, 5, 6, 7.....	A 105, 106, 205, 206, 207, 208			Mathematics 1, Secs. 2, 3, 4, 5, 6, 7.....	106, 205, 206, 207, 208
Philosophy 2.....	A 204			Philosophy 2.....	A 204
Physics 2, Sec. 2.....	S 200			Physics 2, Sec. 2.....	S 200
Botany 1.....	Ap 101	Agricultural Economics.....	Ag 104	Botany 5 b Lab.....	.....
Chemistry 1, Sec. 3.....	S 800	Economics 1, Sec. 2.....	S 400	Chemistry 1, Sec. 3.....	S 800
Chemistry 4.....	S 417	Economics 7.....	S 200	Chemistry 9 Lab.....	Ap 100
Economics 1, Sec. 4.....	Ap 100	Education.....	Ap 202	Economics 1, Sec. 4.....	A 206
Education.....	A 206	English 14.....	A 203	Education.....	A 104,
French 1, Secs. e, f, g, h.....	105, 108, 203	French 1, Secs. a, b, c, d.....	A 105, 108, 204, 207	French 1, 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
Geology 6.....	Ap 102	Geology 8.....	Ap 102	Geology 10.....	A 102
Government 2.....	A 102	German, Beg. A.....	A 205	Government 2.....	A 102
History 4.....	A 106	Government 3.....	S 200	History 4.....	A 106
History 12.....	A 101	History 2.....	A 100	History 12.....	A 101
Latin 1, Secs. 3, 4.....	A 108, 207	History 11.....	A 202	Latin 1, Secs. 3, 4.....	A 108
Mathematics 2, Sec. 2.....	A 205	History 15.....	A 101	Mathematics 2, Sec. 2.....	A 208
Philosophy 8, Sec. 1.....	Ap 101	Latin 1, Secs. 1, 2.....	A 103	Philosophy 8, Sec. 1.....	A 205
Zoology 4.....	Ap 101	Mathematics 2, Sec. 1.....	A 106		
Zoology 7.....	Ap 101	Philosophy 4.....	A 102		
		Zoology 6.....	Ap 101		
		Zoology 5.....	Ap 101		

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AFTERNOONS

TIME TABLE

	MONDAY	ROOM	TUESDAY	ROOM	WEDNESDAY	ROOM
1	Botany 3 Lab.....	Bacteriology 1.....	Botany 3 Lab.....
	Botany 5 c Lab.....	.....	Botany 2.....	.....	Botany 5 a and c.....	.....
	Chemistry 1, Sec.1.....	S 800	Botany 4.....	.....	Botany 6 c Lab.....	.....
	Economics 8.....	A 208	Botany 6 e.....	.....	Chemistry 1, Sec. 1.....	S 800
	Education.....	A 103	Education.....	Ap 202	Economics 8.....	A 208
	English 2 b.....	A 100, Ap 100, S 400, S 200	English 5.....	A 201	Education.....	A 108
		A 104,	English 7.....	A 101	English 2 a.....	A 100
	French 1, Secs. i, j, k, l.....	105, 108, 208	Geology 1 Lab.....	A 105,	French 1, Secs. i, j, k, l.....	A 104, 105, 108, 208
		A 204	Mathematics 1, Secs. 1, 2, 3, 4, 5, 6, 7.....	106, 208, 205, 206, 207, 208	French 4 c.....	A 204
	French 4 c.....	A 204	Philosophy 5.....	A 204	Geology 7 Lab.....	.....
History 10.....	A 106	Physics 3 Lab., Sec. 1.....	.....	History 10.....	A 106	
Latin 4.....	A 102	Zoology 2 Lab.....	.....	Latin 4.....	A 102	
Philosophy 9.....	A 205	Zoology 3 Lab.....	.....	Philosophy 9.....	A 205	
Zoology 5 Lab.....	.....			Sociology.....	A 200	
Zoology 6 Lab.....	.....			Zoology 5 Lab.....	.....
				Zoology 6 Lab.....	.....
2	Botany 3 Lab.....	.....	Bacteriology 1.....	.....	Botany 3 Lab.....	.....
	Botany 5 c Lab.....	.....	Biology 1, Sec. 1.....	.....	Botany 5 a and c.....	.....
	Chemistry 1, Sec. 2.....	S 800	Botany 2.....	.....	Botany 6 c Lab.....	.....
	Chemistry 7 Lab.....	.....	Botany 4.....	.....	Chemistry 1, Sec. 2.....	S 800
	Education.....	A 108	Botany 6 e.....	.....	Education.....	A 106
	English 10.....	A 206	Education.....	Ap 202	English 10.....	A 206
	English 16.....	A 104	English 1 b, Secs. 7, 8, 9, 10, 11, 12, 13.....	A 108, 105, 106, 205, 206, 207, 208	English 16.....	A 104
	French 1, Secs. m, n, o.....	A 105, 208, 204,		A 100	French 1, Secs. m, n, o.....	A 105, 208, 204
	Geography 1.....	Ap 100	English 2 c.....	.....	Geology 7 Lab.....	.....
	German 2.....	A 201	Geology 1 Lab.....	.....	Geography 1.....	Ap 100
History 1.....	A 100	Physics 3 Lab., Sec. 1.....	.....	German 2.....	A 201	
History 13.....	A 108	Zoology 2 Lab.....	.....	History 1.....	A 100	
History 18.....	A 101	Zoology 3 Lab.....	.....	History 13.....	A 108	
Philosophy 1, Sec. 2.....	S 210			History 19.....	A 101	
Physics 4 Lab.....	.....			Philosophy 1, Sec. 2.....	S 210	
Sociology.....	A 108			Sociology.....	A 103	
Zoology 5 Lab.....	.....			Zoology 5 Lab.....	.....
Zoology 6 Lab.....	.....			Zoology 6 Lab.....	.....
3	Bacteriology 1.....	.....	Biology 1, Sec. 1.....	.....	
	Botany 1 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 103	Geology 6 Lab.....	.....	
Physics 4 Lab.....	.....	Physics 3 Lab.....	.....		
Zoology 5 Lab.....	.....	Zoology 2 Lab.....	.....		
Zoology 6 Lab.....	.....	Zoology 3 Lab.....	.....		
4	Bacteriology 1.....	.....	Biology 1, Sec.2.....	.....	
	Botany 1 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.....	.....	
	Geology 5 Lab.....	.....	Zoology 2 Lab.....	.....	
	Physics 4 Lab.....	.....	Zoology 3 Lab.....	.....	
Zoology 5 Lab.....	.....				
Zoology 6 Lab.....	.....				
5	Bacteriology.....	S 400	Biology 1 Lab. 2.....	.....	
	Chemistry 1 Lab. 1.....	.....	Botany 2 Lab.....	.....	
	Chemistry 2 Lab. a.....	.....	Botany 4 Lab.....	.....	
			Chemistry 1, Lab. 2.....	.....	
			Chemistry 2 Lab. b.....	.....	

—Continued

AFTERNOONS

THURSDAY	ROOM	FRIDAY	ROOM				
Biology 1, Sec. 3.....	Biology 1, Sec. 5.....			1	
Botany 4.....	.....	Biology 3.....	.....			
Botany 6 c and e Lab.....	.....	Botany 6 d Lab.....	.....			
English 8.....	A 201	Chemistry 1, Sec. 1.....	S 800				
English 7.....	A 101	Economics 8.....	A 208				
Geology 1 Lab.....	.....	Education.....	A 108			
Mathematics 1.....	A 108,	English 2 a.....	A 100				
Secs. 8, 9, 10, 11,	106, 208,	French 1.....	A 104,				
12, 13.....	205, 206,	Secs. 1, j, k, l.....	105, 108,				
Philosophy 5.....	207	French 4 c.....	208				
Physics 8, Lab., Sec. 2.....	A 204	Geology 2 Lab.....	A 204				
Zoology 1 Lab.....	.....	History 10.....	A 106			
		Latin 4.....	A 102				
		Philosophy 9.....	A 205				
		Sociology.....	S 200				
		Zoology 4 Lab.....	.....			
		Zoology 7 Lab.....	.....			
Biology 1, Sec. 3.....	Bacteriology 1.....			2	
Botany 4.....	.....	Biology 1, Sec. 5.....	.....			
Botany 6 c and e Lab.....	.....	Biology 3.....	.....			
Chemistry 8 Lab. b.....	.....	Botany 6 d Lab.....	.....			
English 1 a.....	A 100,	Chemistry 1, Sec. 2.....	S 800				
Secs. 1, 2, 3, 4, 5, 6.....	106, 205,	Chemistry 8 Lab. a.....	.....			
Geology 1 Lab.....	206, 207,	Education.....	A 106				
Physics 8 Lab., Sec. 2.....	208	English 10.....	A 206				
Zoology 1 Lab.....	.....	English 16.....	A 104			
		French 1.....	A 105,				
		Secs. m, n, o.....	203, 204				
		Geography 1.....	Ap 100				
		Geology 2 Lab.....	.....			
		German 2.....	A 201				
		History 1.....	A 100				
		History 18.....	A 108				
		History 19.....	A 101				
		Philosophy 1, Sec. 2.....	S 210				
		Sociology.....	A 108				
		Zoology 4 Lab.....	.....			
		Zoology 7 Lab.....	.....			
Biology 1, Sec. 4.....	Bacteriology 1.....			3	
Botany 7 Lab.....	.....	Biology 1, Sec. 6.....	.....			
Chemistry 1 Lab. 3.....	.....	Biology 3.....	.....			
Chemistry 2 Lab. b.....	.....	Botany 6 d Lab.....	.....			
Chemistry 8 Lab. b.....	.....	Chemistry 1 Lab. 4.....	.....			
English 15.....	A 101	Chemistry 2 Lab. a.....	.....			
Physics 8 Lab., Sec. 2.....	.....	Chemistry 3 Lab. a.....	.....			
Zoology 1 Lab.....	.....	English 12.....	A 201			
		Zoology 4 Lab.....	.....			
		Zoology 7 Lab.....	.....			
Biology 1, Sec. 4.....	Biology 1, Sec. 6.....				4
Botany 7 Lab.....	.....	Biology 3.....	.....			
Chemistry 1 Lab. 3.....	.....	Botany 6 d Lab.....	.....			
Chemistry 2 Lab. b.....	.....	Chemistry 1 Lab. 4.....	.....			
Chemistry 3 Lab. b.....	.....	Chemistry 2 Lab. a.....	.....			
Zoology 1 Lab.....	.....	Chemistry 3 Lab. a.....	.....			
		Zoology, 4 Lab.....	.....			
		Zoology 7 Lab.....	.....			
						
						
						
						
						
						
						
						
Chemistry 1 Lab. 3.....	Chemistry 1 Lab. 4.....			5	
Chemistry 2 Lab. b.....	.....	Chemistry 2 Lab. a.....	.....			

Faculty of Arts and Science Supplemental Examinations

SEPTEMBER, 1929

Date	Hour	First Year	Second Year	Third Year
Wednesday, September 11th	9 A.M. 2 P.M.	History 1, 2, 3 English Literature	History 1, 2, 3 English Literature	
Thursday, September 12th	9 A.M. 2 P.M.	Latin Authors Chemistry 1 Latin Composition	Latin 2 Chemistry 1, 2	
Friday, September 13th	9 A.M. 2 P.M.	French Geometry Greek	French Geometry Greek	
Saturday, September 14th	9 A.M.	Physics 1, 2	Physics 1, 2, 3 Logic	
Monday, September 16th	9 A.M. 2 P.M.	Trigonometry Algebra	Botany Calculus Zoology 1 Algebra Psychology	
Tuesday, September 17th	9 A.M. 2 P.M.	English Composition German Biology 1	English Composition Biology 1 German	
Wednesday, September 18th	9 A.M. 2 P.M.	Economics 1 Geography	Economics 1, 2 Geography	

To be arranged

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 prerequisites 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. (*See regulations under "First and Second Years" and "Third and Fourth Years."*)

Credits obtained at the Summer Session (*see University Summer Session*) may be combined 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 4, 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 4, 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 4 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:—Students thinking of entering Applied Science are referred to the list of subjects required to be taken by them in First Year Arts, and the regulations in reference to these, given under "Admission" and "General Outline of Courses" in Applied Science. They are advised to attend the noon hour talks on the choice of a profession and on the life and work in vocations likely to appeal to Applied Science graduates.

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 consist of 30 units, of which students must take, in their Third Year, not less than 15 units. The graduation standing is determined by the results of the Third and Fourth Years combined.

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 of the Third and Fourth Years. 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, Mathematics, Physics, Zoology.
- (b) English, Government, Greek, Latin, French, German, History, Economics, Mathematics, Philosophy.

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

3. Only two subjects (6 units) of the First or Second Year courses may be taken in the combined Third and Fourth Years. In a number of these courses extra reading will be required of Third and Fourth Year students.

When two First or Second Year subjects are taken in the Third and Fourth Years not more than one of these subjects may be outside the departments in which the student is doing his major work.

4. 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.

5. 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 com-

pleted 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 specialization. (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 or 2, 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 or 2 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 or 2 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 5. 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 5, and 15 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, 5, 8 or 19, and two units from 7, 10, 12, 13 or 14. 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 or 2; 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 5.

(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 10 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. In general the minor shall be taken outside the Department in which the student is taking his major, but special permission may be given

by Faculty to take both major and minor in the same department, provided the subjects are different and are under different professors.

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. Examinations 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.

Graduate students, who are Assistants, giving not more than four hours a week of tutorial instruction, are permitted to qualify for the M.A. degree after one regular winter session of University attendance, provided they have done, in the Summer vacation, research work of nature and extent satisfactory to the Head of the Department concerned. Such students must be registered as graduate students and must have secured the approval of the Head of the Department concerned and of the Faculty before entering upon the research in question. Other graduate 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) *XVIIth 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 Héloïse—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 10 to 20 inclusive.

Major:—Three courses (nine units) to be chosen from History 10 to 20 inclusive.

M.A. Course:

Minor:—Two courses (6 units) to be chosen from History 10 to 20 inclusive; or the equivalent in reading courses. All candidates for a minor in History must attend the Honours Seminar.

Major:—Two courses (six units) to be chosen from History 10 to 20 inclusive. A thesis embodying original work to which 3 units of credit is given. All candidates for a major in History must attend the Honours 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.

Physics*Prerequisites:*

Minor:—Physics 3 and 5 and at least two more units of work regularly offered in the Third or Fourth Year.

Major:—At least eight units of work regularly offered in the Third and Fourth Years.

M.A. Course:

Minor:—Six units of work in advanced courses in Physics not already taken.

Major:—(a) At least six units of work in the graduate courses.

(b) 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 First and Second Year students who during one session do 15 units of regular work, 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. A request for the re-reading of an answer paper must be forwarded to the Registrar WITHIN FOUR WEEKS after the results of the examinations are announced. Each applicant must state clearly his reasons for making such a request in view of the fact that the paper of a candidate who makes less than a passing mark in a subject is read at least a second time before results are tabulated and announced. A re-reading of an examination paper will be granted only with the consent of the Head of the Department concerned. The fee for re-reading a paper is \$2.00.

5. A student who makes 50 per cent. of the total required for a full year's work (at least 15 units chosen in conformity with calendar regulations), but who fails in an individual subject will be granted a supplemental examination in that subject if he has not fallen below 30 per cent. in that subject. If his mark is below 30 per cent. a supplemental examination will not be granted. Notice will be sent to all students to whom supplemental examinations have been granted.

A student who makes less than 50 per cent. of the total required for a full year's work (15 units), will not be allowed a supplemental examination.

6. 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. Only under urgent circumstances will the privilege of writing a Special Examination be granted. Special examinations will be held during the third week in October and the second week in January and at these times only. 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.

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. If a student fails in two supplemental examinations (whether on the regular date or by way of special examination), in respect of the same course, no further supplemental examination will be granted to that student in respect of that course. If the course is a required one the student must repeat the course; if it is an optional course he may repeat it or take an alternative.

8. No student may enter a higher year with standing defective in respect of more than 3 units.

No student with defective standing of more than 3 units of the year immediately preceding, or with any defects from a year earlier than the one immediately preceding, shall be allowed to register for more than 15 units of work, these units to include the subject (or subjects) in which he is conditioned or permissible substitutes.

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 W. Stewart.

Assistant: Helen M. Mathews.

Assistant: Elizabeth M. Guernsey.

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. Jordan and Falk, *Newer Knowledge of Bacteriology and Immunology*, University of Chicago Press, Latest Editions.

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.

Honorary Lecturer: William Newton.

Assistant: Jean Davidson.

Assistant: R. W. Pillsbury.

Assistant: Margaret Keillor.

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 (a) *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 and one laboratory period per week. First Term. 1½ units.

2 (b) *Principles of Genetics*:—A continuation of the studies of genetic principles with suggested applications. A lecture and laboratory course. The laboratory work will consist of problems, examination of illustrative material and experiments with *Drosophila*.

Text-book:—Sinnott and Dunn, *Principles of Genetics*, McGraw-Hill.

Prerequisite:—Biology 2 (a).

One lecture and four hours laboratory per week.

Second Term.

1½ units.

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 (2 units) toward Botany 1 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. $\frac{1}{2}$ 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. $\frac{1}{2}$ unit.

7. *Plant Ecology.*

7 (a) *Forest Ecology and Geography*:—The inter-relations of forest trees and their environment; the biological character-

istics of important forest trees; forest associations; types and regions; physiography.

Reference books: Whitford and Craig, *Forests of British Columbia*, Ottawa; Zon and Sparhawk, *Forests of the World*, McGraw, Hill; 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.

Assistant Professor: William Ure.

Instructor: John Allardyce.

Assistant: H. R. Lyle Streight.

Assistant: A. Ernest Morell.

Assistant: E. C. Hallonquist.

Assistant: F. L. Munro.

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:—Kendall, *General Chemistry*, Century Co.

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 theoretical chemistry, including a study of gases, liquids, and solids, solutions, ionization, and electrical conductivity, thermochemistry, chemical equilibrium, kinetics of reactions, colloids.

Books recommended:—Millard, *Physical Chemistry for Colleges*, McGraw-Hill; Noyes and Sherrill, *Chemical Principles*, Macmillan; For Laboratory Use:—Findlay, *Practical Physical Chemistry*, Longmans.

Prerequisites:—Chemistry 2, Mathematics 2.

Two lectures and three hours' laboratory per week. Second Term. $1\frac{1}{2}$ 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*.—This course is a continuation of Chemistry 4 and treats in more detail the kinetic theory of gases, properties of liquids and solids, elementary thermodynamics and thermochemistry, properties of solutions, theoretical electrochemistry, chemical equilibrium, kinetics of reactions, radioactivity.

Books recommended:—Getman, *Outlines of Theoretical Chemistry*, Wiley; Noyes and Sherrill, *Chemical Principles*, Macmillan; For Laboratory: Sherrill, *Laboratory Experiments on Physico-Chemical Principles*, Macmillan; Findlay, *Practical Physical Chemistry*, Longmans.

Prerequisites:—Chemistry 2, 3 and 4.

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

8. *Electrochemistry*.—(a) Solutions are studied from the standpoint of the osmotic and dissociation theories. The laws of electrolysis, electroplating, electromotive force, primary and secondary cells are considered in detail.

For reference:—LeBlanc, *Elements of Electrochemistry*, Macmillan; Creighton-Fink, *Theoretical Electrochemistry*, Vol. 1, John Wiley & Sons; Allmand, *Applied Electrochemistry*, Longmans-Green.

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

(b) As in Applied Science.

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:—Moore, *History of Chemistry*, McGraw-Hill.

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.

Prerequisites:—Chemistry 7 and 9.

Lectures:—2 units. 2 units.

(Given in 1929-30 and alternate years.)

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.

(Given in 1930-31 and alternate years.)

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.

(Given in 1929-30 and alternate years.)

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.

Prerequisites:—Chemistry 2 and 4.

Two lectures per week. 2 units.

(Given in 1930-31 and alternate years.)

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.

20. *Methods in Teaching High School Chemistry*.—This course is offered primarily for students in the Teacher Training Course and does not carry undergraduate credit.

For reference:—Black and Conant, *Practical Chemistry*, The Macmillan Company. Kendall, *General Chemistry*, The Century Company.

Three lectures per week. Second Term.

Department of Classics

Professor: Lemuel Robertson.

Professor of Greek: O. J. Todd.

Associate Professor: H. T. Logan.

Instructor: Geoffrey B. Riddehough.

Assistant: George F. Davidson.

Greek

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

Four hours a week. 3 units.

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

History.—Robertson and Robertson, *The Story of Greece and Rome*, Chap. I-XXXII.

Four hours a week. 3 units.

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

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

Literature.—Norwood, *The Writers of Greece.*

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.

Three hours a week. 3 units.

(Given in 1930-31 and alternate years.)

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

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

(Given in 1930-31 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. Mr. Todd, Mr. Logan. 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 contributory 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. Mr. Logan. 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, Two Vols. Everyman; Aristophanes, translated by Frere, Vol. I, (Everyman).

Two hours a week. Mr. Todd. 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, *Cicero and Antony*, Turberville, Oxford Press; 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, Chap. I to XXXII.

Three hours a week. 3 units.

Mr. Robertson, Mr. Riddehough.

A fourth hour a week will be devoted to lectures on the 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.—Robertson and Robertson, *The Story of Greece and Rome*, Dent, Chap. XXXII-LIV.

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

(Given in 1930-31 and alternate years.)

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

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

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

(Given in 1930-31 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. Mr. Robertson, Mr. Todd. 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. 3 units.

(Given in 1930-31 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. *Methods in High School Latin*. Spring term only. This course is offered primarily for students in the Teacher Training Course, and does not carry undergraduate credit. Readings to be assigned.

Three hours a week. Mr. Robertson.

Department of Economics, Sociology and Political Science

Professor: Theodore H. Boggs.

Associate Professor: H. F. Angus.

Associate Professor:.....

Assistant Professor: G. F. Drummond.

Assistant: Doris E. Lazenby.

Assistant: Peter F. Palmer.

Economics

It is hoped that, in the session of 1929-1930, it will be possible to offer (particularly in the direction of commercial studies), a wider range of courses than that described in the Calendar.

The sudden death of Mr. Beckett at the moment of sending the Calendar to press makes it necessary to warn students that the courses listed below as Sociology 1, Economics 2, 5 and 8 may be altered or cancelled.

Students whose plans will be affected by these arrangements are asked to leave their names and addresses with the Registrar so that full information can be sent to them as soon as it is available.

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.

Rufener, *Principles of Economics*, Houghton Mifflin; *The Canada Year Book*, 1928.

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; the relation between economic theory and existing economic organization, 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.

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. 3 units.

(Given in 1930-31 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 1930-31 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. 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 a 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 a 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 1930-31 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.

3 units.

Department of Education

Professor: G. M. Weir.

Associate Professor: Jennie Wyman Pilcher.

Special Lecturer: H. T. J. Coleman.

Lecturers in High School Methods: the following Heads of Departments: H. Ashton, D. Buchanan, R. H. Clark, T. C. Hebb, L. Robertson, D. C. Harvey, 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, Miss R. E. Bassin, 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

Candidates qualifying for the "Academic Certificate" (given by the Provincial Department of Education, Victoria, on the completion of the *Teacher Training Course* as specified below), take the courses prescribed on Pages 115 to 117 below. These courses are open only to graduates registered in the Teacher Training Course.

Four Courses in Education open only to Third and Fourth Year undergraduates in Arts, see Pages 117-119.

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.

In the case of students who have completed the Teacher Training Course, First or Second Class standing in each of (1) *History and Principles of Education*, and in (2) *Educational Psychology* 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

For the season 1929-30 candidates will not be admitted to courses in High School Methods unless they shall have obtained at least six units of credit in the corresponding academic courses normally offered in the Third and Fourth Years. After 1930 the prerequisite will be nine units. Special cases will be considered on their merits by the Head of the Department concerned and the Professor of Education. (The academic courses referred to above are English, History, Mathematics, etc., and not Courses in 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. Foster, *High School Administration*, The Century Co.

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. Reisner, *Nationalism and Education Since 1789*, Macmillan.

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; Frasier and Armentrout, *An Introduction to Education* (Revised Edition), Scott, Foresman & Co.

(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 First 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; Cameron, *Educational Psychology*, The Century Co.

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 Second 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. OBSERVATION ASSIGNMENTS AND PRACTICE TEACHING

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

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

6. 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.

3. *History and Principles of Education* (not offered in 1929-1930).

Note: Courses in Education for undergraduates in Arts of the Third and Fourth Years are preparatory to the Teacher

Training Course, and do not exempt candidates from any of the work prescribed for the latter course.

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.

Department of English

Professor: G. G. Sedgewick.

Professor: W. L. MacDonald.

Associate Professor: F. G. C. Wood.

Associate Professor: Thorleif Larsen.

(On leave of absence, 1929-30)

Associate Professor: F. C. Walker.

Assistant Professor: M. L. Bollert.

Assistant Professor: Frank H. Wilcox.

Assistant Professor: Philip A. Child.

Assistant: Dorothy Blakey.

Assistant: M. Dorothy Mawdsley.

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 1929-30: A book of short stories to be selected. 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 1929-30, 9 (a) will be given as follows:

- i. A detailed study of the text of *Romeo and Juliet*, *Twelfth Night*, *Hamlet*, *The Winter's Tale*.
- 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 (b) (Given in 1930-31 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 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, Hardy, 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. *Contemporary Literature*.—Some tendencies of English Literature of the last generation, in poetry and the essay and the novel, will be studied in this course.

Three hours a week. 3 units.

25 (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.

25 (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.

Winchester, *Principles of Literary Criticism*.

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

(Given in 1930-31 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.

(Not given in 1929-30.)

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 Sélinecourt, 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 1930-31 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, Masfield 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 1929-30.)

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 1930-31 and alternate years.)

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 1930-31 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. Second Term. 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. First Term. 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 1930-31 will probably be some questions in Shakespeare text and criticism.

Two hours a week. Mr. Sedgewick. 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.

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*. Grubermann, *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* (2nd edition). 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 micro-chemical 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.

For nurses only.

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

Department of History

Professor: D. C. Harvey.

Professor: W. N. Sage.

Assistant Professor: F. H. Soward.

Assistant Professor: A. C. Cooke.

Assistant: Francis Painter.

Assistant: Sylvia Thrupp.

Students who intend to specialize in History are advised to study one or more modern languages. A reading knowledge of French, at least, will be required for Honours.

FIRST AND SECOND YEARS

1. *Main Currents in Modern History*.—Intended primarily for First Year students and dealing with the following subjects: The waning of the Middle Ages; Consolidation of Monarchy in France, Spain, and England; the Peace of Westphalia and the Emergence of the European States System; the Balance of Power; Rise of Russia and Prussia; the Revolutionary and Napoleonic Era; the Industrial Revolution; Growth of Democracy and Nationality; the Eastern Question; Expansion of Europe; the Awakening of the Far East; Armed Peace (1870-1914); World War; the Russian Revolution; the League of Nations and Post-war Problems.

Text-books: Higby, *History of Europe* (1492-1815); Schapiro, *Modern and Contemporary European History*, or Hayes, *Political and Social History of Modern Europe*, Vol. II, 1815-1924.

Essays will be assigned throughout the session.

Three hours a week. Mr. Soward.

3 units.

2. (a) *Outlines of Canadian History*.—Discovery and exploration; geographic and institutional background of French and English colonies; relations with the Indians in the fur-trade; conflict and British supremacy; French and British in Canada; effects of American Revolution; representative institutions; achievement of Responsible Government; Confederation; Canadian-American relations; Imperial relations; in the stream of world politics; growth of literature and the arts.

(b) *The History of British Columbia*.—Early explorations of Spaniards and Russians; Captains Cook and Vancouver; Maritime Fur-trade; MacKenzie, Fraser, Thompson; North-West Company in New Caledonia; Hudson's Bay Company in "Old Oregon"; Colonies of Vancouver Island and British Columbia; Gold Rush of 1858; work of the Royal Engineers; Cariboo; Confederation; development of the Province of British Columbia.

A preliminary essay counting 10 per cent. of the year's work must be submitted early in the autumn term. Subject: *The Causes of European Expansion* or *Joseph Howe and Responsible Government*.

Text-books: Lucas, *New France*; Skelton, *The Canadian Dominion*; Borden, *Canadian Constitutional Studies*; Howay, *British Columbia, the Making of a Province*; Sage, *Sir James Douglas and British Columbia*; Sage, *Outline of British Columbia History*.

Reading and reference: Eastman, *Church and State in New France*; Brebner, *Acadia, New England's Outpost*; Abbé Groulx, *La Naissance d'une Race*; Chapais, *Cours d'histoire*; Egerton, *History of Canada*; Trotter, *Federation of Canada*; Keenleyside, *American-Canadian Relations*; Howay and Scholefield, *British Columbia*, Vol. I and II; Denton, *The Far West Coast*; *The Chronicles of Canada*; *The Makers of Canada, Canada and Its Provinces*.

Three hours a week. Mr. Harvey and Mr. Sage. 3 units.

4. *Mediaeval History*.—A sketch of Mediaeval History from the Council of Nicaea to the Fall of Constantinople. The following subjects will be discussed: 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 and England; the Turks and the Byzantine Empire.

A preliminary essay counting 10 per cent. of the year's work must be submitted early in the autumn term. Subject: *The Causes of the Downfall of the Western Roman Empire* or *The Rise of the Frankish Empire*.

Text-book: Munro and Sontag, *The Middle Ages*, or Thordike, *A History of Mediaeval Europe*.

Additional reading: Oman, *The Dark Ages*; Tout, *Empire and Papacy*; Lodge, *The Close of the Middle Ages*; Bryce, *The Holy Roman Empire*.

This course is intended primarily for Second Year students who hope to specialize in history.

Three hours a week. Mr. Sage.

3 units.

THIRD AND FOURTH YEARS

History 10, 11, 12, 13 and 14 are intended for Third Year students; History 15, 19 and 20 for Fourth Year. History 10 must be taken by all candidates for Honours.

All Honours students (whether in History alone or in a combined course), must take the History seminars in their Third and Fourth Years. The Seminar is offered as a training in intensive work and carries no credits.

If the graduating essay be written in History it will count as 3 units.

10. *English History to the Act of Settlement*.—The political aptitudes and institutions of the Anglo-Saxons; relations of Church and State; royal supremacy under Normans and Angevins; the Great Charter; the evolution of Parliament; the Lancastrian experiment; the New Monarchy; the National Church; struggle between King and Parliament; the Puritan Rebellion; the Commonwealth; the Revolution Settlement; the beginnings of party and cabinet government.

A preliminary essay counting 15 per cent. of the year's work must be submitted early in the autumn term. Subject: *Feudalism in England*, or *The Rise of the English Towns*.

Text-book: Trevelyan, *A History of England*; Davis, *England under the Normans and Angevins*; Trevelyan, *England under the Stuarts*.

Reading and reference: Stubbs, *Constitutional History of England*; McKechnie, *Magna Charta*; Pollard, *The Evolution of Parliament*; Stubbs, *Select Charters*; Prothero, *Statutes and Constitutional Documents*; Gardiner, *Constitutional Documents of the Puritan Revolution*; Robertson, *Select Statutes, Cases and*

Documents; and the standard series published by Longman and Methuen.

Three hours a week. Mr. Sage and Mr. Harvey. 3 units.

11. *British Expansion Overseas*.—General aspects of the expansion of Europe; early English discoverers and navigators; early trading companies; English Settlements in America; the Old Colonial System; the duel with France in India and North America; the American Revolution; colonization of Australasia; Dutch and British in South Africa; British North America; Responsible Government; Colonial and Imperial Conferences; India under the Company and Crown; India under the Dyarchy; Crown Colonies, Chartered Companies; Protectorates, and Mandates; The British Commonwealth of Nations.

Essay subjects will be assigned at the beginning of the autumn term.

Text-books: Muir, *A Short History of the British Commonwealth*; Robinson, *The Development of the British Empire*; Egerton, *Origin and Growth of Greater Britain*; Scott, *A Short History of Australia*; Lyall, *British Dominion in India*; Walker, *A History of South Africa*.

Reading and reference: Bolton, *A History of the Americas*; Osgoode, *The American Colonies in the 17th Century, in the 18th Century*; Rusden, *A History of Australia*; Marais, *The Colonization of New Zealand*; Theal, *History of South Africa*; Williams, *Cecil Rhodes*; Innes, *A Short History of the British in India*.

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

12. *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-books: Pease, *The United States*; Pease and Roberts, *Selected Readings in American History*.

Reading and reference: Morison, *Oxford History of the United States*; Turner, *The Frontier in American History*; Lingley, *Since the Civil War*; Faulkner, *American Economic History*; *The American Nation Series*; *The Chronicles of America*; *The Riverside History of the United States*; and the *Histories by Rhodes and Channing*.

A preliminary essay counting 15 per cent. of the year's work must be submitted early in the autumn term. Subject: *Jefferson and Jackson*, or *The Origin and Development of the Monroe Doctrine*.

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

13. *The Age of the Renaissance and Reformation*.—The transition from the Mediaeval to the Modern world; the fore-runners of the Renaissance, the Renaissance in Italy and throughout Europe; the Reformation; the Counter-reformation; the struggle for mastery; the peace of Westphalia.

Essay subjects will be announced at the beginning of the autumn term.

Text-books: Hudson, *The Story of the Renaissance*; Johnson, *Europe in the 16th Century*; Fisher, *The Reformation*; Froude, *Life and Letters of Erasmus*; Smith, *Martin Luther*.

Reading and reference: Symonds, *The Renaissance in Italy*; André Michel, *Historie de l'Art* (iii. iv.); Christopher Hare, *Life and Letters in the Italian Renaissance*; Smith, *Erasmus*; Walker, *The Reformation*.

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

14. *The Age of Louis XIV; The Revolutionary and Napoleonic Era*.—The establishment of absolutism; its strength, weaknesses, and decline; the converging movements of the 18th Century; the "philosophers"; the Revolution; Napoleon; the Congress of Vienna.

A preliminary essay counting 15 per cent. of the year's work must be submitted early in the autumn term. Subject: *The Foreign Policy of Louis XIV*, or *France and the New World in the 17 Century*.

Text-books: Wakeman, *The Ascendancy of France*; Lowell, *The Eve of the French Revolution*; Rose, *The Revolutionary and Napoleonic Era*; Bradby, *The French Revolution*; Fisher, *Napoleon*.

Reading and reference: Young, *Travels in France*; Rousseau, *Social Contract*; Burke, *Reflexions on the French Revolution*; Taine, *L'ancien régime*; Aulard, *The French Revolution*; Lacour-Gayet, or Rose, or Fournier, *Napoleon*; Fisher, *Bonapartism*.

Three hours a week. Mr. Harvey and Mr. Cooke. 3 units.

15. *Europe, 1815-1919*.—The political, social and economic history of the chief countries of continental Europe, with especial attention to international relations.

An introductory essay counting 15 per cent. of the year's work must be submitted early in the autumn term. Subject: *Geographic Factors in European History of the 19th Century* or *The Growth of Democracy, 1815-1914*.

Text-book: Hazen, *Europe Since 1815*.

Additional reading required of Honours 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*; Lavissee et Rambaud, *Histoire Générale*; Buell, *International Relations*; Tilley, *Modern France*; Rambaud, *Histoire de la Civilisation Française*; Grant Robertson, *Bismarck*; Thayer, *Cavôur*; Gooch, *Germany*; Makeef, *Russia*; Toynbee, *Turkey*; *The Balkans*; Wright, *The Geographic Basis of European History*; Marvin, *Century of Hope and the Unity Series*; Fay, *The Origins of the World War*; Dickinson, *The International Anarchy*.

Three hours a week. Mr. Soward.

3 units.

19. *Great Britain Since 1688.*—This course aims at an interpretation of the constitutional, political, economic and religious development of the British Isles since 1688.

A preliminary essay counting 15 per cent. of the year's work must be submitted early in the autumn term. Subject: *The War Policy of William Pitt the Younger*, or *The Irish Question in the Nineteenth Century*, or *The Social Effects of the Industrial Revolution*.

Text-books: Grant Robertson, *England Under the Hanoverians*; Slater, *The Making of Modern England*; Trevelyan, *British History in the Nineteenth Century*.

Reading and reference: *Cambridge Modern History* (V-XII); *Cambridge History of British Foreign Policy*; Poole and Hunt, *The Political History of England*; Mantoux, *The Industrial Revolution*; Williams, *Life of Chatham*; Morley, *Life of Gladstone*; Moneypenny and Buckle, *Life of Disraeli*.

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

20. *The Evolution of Canadian Self-government.*—A survey of the period from the Peace of Utrecht to the present day. The following subjects will be dealt with: French and British Colonial Systems; British experience in Acadia; British policy after the Treaty of Paris; The Quebec Act; the effect of the American Revolution; the Constitutional Act; the opening of the West; the War of 1812; the formation of parties and the struggle for Reform; Durham's Report; the achievement of Responsible Government; Confederation and the completion of the Dominion; the development of Responsible Government and the growth of nationhood.

Text-books: Martin, *Empire and Commonwealth*; Kennedy, *The Constitution of Canada*; Kennedy, *Documents of the Canadian Constitution*.

Reading and reference: Egerton and Grant, *Canadian Constitutional Development*; Shortt and Doughty, *Constitutional Documents, 1759-1791*; Doughty and McArthur, *Documents, 1791-1918*; Oliver, *The Canadian North-West*; Durham,

Report; Pope, Confederation Documents; Whelan, The Union of the British Provinces; Confederation Debates; Chisholm, Speeches and Public Letters of Joseph Howe; Keith, Responsible Government in the Dominions; Morison, British Supremacy and Canadian Self-government; Toynbee, The Conduct of British Empire Foreign Relations Since the Peace Settlement; Corbett and Smith, Canada and World Politics; Borden, Canada in the Commonwealth; The Chronicles of Canada; The Makers of Canada; Canada and Its Provinces.

Essays will be assigned throughout the Session.

Three hours a week. Mr. Harvey.

3 units.

21. *Methods in High School History.*—This course is offered primarily for students in the Teacher Training Course and does not carry undergraduate credit.

Readings to be assigned.

Three hours a week in Spring term only.

Honours Seminar:

(a) Third Year: *Historical Method.*

(b) Fourth Year: *The Quebec Act and The Constitutional Act.*

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: H. D. Smith.

Assistant: C. G. Patten.

Assistant: R. D. James.

Assistant: Mary E. Pollock.

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.

Students intending to take Mathematics 2 or to enter Applied Science should purchase the larger edition of *The Intermediate Algebra*.

Four hours a week. First Term.

(b) *Analytical Geometry*.—Fundamental concepts, loci, the straight line and circle, and an introduction to the other conics. Buchanan and Nowlan, *Analytical Geometry* (Chapters I to V).

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.

Buchanan and Nowlan, *Analytical Geometry*.

Two hours a week. First Term. Mr. Nowlan.

(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. Nowlan.

(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.

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 1930-31 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 func-

tions. 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. 2 units.

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. 2 units.

(Given in 1930-31 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.

Ford, *Brief Course in Analytical Geometry*, Holt.

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

(Given in 1930-31 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. Mr. Jordan. 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*; Smith, *History of Mathematics*.

Mr. Buchanan. 1 unit.

19. *Methods in High School Mathematics*.

This course is offered primarily for students in the Teacher Training Course and does not carry undergraduate credit. Readings to be assigned.

Three hours a week. Second Term.

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:.....

Assistant Professor: Janet T. Greig.

Instructor: Joyce Hallamore.

Assistant: E. E. Delavault.

Assistant: G. Barry.

Assistant: W. Tipping.

Assistant: Y. Darlington.

Assistant: D. Dallas.

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. Victor Hugo, *Prose et Poésies* (Wilson Green), Cambridge. Kastner and Marks, *French Composition*, Pt. 1. Dent. Ashton, *A Preface to Molière*, Longmans, Toronto.

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. Courses 1 (b) and 2 (b) do not fulfill the conditions required of graduates taking the Teacher Training Course. Students who intend to teach French must take 1 (a) and 2 (a).

Summer Reading:—See the announcement after the Fourth Year courses.

2. (a) La Fontaine, *One Hundred Fables*, Ginn. Molière, *Les Femmes Savantes*, Didier. Faguet, *Ce que disent les livres*, Cambridge.

Conversation in French on the above. Written *résumés*.

Composition from Kastner and Marks, *French Composition*, Pt. 1. French 1 (a) is a prerequisite.

There will be oral tests. 3 units.

2. (b) Text as above. French 1 (a) or 1 (b) prerequisite. 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. French 2(a) is prerequisite. Students who cannot write French with some facility are advised not to attempt 3 (a). They will not be admitted to 3 (b), which is intended for Honours students.

Students who intend to take French throughout the four years or who wish to teach this subject should also take 3 (c).

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) *Bibliography, 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.

French 3 (a) is a prerequisite. Students who cannot write accurate French with facility and understand spoken French are advised not to attempt 4 (a).

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). French 3 (a) and 3 (b) are prerequisite. The requirements for entrance to 4 (b) are accurate written French and a sufficient mastery of spoken French to permit conversation on a literary subject.

4. (c) *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.

5. *Methods in High School*.—Modern Languages. Phonetics during First Term (1 hour a week). Methods during Spring Term (2 hours a week). Texts for discussion: Hedgecock, *Practical French Teaching*, Pitman; *Modern Studies*, 1918. This course is primarily for students in the Teacher Training course and does not carry undergraduate credit.

Summer Reading

Upon entering the courses for the years stated, 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 Choiesies*.

Third Year:

1. Chateaubriand, *Atala*.
2. Le Sage, *Gil Blas*.
3. Vigny, *Servitude et grandeur militaires*.
4. Banville, *Gringoire*; or Musset, *Poésies Choiesies*.

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 Hillern, *Höher als die Kirche*, Scribner; Diamond and Uhlendorf, *Mitten im Leben*, Holt; 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.

Fretag, *Die Journalisten*, Ginn. Schiller, *Wilhelm Tell*, Heath. Bruns, *Book of German Lyrics*. 3 units.

(b) A general survey of German literature.

Prerequisite for German 3. Lectures in English and open to students of other literatures. One hour. No credit.

3 (a) *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.

3 (b) *Introduction to Modern Literature*.

Texts: Schweizer, *Der deutsche Geist der Neuzeit*, Cambridge. Porterfield, *Modern German Stories*, Heath. 3 units.

Composition on above texts.

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.

Department of Philosophy

Professor: H. T. J. Coleman.

Associate Professor: James Henderson.

Associate Professor of Psychology and Education:

Jennie Wyman Pilcher.

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 1930-31 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 1930-31 and alternate years.)

7. *Philosophy of 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 Unstable Child*, Appleton; Hollingworth, *Gifted Children*, Macmillan; Wallin, *Clinical and Abnormal Psychology*, Houghton Mifflin; Cyril Burt, *The Young Delinquent*, Appleton.

3 units.

Department of Physics

Professor: T. C. Hebb.

Associate Professor: A. E. Hennings.

Associate Professor: J. G. Davidson.

Associate Professor: G. M. Shrum.

Assistant: H. W. Fowler.

Assistant: C. G. Patten.

Assistant: H. D. Smith.

Assistant: R. D. James.

Primarily for First and Second Year students.

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 Edwards, *A First Course in Physics for Colleges*.

Three lectures and two hours' laboratory per week. 3 units.

2. *Elementary 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 covers mechanics, properties of matter, heat, light, sound, electricity and some of the more recent developments and theories.

Text-book: Stewart, *Physics, A text-book for Colleges*, Ginn.

Prerequisite: High School Physics.

Three lectures and one two-hour laboratory period per week. 3 units.

Books for reference: Watson, *A Text-book of Physics*, Longmans; Kaye and Laby, *Physical and Chemical Constants*, Longmans.

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, Heat*, Ginn.

Prerequisite: Physics 1 or 2.

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

PRIMARILY FOR THIRD YEAR STUDENTS

5. *Electricity, Sound, and Light*.—A study of the fundamentals of magnetism, electricity, sound, and light.

Text-book: Millikan and Mills, *Electricity, Sound and Light*, Ginn.

Prerequisite: Physics 1 or 2.

Two lectures and three hours' laboratory per week.

3 units.

6. *Theoretical Mechanics*.—A selected course in statics, dynamics of a particle and of a rigid body.

Text-book: Smith and Longley, Ginn.

Two lectures per week.

2 units.

7. *Introduction to Theoretical Physics*.—A course of lectures upon selected topics, including elasticity, viscosity, and hydromechanics.

Two lectures per week.

2 units.

8. *Physical Optics*.—A course of lectures accompanied by laboratory work, covering optical instruments, interference, diffraction and polarisation.

Two lectures and one three-hour laboratory period per week.

3 units.

Reference Books: Schuster and Nicholson, *The Theory of Optics*; Houstoun, *Treatise on Light*; Mann, *Advanced Optics*; Wood, *Physical Optics*; Preston, *Theory of Light*; Drude, *Theory of Optics*; Taylor, *College Manual of Optics*; Edser, *Light for Students*.

PRIMARILY FOR FOURTH YEAR STUDENTS

10. *Elementary Spectroscopy*. — An introductory course, outlining the general characteristics of spectra and their classification.

One lecture per week.

1 unit.

Reference Books: Baly, *Spectroscopy* (4 vols.); Kayser, *Handbuch der Spectroscopie*; Wood, *Physical Optics*.

11. *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 5 and Mathematics 10.

Two lectures per week.

2 units.

12. *Ions, Electrons, and Ionising Radiations*.—A course of lectures dealing with the conduction of electricity through gases, cathode and positive rays, photo-electricity, X-rays, and radio-activity.

Reference Books: 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 5, and Differential and Integral Calculus.

Two lectures per week.

2 units.

13. *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.

14. *Thermodynamics*.—A course of lectures covering the fundamental principles of the subject.

Text-book: Birtwistle, *The Principles of Thermodynamics*.

One lecture per week.

1 unit.

18. *Experimental Physics*.—A laboratory course accompanying Physics 10.

Three hours per week.

1 unit.

19. *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. 2 to 3 units.

With the consent of the head of the department Fourth Year students may select one or more units from the graduate Courses.

PRIMARILY FOR GRADUATE STUDENTS

20. *Spectroscopy*.—A study of the methods of excitation and observation of spectra, series in arc and spark spectra, multiplets, Zeeman and Stark effects, and band spectra.

One lecture per week. 1 unit.

21. *Radiation and Atomic Structure*.—A study of the theories of radiation and miscellaneous related topics selected from current literature.

One lecture per week. 1 unit.

22. *Advanced Electricity and Magnetism*.—A study of the Electromagnetic theory and its application, the theories of metallic conduction, and electrical oscillations.

One lecture per week. 1 unit.

23. *Vector Analysis*.—A course of lectures upon the applications of Vector Analysis to problems in Physics.

One lecture per week. 1 unit.

24. *X-rays and Crystal Structure*.—A study of the modern methods of production and observation of X-rays, the Compton effect, X-ray analysis, and the structure of crystals.

One lecture per week. 1 unit.

25. *The Theory of Sound*.—A course of lectures covering the propagation of sound, and the general phenomena associated with vibrating systems.

One lecture per week. 1 unit.

26. *The Theory of Potential*.—A general course giving the applications of the Theory of Potential to Physics.

One lecture per week. 1 unit.

27. *The Theory of Relativity*.—An introductory course to the theory of relativity.

One lecture per week. 1 unit.

40. *Methods in High School Physics*.—Spring term only. This course is offered primarily for students in the Teacher Training Course and does not carry undergraduate credit. Readings to be assigned.

Three hours per week.

Department of Zoology

Professor: C. McLean Fraser.

Assistant Professor: G. J. Spencer.

Assistant: Verna Z. Lucas.

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.

A collection of insects is required.

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

1929-30

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. 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.

Students are advised to register with the Association of Professional Engineers of British Columbia in their third year; and to associate themselves with the appropriate engineering societies listed on Page 341.

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 42-44.

As for Arts, complete Junior Matriculation or its equivalent is required for admission to Applied Science, and no student may enter with any outstanding supplemental in Junior Matriculation.

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 192.)

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.
- 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 192.)

This course is strongly recommended to students who are young enough to afford the time and to students wishing to enter Applied Science, and who have to their credit some, but not all, of the requirements of First Year Applied Science as set forth on Page 165. The latter can select subjects in their Second Year Arts that will satisfy the Arts requirements for the double degree, and at the same time complete the work of First Year Applied Science. Thus they may qualify for an Arts degree without expending any more time than would be required to qualify them for entrance into Second Year Applied Science.

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

†The curriculum described in the following pages may be changed from time to time as deemed advisable by the Senate.

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 is 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 him to release the student in time to reach the University on the opening day. 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. Fourth and Fifth Year Essays (see Page 167) should be based, as far as possible, upon the summer work.

Upon approval of the Dean and the Head of the Department concerned, University credit may be granted for work done outside the University under the immediate supervision of the University staff, during the University session.

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

Students in Nursing and Health register directly in Applied Science and take the special course outlined on Pages 184-191. All other students of Applied Science have a general course common to all for the First three years as under:

FIRST YEAR

The students register in Arts and take the following classes as Arts students:

English 1 (a and b).

Mathematics 1 (Algebra, Geometry, Trigonometry.)

Chemistry 1.

Physics 1 or 2.

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 mark of 40 per cent. will be accepted, provided an average of 50 per cent. has been obtained in the total work of the year. Biology 1 may with advantage be taken as an optional extra subject, and, if passed with a grade of at least 50 per cent., need not be repeated in the Second Year. So, too, 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. No student may proceed to the Second Year with a supplemental against him in Chemistry, Physics or Mathematics nor with supplementals in other subjects to the extent of more than three units.*

Students who have passed First Year Arts and Science, but who have failed to make the necessary fifty per cent. in Mathematics, Chemistry or Physics, may take the September Supplemental Examinations of Arts and Science in these subjects.

First Year students are advised to attend the noon-hour talks on the choice of a profession and on the life and work in various callings likely to be selected by Applied Science graduates, as these may assist the student in determining whether Applied Science is the best course for him. If he finds it is not he can proceed in Arts without any loss of time.

*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.

Equivalent standing in the subjects of the First Year outlined above, obtained outside the University, may be accepted in lieu of this First Year work, but students are strongly advised to take this year within the University if it is at all possible, for it is a professional course co-ordinated throughout. It gives the student a year longer in which to become acquainted with the work in Applied Science, and hence be in a better position to choose the particular branch of Applied Science to follow; the friendships formed with his classmates in Arts are continued throughout his college life, and tend to offset the narrowing effect of a somewhat specialized course with associates confined to students of the same interests and knowledge as himself; he becomes acquainted with the University methods and life during the year that planned to help him make these adjustments and enters the comparatively heavy Second Year prepared and able to work effectively from the opening of the term, which is unlikely to be possible for the student beginning life at the University.

The work of the Second and Third Years is the same in all courses, except those in Nursing and Health.

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. 1 Trigonometry.....	225	.....	.....	2	.....
Math. 2 Solid Geometry.....	226	2	.....	.....	.....
Math. 3 Algebra.....	226	2	.....	2	.....
Math. 4 Calculus.....	226	2	.....	2	.....
C.E. 1 Descriptive Geom.....	204	.....	3	.....	3
M.E. 1 Drawing 1.....	227	.....	6	.....	6
Physics 3 Mechanics.....	243	3	3	.....	.....
Physics 4 Heat.....	243	.....	.....	3	3
Chem. 2a Qual. Analysis.....	200	1	3	1	3
M.E. 2a Shop Practice.....	227	1	2	1	2
Biology 1* Introductory.....	196	1	2	1	2
C.E. 2 Surveying.....	204	Field Work			
C.E. 30 Engineering Prob. 1.....	214	.....	4	.....	4

*Biology 1, Arts, passed with a grade of at least 50 per cent. will be accepted in lieu of this course.

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.
Math. 6 Calculus.....	226	3	.....	3	.....
Math. 7 Anal. Geom.....	226	2	.....	2	.....
Chem. 2b Quan. Analysis.....	200	1	3	1	3
C.E. 4 Graphics.....	204	.....	2	.....	2
M.E. 6a Elem. Theory.....	229	2	.....	2	.....
Physics 5 Electricity.....	243	2	3	2	3
Physics 6 Mechanics.....	243	2	.....	2	.....
C.E. 5 Mapping.....	205	.....	3	.....	3
C.E. 6 Surveying.....	205	2	.....	2	.....
Geology 1 General.....	220	2	2	2	2
†C.E. 7 Surveying.....	205	Field Work			
C.E. 31 Engineering Prob. 2.....	214	.....	3	.....	3

†Students entering Civil, Forest, Geological, Metallurgical, and Mining Engineering are required to take Civil Engineering 7 (see Page 205) immediately after the spring examinations.

FOURTH AND FIFTH YEARS

Essays

Essays are required of all students entering the Fourth and Fifth 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 fourth 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 fifth 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.

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.....	167				
Economics 1 Introductory.....	215	2	.....	2	.....
Met. 1 Introductory.....	240	2	.....	2	.....
Geol. 2(a) Mineralogy.....	222	2	2	.....	.....
Chem. 3 Organic.....	201	2	3	2	3
Chem. 4 Theoretical.....	201	.....	.....	2	3
Chem. 5 Adv. Analysis.....	201	1	9	1	6
E.E. 1 General.....	232	2	2	2	2
Physics 7 Light.....	243	1	.....	1	.....
C.E. 12 Hydraulics.....	207	1	3	1	3

FIFTH 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.....	167				
Chem. 6 Industrial.....	202	2	.....	2	.....
Chem. 7 Physical.....	202	2	3	2	3
Chem. 8 Electro.....	202	2	3	2	3
Chem. 9 Adv. Organic.....	203	2	3	2	3
Chem. 16 Engineering.....	203	2	.....	2	.....
Met. 2 General.....	240	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 Fourth Year, Analytical, Organic, and Physical Chemistry are studied from the scientific side and in relation to technology; while in the Fifth Year a considerable amount of time is devoted to a short piece of original work.

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.....	167				
Econ. 1 Introductory.....	215	2	.....	2	.....
Chem. 3 Organic.....	201	2	3	2	3
Chem. 4 Theoretical.....	201	.....	.....	1	3
Chem. 5 Adv. Analysis.....	201	1	9	2	9
Met. 1 Introductory.....	240	2	.....	2	.....
Geol. 2(a) Mineralogy.....	222	2	2	.....	.....
Met. 5 Assaying.....	241	1	5	.....	.....
German (Arts) B.....	148	3	.....	3	.....
Physics 7 Light.....	243	1	.....	1	.....

FIFTH 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.....	167				
Bacteriology 1 (Arts).....	91	.....	7	.....	.....
Physics 12 Advanced.....	155	2	.....	2	.....
Chem. 6 Industrial.....	202	2	.....	2	.....
Chem. 7 Physical.....	202	2	3	2	3
Chem. 8 Electro.....	202	2	3	2	3
Chem. 9 Adv. Organic.....	203	2	3	2	3
Met. 2 General.....	240	2	.....	2	.....
Thesis.....		.....	9	.....	13

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 Fifth Year thesis an opportunity is given for special investigation and research under the supervision of experienced engineers.

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.....	167				
C.E. 8 Foundations.....	205	2	3	1	.....
C.E. 9 Elementary Design.....	206	.....	.....	1	3
C.E. 10 Strength of Mtls.....	206	2	3	2	3
C.E. 11 Railways.....	207	2	.....	2	.....
C.E. 12 Hydraulics.....	207	1	3	1	3
C.E. 13 Mapping.....	208	.....	3	.....	3
C.E. 14 Surveying.....	208	2	.....	2	.....
C.E. 15 Drawing.....	208	.....	2	.....	2
M.E. 6(b) Laboratory.....	229	.....	3	.....	3
E.E. 1 General.....	232	2	2	2	2
Econ. 1* Introductory.....	215	2	.....	2	.....
C.E. 16 Surveying.....	208	Field Work			
C.E. 21 Water Power.....	210	1	.....	1	1
C.E. 28 Seminar.....	213	1	.....	1	.....

*Economics 1 in Arts will be accepted in lieu of the Science Course.

FIFTH 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.....	167				
C.E. 17 Structural Design.....	209	1	6	1	6
C.E. 18 Engineering Economics.....	209	2	.....	2	.....
C.E. 19 Law—Contracts.....	209	1	.....	1	.....
C.E. 20 Geodesy.....	210	1	.....	1	.....
C.E. 22 Municipal.....	210	2	2	2	2
C.E. 23 Transportation.....	211	2	.....	2	.....
C.E. 24 Mechanics of Mtls.....	212	2	3	2	3
C.E. 25 Theory of Structures.....	212	1	6	1	6
C.E. 26 Trips.....	213	Required Sat. A.M.			
C.E. 27 Thesis.....	213	.....	3	.....	3
C.E. 28 Seminar.....	213	1	.....	1	.....
C.E. 29 Hydraulic Machines.....	213	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. The Fourth Year of the course is devoted to the study of the basic principles of Mechanical and Electrical Engineering, and is intended to prepare the student for the more specialized courses which are given in the Fifth Year. In the Fifth Year an intensive course in all the important branches of Design, Transmission, Electro-Technology, Radio and Electric Traction, is given, together with thorough laboratory work in most of these subjects.

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.....	167				
E.E. 2 Direct Current Technology.....	233	3	3	1	.....
E.E. 3 Elementary AC Technology.....	234	.....	.....	2	3
E.E. 4 Direct Current Machine Design.....	234	.....	.....	2	3
Math. 8 or 9 (Adv. Calculus).....	226	3	.....	3	.....
M.E. 3 Kinematics.....	228	2	.....	2	.....
M.E. 7 Heat Engines.....	229	3	3	3	3
M.E. 4 Dynamics.....	228	2	.....	2	.....
E.E. 5 Electrical and Magnetic Meas- urements and Instruments.....	234	2	.....	2	.....
E.E. 6 Electrical Problem Course.....	235	.....	2	.....	2
C.E. 12 Hydraulics.....	207	1	3	1	3
M.E. 5 Machine Design.....	228	2	.....	2	.....
M.E. 5(a) Problem Course in Strength of Materials and Design.....	229	.....	3	.....	3
C.E. 10 Strength of Materials.....	206	2	3	2	3

FIFTH 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.....	167				
E.E. 7 Design of Electrical Machinery.....	235	2	3	2	3
E.E. 8 Electrical Traction.....	235	2	.....	2	.....
E.E. 9 Transmission and Distribution of Electrical Energy.....	235	2	.....	2	.....
M.E. 15 Prime Movers.....	231	2	.....	2	.....
E.E. 14 Mechanical Design.....	238	3	3	3	3
E.E. 10 Electrical Problem Course.....	236	.....	2	.....	2
E.E. 11 Radio Telegraphy and Radio Telephony.....	236	2	.....	2	.....
Math. 8 or 9 (Differential Equa. or Adv. Calculus).....	226	3	.....	3	.....
E.E. 12 Electro-technology.....	236	3	6	3	6
E.E. 13 Transient Phenomena and Oscillations.....	237	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.

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.....	167				
F.E. 1 General Forestry.....	215	1	.....	1	.....
F.E. 2 Mensuration.....	215	1	4	1	4
F.E. 3 Protection.....	216	.....	.....	1	.....
F.E. 4 Finance.....	216	.....	.....	2	.....
Bot. 1 General Botany.....	197	2	2	2	2
Bot. 5 (b) Dendrology.....	198	1	2	1	2
E.E. 1 Fundamentals.....	232	2	2	2	2
C.E. 8(a) Foundations.....	205	1	3	.....	.....
C.E. 9 Structural Design.....	206	.....	.....	1	3
C.E. 10 Strength Materials.....	206	2	3	2	3
C.E. 11 Railways.....	207	2	.....	2	.....
C.E. 13 Mapping.....	208	.....	.....	.....	3
C.E. 14 Surveying.....	208	2	.....	.....	.....
C.E. 12 Hydraulics.....	207	1	3	1	3

FIFTH YEAR

Subject.	For Details See Page:	First Term.		Second Term.	
		Lectures	Laboratory Hours per Week.	Lectures per Week.	Laboratory Hours per Week.
Essay.....	167				
F.E. 5 Technology.....	216	2	3	2	3
F.E. 6 Organization.....	217	1	.....	1	.....
F.E. 7 History.....	217	1	.....	1	.....
F.E. 8 Silviculture.....	217	2	.....	2	3
F.E. 9 Lumbering.....	218	2	.....	1	.....
F.E. 10 Logging.....	218	1	} 4	1	} 4
F.E. 11 Milling.....	218	2		
F.E. 12 Products.....	219				
Bot. 6(b) Pathology } Zool. 7 Entomology }	199 249	.....	.....	1	2
Bot. 7(a) Ecology.....	249	1	2	.....	.....
C.E. 17 Structural Design.....	209	1	3	1	3
C.E. 18 Economics.....	209	2	.....	2	.....
C.E. 19 Law.....	209	1	.....	1	.....
M.E. 6(b) Steam Lab.....	229	.....	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.

Students are advised to become student members of the Canadian Institute of Mining and Metallurgy.

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.....	167				
Geol. 2 Mineralogy.....	221	2	2	2	2
Geol. 3 Historical.....	222	3	.....	.....	.....
Geol. 4 Structural.....	222	.....	.....	3	.....
Geol. 5 Regional.....	223	3	1	3	1
Chem. 4 Theoretical.....	201	.....	.....	2	3
Econ. 1 (Arts).....	108	3	.....	3	.....
Min. 1 Metal Mining.....	238	2	.....	2	.....
Met. 5 Fire Assaying.....	241	1	5	.....	.....
Met. 1 General.....	240	2	.....	2	.....
Ore Dressing 1 General.....	241	2	.....	2	.....
Zool. 1.....	249	2	2	2	2
C.E. 13 Mapping.....	208	.....	.....	.....	3
Chem. 5* Adv. Analysis.....	201	1	6	1	6
Met. 6* Wet Assaying.....	241	.....	3	.....	3

*Either Chem. 5 or Met. 6 must be taken.

FIFTH 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.....	167				
Geol. 6 Palaeontology.....	223	2	2	2	2
Geol. 7 Petrology.....	223	2	4	2	4
Geol. 8 Economic.....	224	3	1	3	1
C.E. 18 Engr. Economics.....	209	2	.....	2	.....
Geol. 9 Mineralography.....	224	.....	2	.....	2
Geol. 10 Field.....	224	.....	3	.....	3
Min. 2 Coal and Placer.....	238	2	.....	2	.....
Min. 3 Metal Mining.....	239	2	.....	2	.....
Min. 5 Surveying.....	239	1	.....	.....	.....
Met. 2 Smelting.....	240	2	.....	2	.....
Ore Dressing 2 Laboratory.....	242	.....	3	.....	3
Thesis.....	.....	.....	4	.....	5

VII. Mechanical Engineering

The course in Mechanical Engineering has been designed to give the student a thorough knowledge of the theory and application of those basic subjects which are essential in this branch of Engineering.

With this in view stress has been laid upon such subjects as Mathematics, Physics, Applied Mechanics, Strength of Materials, Applied Thermodynamics and Hydraulics. Graduates of this course are therefore qualified to enter upon any of the many specialized branches of this profession, especially in British Columbia, whose rapid industrial development demands Mechanical Engineers prepared to attack a great diversity of problems.

Although fundamentally general in character the course embodies design of prime movers, mechanical electrical and hydraulic, machinery design, power plant operation and design and the testing of engines and power plants, thus giving sufficient specialized training in Mechanical Engineering to enable students to enter the field of design or research should they so desire.

Students following this course are given a general 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 to developing a business sense, an understanding of men and the ability to report clearly on industrial problems. This demands a study of Economics, the use of good English and the participation in outside industrial work during vacation.

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
C.E. 10 Strength of Materials.....	206	2	3	2	3
M.E. 3 Kinematics.....	228	2	.....	2	.....
M.E. 4 Dynamics of Machines.....	228	2	.....	2	.....
M.E. 5 Machine Design.....	228	2	.....	2	.....
M.E. 5(a) Problems in Materials and Design.....	229	.....	3	.....	3
M.E. 7 Heat Engines.....	229	3	3	3	3
M.E. 13 Physical Treatment on Metals.....	231 233	1	2	1	2
E.E. 2 and 3 General.....	207	3	3	3	3
C.E. 12 Hydraulics.....	226	1	3	1	3
Math. 8 Advanced Calculus or Math. 9 Differential Equations }.....	226	3	.....	3	.....
Essay.....	167	.....	.....	.....	.....

FIFTH YEAR

Subject	For Details See Page:	First Term		Second Term	
		Lectures per Week	Laboratory Hours per Week	Lectures per Week	Laboratory Hours per Week
M.E. 8 Steam Turbines.....	230	1	.....	1	.....
M.E. 9 Internal Combustion.....	230	1	5	1	5
M.E. 10 Refrigeration.....	230	1	.....	1	.....
*M.E. 11 Heating and Ventilation.....	230	1	.....	1	.....
M.E. 12 Power Plant Design.....	231	1	3	1	3
M.E. 15 Prime Movers.....	231	2	.....	2	.....
M.E. 16 Machine Design.....	231	3	5	3	5
M.E. 17 Mechanics of Materials.....	232	2	.....	2	.....
*M.E. 18 Aeronautics.....	232	1	.....	1	.....
M.E. 19 Problems in Mech. and Elec. Eng.	232	.....	2	.....	2
E.E. 14 General.....	238	2	5	2	5
Math. 9 Differential Equations or Math. 8 Adv. Calculus.....	226 226	3	.....	3	.....
Essay.....	167	.....	.....	.....	.....

*Alternative subjects.

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 Fourth and Fifth 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 Fourth and Fifth 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 Fifth Year curriculum.

Students are advised to become student members of the Canadian Institute of Mining and Metallurgy.

VIII. Metallurgical Engineering

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.....	167				
Econ. 1.....	215	2	.....	2	.....
C.E. 9 Elem. Design.....	206			1	3
C.E. 10 Str. of Materials.....	206	2	3	2	3
C.E. 12 Hydraulics.....	207	1	3	1	3
C.E. 13 Mapping.....	208	.....	.....	.....	3
M.E. 6(b) Laboratory.....	239	.....	3	.....	.....
Geol. 2 Mineralogy.....	221	2	2	2	2
E.E. 1 General.....	232	2	2	2	2
Min. 1 Metal Mining.....	238	2	.....	2	.....
Ore Dressing 1 General.....	241	2	.....	2	.....
Met. 1 General.....	240	2	.....	2	.....
Met. 5 Fire Assay.....	241	1	5	.....	.....
Met. 6 Wet Assay.....	241	.....	3	.....	3

FIFTH 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.....	167				
Geol. 9 Mineralography.....	224	.....	2	.....	2
Geol. 8 Economic.....	224	3	1	3	1
C.E. 18 Engr. Economics.....	209	2	.....	2	.....
Chem. 8 Electro.....	202	2	3	2	3
Ore Dressing 2 Laboratory.....	242	.....	9	.....	9
Min. 3 Metal Mining.....	239	2	.....	2	.....
Met. 2 Smelting.....	240	2	.....	2	.....
Met. 3 Calculations.....	240	2	.....	2	.....
Met. 4 Analysis.....	240	.....	9	.....	9

IX. Mining Engineering

FOURTH YEAR

As in Metallurgical Engineering. (See Page 182.)

FIFTH 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.....	167				
Geol. 7 Petrology.....	223	2	4	2	4
Geol. 8 Economic.....	224	3	1	3	1
C.E. 18 Engr. Economics.....	209	2	.....	2	.....
C.E. 19 Engr. Law.....	209	1	.....	1	.....
Met. 2 Smelting.....	240	2	.....	2	.....
Ore Dressing 2 Laboratory.....	242	.....	9	.....	9
Min. 2 Coal and Placer.....	238	2	.....	2	.....
Min. 3 Metal Mining.....	239	2	.....	2	.....
Min. 4 Machinery.....	239	2	.....	2	.....
Min. 5 Surveying.....	239	1	.....	.....	.....
Min. 7 Methods.....	239	.....	.....	1	.....
Min. 6 Design.....	239	.....	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 188.)

3. *Nursing C*.—A graduate course of one academic year in Teaching and Supervision in Schools of Nursing. (See Page 189.)

Registration for these courses will be subject to the general University Regulations (see Pages 45-47) 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 of an associated hospital. It is given by the University in co-operation with the Schools of Nursing of associated hospitals, 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 satisfy the entrance requirements of the

associated Hospital Schools of Nursing; the individual applicant must make her arrangements for admission to the associated hospital directly with the Superintendent of Nurses and in advance of the opening of the University term.

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).....	119	2	.....	2	.....
English 1(b).....	120	2	.....	2	.....
Choice of Mathematics 1.....	140				
<i>or</i> Latin 1.....	106				
<i>or</i> French 1.....	145	3	.....	3	.....
<i>or</i> History 1, 2, or 3.....	132				
Physics 1 or 2.....	152	3	2	3	2
Chemistry 1.....	99	3	3	3	3
Biology 1.....	93	2	2	2	2
Nursing 1.....	244	1	.....	1	.....

Probationary Period (Hospital)

It is expected that the probationary period of four months (to be spent in an associated hospital), will be taken between the first and second academic years. The student must, however, meet the admission requirements of the associated Hospital School of Nursing (which requirements each student will learn upon making application to the School). The student must have attained such age as may be fixed by the associated Hospital School of Nursing—in the Vancouver General Hospital School of Nursing the eighteenth birthday must be passed; and her academic standing must be acceptable to the associated Hospital School of Nursing.

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).....	120	2	.....	2	.....
English 2(b).....	120	1	.....	1	.....
Zoology 1.....	157	2	2	2	2
Philosophy 1.....	149	4	.....	4	.....
Economics 1.....	108	3	.....	3	.....
Bacteriology 1.....	91	1	6	.....	.....
Bacteriology 2.....	92	.....	.....	1	6
Nursing 2.....	245	1	.....	1	.....
Anatomy and Physiology.....	245	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. This course leads to a Certificate in Public Health Nursing.

NURSING B (Public Health Nursing)

Subject	For Details See Page:	Total Hours Lectures	Total Hours Laboratory
Preventable Diseases.....	245	21	
Epidemiology.....	245	21	
Tuberculosis.....	245	11	
Venereal Diseases.....	245	3	
Mental Hygiene.....	245	11	
Bacteriology.....	245		*
Infant Welfare.....	246	11	
Orthopedics.....	246	5	
Public Health.....	246	15	
Public Health Administration.....	246	4	
Public Health Organizations.....	246	4	
Vital Statistics.....	246	18	
Principles and Practice of Public Health Nursing.....	247	34	
Rural Public Health Nursing.....		6	
Urban Visiting Nursing Programme.....	247	2	
Health Education.....	247	16	
History of Nursing and Contemporary Nursing Problems.....	247	18	
School Hygiene.....	247	13	
Social Case Work.....	248	6	
Hospital Social Service.....	248	3	
Metabolism and Nutrition.....	248	11	
Psychology for Nurses.....	248	16	
Principles of Education Applied to Teaching.....	248	34	
Public Speaking and Parliamentary Procedure.....	248	18	
Sociology.....	248	21	
Geography 10.....	248	16	
Motor Mechanics.....	248		10
Field Work.....	189	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. This course leads to a Certificate in Teaching and Supervision in Schools of Nursing.

NURSING C

Subject	See Page: For Details	Total Hours Lectures	Total Hours Laboratory
Preventable Diseases.....	245	21	
Mental Hygiene.....	245	11	*
Bacteriology.....	245		
Infant Welfare.....	246	11	
Orthopedics.....	246	5	
History of Nursing and Contemporary Nursing Problems.....	247	18	
Teaching in Schools of Nursing.....	247	34	
Principles of Supervision in Schools of Nursing.....	247	16	
Metabolism and Nutrition.....	248	11	
Psychology for Nurses.....	248	16	
Principles of Education Applied to Teaching.....	248	34	
Public Speaking and Parliamentary Procedure.....	248	18	
Sociology.....	248	21	
Electives from Nursing B or from related Science Courses.....			
Field Work.....	Below		

*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 M. McLennan, 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 72-74) 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 162).
2. Biology 1, Chemistry 2, Mathematics 2 (a) and 2 (b), and Physics 3 or 5 or 6 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 second, third, fourth and fifth 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.

In the case of students who have completed the Teacher Training Course, First or Second Class standing in each of (1) History and Principles of Education, and in (2) Educational Psychology, is accepted as equivalent to a Minor for an M.A.Sc. degree, subject in each case to the consent of the Head of the Department in which the student wishes to take his 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 48.

EXAMINATIONS AND ADVANCEMENT

1. Examinations are held in December and in April. December examinations will be held in all subjects of the Second and Third Years, and are obligatory for all students of these years. December examinations in subjects of the Fourth and Fifth 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 88.)

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 17th, 18th, 19th and 20th. Special examinations will not be granted, except by special permission of the Faculty, and on payment of a fee of \$7.50 per paper, and then only during the third week in October or the second week of January.

5. Applications for supplemental examinations, accompanied by the necessary fees (see Schedule of Fees Page 48), 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 will be exempted from attending lectures and passing examinations in subjects in which he has already made at least Second Class standing. In this case he may, "on application in writing," be permitted by the Faculty to take, in addition to the subjects of the year which he is repeating, certain subjects of the following year, subject to the prerequisite requirements and the exigencies of the Time Table.

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 Second or Third 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 Senate may deem advisable.

Department of Botany

Professor: A. H. Hutchinson.
 Associate Professor: Frank Dickson.
 Assistant Professor: John Davidson.
 Honorary Lecturer: William Newton.
 Assistant: Jean Davidson.
 Assistant: R. W. Pillsbury.
 Assistant: Margaret Keillor.

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.

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 and one laboratory period 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 courses in Botany except the Evening Course. Partial credit (2 units) toward Botany may be obtained through the Evening Course. (See Page 98.)

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-relationships of forests and their environment; the biological characteristics of important forest trees; forest associations; types and regions; physiography.

Reference books: Whitford and Craig, *Forests of British Columbia, Ottawa*; Zon and Sparhawk, *Forests of the World*, McGraw-Hill; 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.

Assistant Professor: William Ure.

Instructor: John Allardyce.

Assistant: H. R. Lyle Streight.

Assistant: A. Ernest Morell.

Assistant: E. C. Hallonquist.

Assistant: F. L. Munro.

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: Kendall, *General Chemistry*, Century Co.

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 theoretical chemistry, including a study of gases, liquids, and solids, solutions, ionization, and electrical conductivity, thermochemistry, chemical equilibrium, kinetics of reactions, colloids.

Books recommended: Millard, *Physical Chemistry for Colleges*, McGraw-Hill; Noyes and Sherrill, *Chemical Principles*, Macmillan; for Laboratory use: Findlay, *Practical Physical Chemistry*, Longmans.

Prerequisite: Chemistry 2. Mathematics 2.

Two lectures and three hours' laboratory per week. Second Term. $1\frac{1}{2}$ 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 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*.—This course is a continuation of Chemistry 4 and treats in more detail the kinetic theory of gases, properties of liquids and solids, elementary thermodynamics and thermochemistry, properties of solutions, theoretical electrochemistry, chemical equilibrium, kinetics of reactions, radioactivity.

Books recommended: Getman, *Outlines of Theoretical Chemistry*, Wiley; Noyes and Sherrill, *Chemical Principles*, Macmillan; for Laboratory: Sherrill, *Laboratory Experiments on Physico-Chemical Principles*, Macmillan; Findlay, *Practical Physical Chemistry*, Longmans.

Prerequisites: Chemistry 2, 3 and 4.

Two lectures and three hours' laboratory per week.

3 units.

8. *Electrochemistry*.—

(a) As in Arts. (See Page 101.)

(b) Electric furnaces, electrolytic refining and deposition of metals will be studied in detail.

Text-book: Thompson, *Theoretical and Applied Electrochemistry*, Macmillan.

Two lecture and three hours' laboratory per week. Second Term.

1½ units.

9. *Advanced Organic Chemistry.* — As in Arts. (See Page 101.)

11. *Physical Organic Chemistry.*—As in Arts. (See Page 102.)

(Given in 1929-30 and alternate years)

12. *Colloid Chemistry.*—As in Arts. (See Page 102.)

(Given in 1930-31 and alternate years)

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 †

The following firms have kindly permitted the students in Chemical Engineering to work one day a week in their plants as part of their practical training:

British Columbia Electric Railway Co. (Gas Department).

Sherwin-Williams Co. of Canada, Limited.

Royal Crown Soaps, Limited.

Imperial Oil Company, Limited.

B. C. Refractories, Limited.

Triangle Chemical Company, Limited.

Westminster Paper Mills.

Canadian Carbonate, Limited.

17. *Chemical Thermodynamics.* — As in Arts. See Page 103.)

(Given in 1929-30 and alternate years)

18. *Advanced Inorganic Chemistry*. — As in Arts. (See Page 103.)

(Given in 1930-31 and alternate years)

Department of Civil Engineering

Professor: Wm. E. Duckering.

Associate Professor: E. G. Matheson.

Assistant Professor: F. A. Wilkin.

Assistant Professor: A. H. Finlay.

Assistant Professor: A. Lighthall.

Instructor: A. G. Stuart.

Instructor: J. C. Oliver.

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. Finlay, Mr. Lighthall, Mr. Stuart, Mr. Oliver.

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, Mr. Oliver.

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 6 must either precede or accompany Civil 4.

One two-hour period per week. Mr. Finlay, 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, Math. 1.

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; Civil 10 must either precede or be taken concurrently.

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 be taken with 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*; Morley, *Strength of Materials*.

Prerequisites: Physics 6, 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 Brown 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.

Prerequisite: 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 6.

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. Oliver.

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.

One two-hour period per week. Mr. Lighthall.

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: Kirby, *Elements of Specification Writing*, Wiley & Sons.

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: Mead, *Water-power Engineering*, McGraw-Hill.

References: Gibson, *Hydroelectric Engineering*, Volume I, Blackie; Mead, *Hydrology*, McGraw-Hill.

Prerequisites: Civil 12 must either precede or be taken concurrently.

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 management.

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. Oliver.

(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. Oliver.

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 Fifth 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 theoretical investigations. Topics may be selected from divisions of the Civil Engineering Course: Goedetics, Railways, Hydraulics, Municipal, Highways, Economic and Business Engineering, Structures. Copy of thesis in regular form and binder 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 Fourth and Fifth 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, or Senior Matriculation.

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. Stuart, Mr. Oliver.

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 Second and Third Years of Applied Science, drawn from the field of mechanics, surveying, draughting, and engineering.

Prerequisite: Civil 30, Math. 1, 2, 3 and 4.

Text-book: Duckering, *Notes and Problems*, Second Edition, McGraw-Hill.

One three-hour period per week.

Mr. Duckering, Mr. Stuart, 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:.....

Assistant: Peter F. Palmer.

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.

Honorary Lecturer: R. M. Brown.

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, *Woodsmen'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 wood-working 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.Sc. (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 investigations, 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.

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 Quaternary 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 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 or 2 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 Palaeontology*.

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*. Grubermann, *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 books: Lindgren, *Mineral Deposits*, 2nd ed.; 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.

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 micro-chemical 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 Professor: B. S. Hartley.

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: Wilson and Warren, *Intermediate Algebra* (Larger Edition), Oxford.

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.

Three lectures per week.

(Given in 1930-31 and alternate years.)

9. *Differential Equations*.—A study of ordinary and partial differential equations and their applications.

Three 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.

Assistant Professor of Electrical Engineering: E. G. Cullwick.

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.

Four hours laboratory per week First Term, and three hours Second Term.

3. *Kinematics of Machines*.—Velocity and Acceleration diagrams of mechanisms. Instantaneous centre of Rotation. Slider Crank and Quadric-crank chain; quick-return mechanisms; inversion; straight-line motions; epi-cyclic trains; valve-gears and miscellaneous mechanisms.

Text-book: McKay, *Theory of Machines*, Longmans Green & Co.

One two-hour lecture period per week.

4. *Dynamics of Machines*.—Diagrams of crank effort, piston velocity and acceleration; flywheel; balancing, rotating and reciprocating masses; secondary balancing; governors; brakes and dynamometers; belt-drives; dynamics of the gyroscope; friction and friction-clutches; impulsive forces in mechanisms.

Text-book: Low, *Applied Mechanics*, Longmans Green & Co.

Two lectures per week.

5. *Machine Design*.—A study of the theory of the properties of materials as applied to the design and construction of machines.

Reference books: Case, *Strength of Materials*, Arnold; Kimball and Bar, *Elements of Machine Design*, Wiley; Spooner, *Machine Design Construction and Drawing*, Longmans Green.

Two lectures per week.

5 (a). *Problem Course in Materials and Design*.—Examples and problems illustrating the lectures of M.E. 5 and including the solution under supervision of actual design problems.

Text-book: L. S. Marks, *Mechanical Engineers' Handbook*, McGraw-Hill.

Reference book: As in M. E. 5.

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*, Longmans Green. Simmons, *Compressed Air*, McGraw-Hill. Marks and Davis, *Steam Tables and Diagrams*, Longmans 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. *Heat Engines*.—A more precise study of the thermodynamic theory, construction and performance of steam boilers, air compressors, reciprocating steam engines, steam turbines and internal combustion engines.

Text-book: Low, *Heat Engines*, Longmans Green.

Reference books: As under M. E. 6.

Three lectures and one three-hour laboratory period per week.

8. *Steam Turbines*.—A more advanced course in the thermodynamic theory, design and performance of steam turbines both marine and stationary.

Reference books: Goudie, *Steam Turbines*, Longmans Green; Stodola, *Steam and Gas Turbines*, McGraw-Hill; Moyer, *Steam Turbines*, Wiley.

One lecture per week.

9. *Internal Combustion Engines*.—A more advanced course in the thermodynamic theory, design and performance of petrol, gas and oil engines.

Reference books: Wimperis, *Internal Combustion Engines*, Constable; Bird, *Oil Engines*.

One lecture per week.

10. *Refrigeration*.—A course in the thermodynamic theory, design and performance of refrigerating machines as used for commercial and domestic purposes.

Reference books: Ewing, *Mechanical Production of Cold*, Cambridge; Moyer and Fittz, *Refrigeration*, McGraw-Hill.

One lecture per week.

8, 9, 10. *Laboratory*.—The work carried out embodies the operation and testing of the laboratory machines, illustrating the theory covered in the lectures. Weekly written reports are required on the tests carried out.

One five-hour period per week.

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 appliances 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, and one three-hour laboratory period 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.

Reference books: Colvin and Juthe, *The Working of Steel*, McGraw-Hill; Bullen, *Steel and Its Heat Treatment*, Wiley; Dalby, *Strength and Structure of Steel and Other Metals*, Arnold.

One lecture and one two-hour laboratory per week.

14. *Mechanical Design*.—Design of shafts and high-speed bearings; critical speeds of shafts; machine frames; strength of armature cores and discs; torsional oscillations; transmission towers and supports; catenary suspensions; guy ropes; revolving field magnets; turbo-rotors, etc.

Text-book: None advised.

Three lectures and one three-hour drawing office period per week.

15. *Prime Movers*.—Theory and design of all types of hydro-electric machinery from the mechanical standpoint.

Reference book: Gibson, *Hydro-electric Engineering*, Vol. 1, Blackie.

Two lectures per week.

16. *Machine Design*.—The design of machine and structural parts, including parts of engines of all types; design of

wheel teeth, belt, rope, and chain gearing, flywheels, cams, clutches, couplings, machine frames, etc.

Text-book: Spooner, *Machine Design*, Longmans.

Three lectures and one five-hour drawing office period per week.

17. *Mechanics of Materials*.—A more complete study of the properties of materials and more advanced problems in design.

Reference books: As in M. E. 5.

Two lectures per week.

18. *Aeronautics*.—General theory of flight; aerofoils, lift, drag, distribution of pressure, aspect ratio, effect of variation of chamber; steam lines, airscrews, performance curves; general principles of design and methods of construction; theory of stability.

Text-book: Warner, *Aeronautics*, McGraw-Hill.

One lecture per week.

19. *Problems in Mechanical and Electrical Engineering*.—The solution under supervision of problems arising from the lecture courses.

One two-hour period per week.

Electrical Engineering

1. *Theory and Operation of Electrical Machines*.—A practical course for students not specializing in Electrical or Mechanical Engineering, designed to introduce to the student the principal factors in electrical machinery. Enough theory is given to explain fully the characteristics of the apparatus studied.

Introductory: Magnetic and electrical circuits, magnetic and electric measurements, electro-magnetic induction, EMF equation, motor law.

Direct Current Machines: The generator; simplex armature windings; EMF equation. Armature reaction; commutation. Methods of excitation, load characteristics. Conditions for self-excitation. The motor—types, speed equation, arma-

ture reaction, commutation, load characteristics, speed control, applications. Efficiency, rating, parallel operation of generators.

Alternating Current: Generation; wave form; vector representation; maximum, effective and average values. Resistance, inductance and capacitance in AC circuits—vector, impedance and admittance—solution of simple net works. Resonance. Polyphase circuits, power and its measurement. Polyphase loads.

Alternating Current Machines—Alternator: Emf. equation; armature winding; magneto-motive forces and fluxes; armature reaction; leakage reactance; regulation; efficiency; parallel operation of alternators. *Synchronous Motor:* Principle; vector diagram; output; power factor; synchronizing; hunting. *Trans-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.

Text-book: Gray, *Principles and Practice of Electrical Engineering*, McGraw-Hill.

Prerequisite: Physics 5.

Two lectures and one three-hour laboratory period per week.

2. *Elementary D.C. Technology.*—Elementary electro-magnetic theory. Theory and use of direct current generators and motors. Direct current transmission. Secondary batteries. Illumination, etc.

Text-books: Langsdorf, *Principles of Direct Current Machines*, McGraw-Hill; MacCall, *Electrical Engineering Continuous Currents*, University Tutorial Press, Ltd.; Smith, *Testing Dynamos and Motors*, Scientific Publishing Co.; Maclean, *Electrical Laboratory Course for Junior Students*, Blackie

and Sons; Bennett and Crothers, *Electro-Dynamics*, McGraw-Hill.

For Fourth Year Electrical and Mechanical Students only.

Prerequisite: Physics 3.

First Term: Three lectures and one three-hour laboratory period per week.

Second Term: One lecture per week.

3. *Elementary Alternating Current Technology*. — A thorough treatment of alternating current theory and calculations, with an introduction to the principles of the chief alternating current machines.

Text-books: Lawrence, *Principles of Alternating Currents*, McGraw-Hill; MacCall, *Electrical Engineering Alternating Currents*, University Tutorial Press, Ltd.; Smith, *Practical Alternating Currents*, Scientific Publishing Co.

For Fourth Year Electrical and Mechanical Students only.

Prerequisites: Physics 3.

Second Term: Two lectures and one three-hour laboratory period per week.

4. *Direct Current Machine Design*.—This course deals with the design of armatures, armature windings, the magnetic field system; shunt and compound windings, and with the complete design of direct-current dynamos and motors.

Text-book: A. C. Clayton, *Direct Current Machine Design*, Sir Isaac Pitman & Sons, Ltd.

Two lectures per week, second term only of fourth year. Three hours laboratory.

5. *Electrical and Mechanical Measurements and Instruments*.—A study of the units and quantities of magnetism and electricity, developing therefrom a detailed treatment of measurements and measuring instruments of all kinds, in theory and practice.

Brief Summary: Absolute instruments, secondary instruments; measurements of current, resistance, potential difference, and power; measurement of inductance and capacity; watt-hour meters, recording instruments, phase, power-factor, and fre-

quency measurements; instrument transformers; determination of wave form; calibration of instruments, etc.

Text-books: Laws, *Electrical Measurements*, McGraw-Hill; Drysdale and Jolly, *Electrical Measuring Instruments*, London, E. Benn, Ltd.

For Fourth Year Electrical Students only.

Prerequisite: Physics 5.

Two lectures per week.

6. *Problems in Direct Current and Alternating Current Technology.*

Two hours per week.

7. *Design of Electrical Machinery.*—In this course, the design of slow and high-speed alternators, transformers and induction motors, and rotary converters will be covered. In each case the design of a machine of each type, together with the underlying principles will be taught.

Text-books: Gray, *Design of Electrical Machinery*, McGraw-Hill; Slichter, *Design of Electrical Machinery*, Wiley & Sons. Vickers, *The Induction Motor*, Sir Isaac Pitman & Sons.

Two lectures per week each term.

Three hours laboratory period.

8. *Electric Traction.*—In this course will be considered the various DC and AC systems; speed-time curves, energy consumption curves; train resistance; characteristics of railway motors; control and control systems; regenerative braking; equipment and rolling stock; overhead construction and rail construction, feeder systems and their design. Substation equipment. Corrosion and its prevention.

Text-book: A. T. Dover, *Electric Traction*, Sir Isaac Pitman & Sons.

Reference book: Wilson & Lydall, *Electric Traction*, Longmans Green & Co.

Two lectures per week each term.

9. *Transmission and Distribution of Electrical Energy.*—In this course will be considered the following: Inductance and

capacity calculations for short and long lines, voltage drops on short and long lines; charging currents of long lines; voltage rises on AC systems; automatic protective switch gear; high-tension cables and their design; lightning arresters; design of feeders and distributors; Kelvin's law; economics of hydro-electric development; high-tension insulators; Corona, its laws and losses; voltage and power-factor control of transmission lines.

Text-books: Loew, *Electric Power Transmission*, McGraw-Hill; Still, *Overhead Power Transmission*, McGraw-Hill.

Two lectures per week each term.

10. *Electrical Problem Course*.—In this course problems in electro-technology and transmission and traction will be covered.

Two hours per week each term. (1 unit)

11. *Radio-Telegraphy and Telephony*.—In this course will be considered: Generation of oscillations by spark, arc, high-frequency alternators, and thermionic vacuum tubes. Open and closed circuit oscillators. Resonance; coupled circuits and their characteristics; forced and free vibrations; waves on coils and wires; propagation of electro-magnetic waves; methods of reception; direction finding; the use of the valve as generator, amplifier and detector.

Wireless Telephony microphones; transmitting circuits, receiving circuits, tuning.

Text-books: Morecroft, *Principles of Radio Communication*, Wiley & Sons; L. B. Turner, *Outlines of Wireless*, Cambridge Press.

12. *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.

Three lectures per week.

One laboratory period of six hours.

13. *Transient Phenomena and Oscillations.*—In this course will be considered the transient phenomena which occur in switching electric circuits, long transmission lines; standing and travelling waves; the penetration of current and flux into

magnetic materials at high frequency; the effective resistance, inductance and capacity of high frequency circuits; abnormal voltage rises in AC circuits; transients in radio circuits; waves and impulses, etc.

Text-book: Steinmetz, *Transient Phenomena*, McGraw-Hill.
One lecture per week.

14. A general course in electrical engineering for Mechanical Students.

Text-book: Lawrence, *Principles of Alternating Current Machines*, McGraw-Hill.

Two lectures per week.

One laboratory period of six hours.

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; 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.

Nine hours laboratory per week. Mr. Thompson.

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. Thompson. Mr. Bishop.

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. Mr. Bishop.

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.

Assistant: C. G. Patten.

Assistant: H. D. Smith.

Assistant: R. D. James.

The instruction includes lectures on the general principles of Physics, accompanied by courses of practical work in the laboratory.

1. *Introduction to Physics*.—See Physics 1, Arts and Science, Page 152.

2. *Elementary Physics*.—See Physics 2, Arts and Science, Page 153.

3. *Mechanics*.—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 Second Year of Applied Science.

Text-books: Loney, *Mechanics and Hydrostatics*, Cambridge University Press; Millikan, *Mechanics Molecular Physics and Heat*, Ginn.

Prerequisite: Physics 1 or 2.

Three lectures and one three-hour laboratory period per week.

4. *Heat*.—This course is begun when Physics 3 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; *Mechanics, Molecular Physics and Heat*, Ginn.

5. *Electricity and Magnetism*.—A quantitative study of fundamental principles of electricity and magnetism, with 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.

6. *Mechanics*.—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: Physics 3.

Text-book: Poorman, *Applied Mechanics*, McGraw-Hill.

Two lectures per week.

7. *Light*.—A short lecture course on light for engineering students. A study of optical instruments, light sources and

filters, spectroscopy, photometry, energy measurements, refractometers, interference, diffraction and polarized light.

Text-books: Houstoun, *Treatise on Light*, Longmans.

One lecture per week.

12. *Ions, Electrons, and Ionizing Radiations*.—See Physics 12, as in Arts and Science, Page 155.

Department of Nursing and Health

Professor: Hibbert Winslow Hill.

Assistant Professor: Mabel F. Gray.

Part-time Lecturers:

Miss Elizabeth Gertrude Breeze, R.N., Cert. P.H.N. (University of California).

Miss Margaret Duffield, Cert.P.H.N. (University of Toronto).

Miss Laura Holland, Cert. School of Social Work (Simmons).

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. Mrs. Stewart.

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.

Two lectures a week. First Term. 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 Department 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. *Social Case Work*.—And its relationship to Public Health Nursing.

Six lectures. Miss Holland.

22. *Hospital Social Service*.—A presentation of the principles underlying Medical Social Service.

Three lectures. Miss Timmins.

23. *Metabolism and Nutrition*.

Eleven lectures. Dr. Coleman.

24. *Psychology for Nurses*.

Two hours a week. Second Term. Dr. Wyman Pilcher.

25. *Principles of Education Applied to Teaching*.

Two hours a week. Both Terms. Dr. Weir.

26. *Public Speaking and Parliamentary Procedure*.—Principles and practice, fitting students for giving addresses and conducting meetings.

One hour a week. Eighteen hours. Dr. Hill.

27. *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.

Text-book: Beach, *Introduction to Sociology*, Houghton-Mifflin.

28. *Geography* 10.

One hour a week. Both Terms. Mr. Brock, Mr. Schofield.

29. *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.
Assistant: Verna Z. Lucas.

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.

1929-30

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	A 100	Agronomy 1	Ag 100
			Poultry 1	Ag 100		
10-11			Animal Husbandry 1	Ag 100		
11-12	Biology 1	Ap 100	French 1	A 104	Biology 1	Ap 100
	Zoology 1	Ap 101	Botany 1	A 204	Zoology 1	Ap 101
12-1						
1-2	Chemistry 1 a	S 800	Agronomy 1	Ag 108	Chemistry 1 a	S 100
	English 2 b	A 100	Bacteriology 1	S	English 2 a	A 100
2-3			Agronomy 1	Ag 108	Botany 1 Lab...	Ap
			Bacteriology 1	S		
3-4	Chemistry 1 Lab. 1	S	Agronomy 1	Ag 108	Botany 1 Lab...	Ap
	Bacteriology 1	S	Chemistry 2 Lab b	S		
4-5	Chemistry 1 Lab. 1	S	Chemistry 2 Lab b	S		
	Bacteriology 1	S				
5-6	Chemistry 1 Lab. 1	S	Chemistry 2 Lab b	S		
	Bacteriology 1	S				

SECOND

	MONDAY	ROOM	TUESDAY	ROOM	WEDNESDAY	ROOM
9-10	Agronomy 2	Ag 100	English 1 b	A 100	Agronomy 2	Ag 100
			Dairying 1	Ag 100		
10-11	Horticulture 1	Ag 100	Animal Husbandry 4	Ag 100	Animal Husbandry 4	Ag 100
11-12	Biology 1	Ap 100	French 1	A 104	Biology 1	Ap 100
	Zoology 1	Ap 101	Botany 1	A 204	Zoology 1	Ap 101
12-1						
1-2	Chemistry 1 a	S 800	Agronomy 2	Ag 108	Chemistry 1 a	S 800
	English 2 b	A 100			English 2 a	A 100
2-3	Dairying 1 Lab..	Ag 108	Agronomy 2	Ag 108	Botany 1 Lab...	Ap
3-4	Chemistry 1 Lab. 1	S	Agronomy 2	Ag 108	Botany 1 Lab...	Ap
	Dairying 1 Lab.	Ag 108	Chemistry 2 Lab. b	S		
4-5	Chemistry 1 Lab. 1	S	Chemistry 2 Lab. b	S		
	Dairying 1 Lab.	Ag 108				
5-6	Chemistry 1 Lab. 1	S	Chemistry 2 Lab. b	S		

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

-1929-30

FIRST AND SECOND YEARS.

TERM

THURSDAY	ROOM	FRIDAY	ROOM	SATURDAY	ROOM	
English 1 b	A 100	Poultry 1	Ag 100	English 1 a	A 100	9-10
				Poultry 1	Ag 102	
		Animal Husbandry 1	Ag 114	Poultry 1	Ag 102	10-11
		Chemistry 2	S 300			
French 1	A 104	Animal Husbandry 1	Ag 114	French 1	A 104	11-12
Botany 1	A 204			Poultry 1	Ag 102	
						12-1
Zoology 1 Lab.	Ap	Chemistry 1 a	S 300			1-2
		English 2 a	A 100			
English 1 a	A 100	Bacteriology 1	S			2-3
Zoology 1 Lab.	Ap					
Animal Husbandry 1	Ag 114	Bacteriology 1	S			3-4
Chemistry 2 Lab. b	S					
Animal Husbandry 1	Ag 114	Biology 1 Lab. 6	Ap			4-5
Chemistry 2 Lab. b	S					
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	Ag 100			10-11
		Chemistry 2	S 300			
French 1	A 104	Horticulture 1	Ag 100	French 1	A 104	11-12
Botany 1	A 204					
						12-1
Zoology 1 Lab.	Ap	Chemistry 1 a	S 300			1-2
		English 2 a	A 100			
English 1 a	A 100	Horticulture 1	Ag 104			2-3
Zoology 1 Lab.	Ap					
Chemistry 2 Lab. b	S	Horticulture 1	Ag 104			3-4
Chemistry 2 Lab. b	S	Biology 1 Lab.	Ap			4-5
		Horticulture 1	Ag 104			
Chemistry 2 Lab. b	S	Biology 1 Lab.	Ap			5-6

Ap, Applied Science; S, Science.

1929-30

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 1929-30.)

Graduate Work

For regulations, see page 262.

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

	<i>Units</i>
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.

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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 Genetics—Genetics 1 (a).....	1½
Total required	7½

FOURTH YEAR

(Required subjects)

	Units
Agricultural Economics	1½
Thesis	3
Total required	4½

Agronomy Major

THIRD YEAR

	Units
Required subjects, as above.....	7½
Plant Physiology—Botany 3.....	2
Systematic Entomology—Zoology 4	2
Economic Entomology—Zoology 7	2
*Total	13½

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.

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Animal Husbandry Major

THIRD YEAR

	Units
Required subjects, as above.....	7½
*Total	7½

FOURTH YEAR

	Units
Required subjects, as above.....	4½
Agronomy 7	1½
*Total	6

Dairying Major

THIRD YEAR

	Units
Required subjects, as above.....	7½
*Total	7½

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.....	7½
Plant Physiology—Botany 3	2
Systematic Entomology—Zoology 4.....	2
Economic Entomology—Zoology 7.....	2
*Total	13½

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.....	7½
*Total	7½

FOURTH YEAR

	Units
Required subjects, as above.....	4½
*Total	4½

Botany (Plant Pathology) Major**THIRD YEAR**

	Units
Required subjects, as above.....	7½
*Total	7½

* 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.....	7½
*Total	7½

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.

At least second class standing is required in the subjects of the minor.

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 will be exempted 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.

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. P. A. Boving, 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)*.—A study of the factors influencing the production of field crops. Field husbandry practices in Canada will be compared with those prevailing in other countries. Special problems of production, weed control, rotations, harvesting and storage will be considered as well as the physical phases of marketing.

Two lectures 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. *The Grading and Judging of Field Crops*.—The work of this course includes studies of the noxious weed seeds, the commercial and seed grades of Canada, the commercial grain and hay grades of the United States, and the identification and judging of the principal types and varieties of field crops.

One laboratory per week. First and Second Terms. Third Year. Mr. Moe. 1 unit.

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 Genetics 1 (a). With this course as a basis, the work is designed to illustrate and explain the breeding of field crops.

Two lectures per week. Second Term, Fourth Year. Mr. Moe. 1 unit.

Hayes and Garber, *Breeding Crop Plants*, McGraw-Hill; Babcock and Clausen, *Genetics in Relation to Agriculture*, McGraw-Hill; Sinnott and Dunn, *Principles of Genetics*, 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.

Two lectures per week. First Term, Fourth Year. Mr. Moe. 1 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. (Same as Bacteriology 6.)

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 Genetics 1(a).

Two lectures per week. Second Term, Third Year.

Mr. Davis. 1 unit.

(Open to Third Year Students in 1929-30.)

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.

(Open to Third Year Students in 1929-30.)

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.

(Open to Third Year Students in 1929-30.)

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.

(Not offered in 1929-30.)

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.

(Open to Third Year Students in 1929-30.)

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.

(Not offered in 1929-30.)

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.

(Not offered in 1929-30.)

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 Professor: Blythe Eagles.

Assistant: Lenora Irwin.

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.

$\frac{1}{2}$ 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 1929-30.)

10. *The Judging and Grading of Milk and Milk Products*. — Offered to students of the Senior Year.

Mr. Golding, Mr. Sadler.

1 $\frac{1}{2}$ units

(Open to Third Year Students in 1929-30.)

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.

Assistant Professor: G. H. Harris.

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.

(Not offered in 1929-30.)

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.

(Open to Third Year Students in 1929-30.)

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.

(Not offered in 1929-30.)

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.

(Open to Third Year Students in 1929-30.)

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, Mr. Harris. 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 Genetics 1 (a).

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.

(50 and 51 are offered in alternate years.)

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.

(Not offered in 1929-30.)

GENETICS

A. H. Hutchinson.
G. G. Moe.

1 (a). *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. (Same as Biology 2 (a) under Botany.)

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

Prerequisite: Biology 1.

Three hours per week. First Term. Mr. Hutchinson.

1½ units.

1 (b). *Principles of Genetics*.—A continuation of the studies of genetic principles with suggested applications. A lecture and laboratory course. The laboratory work will consist of problems, examination of illustrative material and experiments with *Drosophila*. (Same as Biology 2 (b) under Botany.)

Text-book: Sinnott and Dunn, *Principles of Genetics*, McGraw-Hill.

Prerequisite: Genetics 1 (a).

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

NOTE:—Where courses other than those listed under Agronomy, Animal Husbandry, Dairying, Horticulture, Poultry Husbandry, Agricultural Economics and Genetics are mentioned, the student will please refer to outlines of courses in Arts and Science or Applied Science.

1929-30

**LIST OF STUDENTS IN ATTENDANCE,
SESSION 1928-29**

FACULTY OF ARTS AND SCIENCE

FIRST YEAR

Full Undergraduates

<i>Name</i>	<i>Home Address</i>
Adams, Grace V.	Vancouver
Agar, Martha J.	New Westminster
Akenhead, A. Edwin	Ladysmith
Akerly, Ernest N.	Vancouver
Alexander, Margaret R.	Mission City
Allen, George S.	Vancouver
Allen, Gladys L.	Vancouver
Allen, Kenneth E.	Hammond
Allen, M. Elizabeth L.	Vancouver
Anderson, Stanley H.	Vancouver
Arkell, R. Reginald	Vancouver
Armitage, T. Harvey	Vancouver
Armstrong, John E.	Cloverdale
Atherton, Amy G.	Vancouver
Atkins, John M.	Vancouver
Atwater, Edward L.	Vancouver
Aylwin, Charlie H.	Vancouver
Bagnall, Arthur W.	Vancouver
Bailey, Margaret C.	Vancouver
Baillie, G. By J.	Vancouver
Bain, Archibald J. J.	Murrayville
Baker, Alice M.	Eburne
Balloch, Helen D.	New Westminster
Bamforth, Doric C.	Vancouver
Barnes, Hazel E.	Gibson's Landing
Barton, Doris J.	Vancouver
Beamish, Katherine	New Westminster
Beckett, Kenneth M.	Vancouver
Bennett, Gordon H.	Vancouver
Berridge, Eileen M.	Vancouver
Bescoby, Isabel M. L.	Vancouver
Bews, Isabel G.	New Westminster
Bingay, Kathleen B.	Trail
Black, Marietta C.	Vancouver
Blair, Kenneth J.	Granum, Alberta
Blumberg, Theresa	Vancouver
Bower, Benjamin L.	Vancouver
Bower, Kenneth L.	Vancouver
Boyd, Marian I.	Burnaby
Bradbury, John F.	Vancouver
Breger, Florence	Vancouver
Brewster, Norman H.	Merritt
Brine, Eleanor G.	Hollyburn
Broatch, Andrew L.	Calgary, Alberta
Brock, Thomas L.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Brown, Brenton S.	Vancouver
Brown, Florence	Vancouver
Brown, Mabel M. K.	Vancouver
Brown, Marjorie E.	Cumberland
Brown, W. Thomas	Vancouver
Bruce, Charles D.	Vancouver
Brunt, R. Ray	Vancouver
Bryant, Mary M. F.	Vancouver
Brynelsen, Bernard	Vancouver
Bryson, Bruce F.	New Westminster
Buckham, Jean C.	Vancouver
Buckland, Alfred C.	Vancouver
Burd, Marion	Vancouver
Burn, Ivone St. G.	Lundbreck, Alberta
Burnett, Dorothy D.	Vancouver
Burton, Geoffrey S.	Enderby
Caldicott, Arthur H.	Trail
Calverley, Elizabeth E.	Nanaimo
Cameron, Alan H.	Vancouver
Cameron, Jean H.	New Westminster
Campbell, C. Bruce	New Denver
Campbell, Harry D.	Vancouver
Campbell, Kathleen M.	Vancouver
Campbell, Mildred F.	Vancouver
Campbell, Veda J.	Vancouver
Carder, Margaret-Jean	Vancouver
Carlisle, Florence E.	Vancouver
Carlson, Albert M.	Carlin
Carmichael, Gwendolyn C.	Keremeos
Carpenter, Helen M.	Vancouver
Carter, Sarah B.	Vancouver
Casselmann, Marion McR.	Vancouver
Cather, Kathleen F.	Vancouver
Catto, Jean A.	Aldergrove
Charter, Norman A.	Alexis Creek
Chatwin, Ina M.	Vancouver
Cheeseman, Bessie	Vancouver
Chodat, Henry H.	Vancouver
Christian, Frank C.	Vancouver
Christie, J. Clark	Vancouver
Clark, Bruce	Vancouver
Clarke, E. Muriel	Vancouver
Clarke, Margaret E.	Vancouver
Clements, Margaret L.	West Vancouver
Cline, Bernice E.	Vancouver
Clugston, Kathryn M.	Vancouver
Colledge, Dorothy B.	Vancouver
Cooke, Carlton C.	Vancouver
Cornett, Margaret F. M.	Vancouver
Cornish, Peggy	Vancouver
Corp, Grenville A.	New Westminster
Coulthard, Margaret I.	Vancouver
Cowan, Eleanor M.	Vancouver
Cox, James W.	North Vancouver
Craig, Margaret W.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Crawford, Jessie G.	Vancouver
Crosby, Kathleen M.	Vancouver
Cruise, E. Audrey	Vancouver
Currie, Lucy I.	Vancouver
Curry, W. Jamieson	Vancouver
Dairon, David A.	Vancouver
Danielson, Gordon C.	Ladner
Darling, Frances	Vancouver
Davidson, Donald C.	Vancouver
Davidson, Jack	Vancouver
Dawson, Wilma F.	Vancouver
Deacon, George B.	Vancouver
DeLong, Barbara M.	Vancouver
DeLong, Mary E.	Vancouver
Detwiller, Hartley W.	Vancouver
Dick, Archibald N.	Cumberland
Dingle, W. Brian	New Westminster
Dingwall, Mairi A.	Vancouver
Dinsmore, Aubrey W.	Grand Forks
Dixon, Harold S.	Vancouver
Dixon, Kenneth W. C.	Prince George
Dixon, Muriel E.	Vancouver
Doane, Morton	Vancouver
Doberer, E. Ruth	Vancouver
Dobry, Austin N.	Grand Forks
Dodd, Dorothy A. E.	Vancouver
Dolsen, George W.	Vancouver
Donaldson, James W.	North Vancouver
Dooley, Mary C.	Vancouver
Douglas, R. Alan	Vancouver
Dryden, Earl	Vancouver
Dunbar, Ross P.	Vancouver
Earl, Alicia C.	Vancouver
Elliot, Alfred J.	New Westminster
Emerson, Jean W.	Vancouver
Ewart, Alexander	Burnaby
Ewart, Jessie P.	Princeton
Fallis, Mary M.	Vancouver
Falls, Marion	Vancouver
Farquharson, Ian C.	Vancouver
Ferguson, J. Mabel	Ladner
Ferguson, John L.	Hatzic
Ferris, Robert J.	Vancouver
Finch, Marjorie C.	Courtenay
Fitchpatrick, Margaret G.	Vancouver
Fletcher, Ralph	Vancouver
Follis, Doris E.	Vancouver
Ford, Graydon	Vancouver
Foulkes, Jennie	Vancouver
Fowler, Hedley S.	Riondel
Francis, Edmund D.	Vancouver
Frankforth, Evelyn H.	Vancouver
Fraser, Douglas P.	Osoyoos
Fraser, Kenneth F.	Vancouver
Fraser, Thomas C.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Freeman, David A.	Vancouver
Freeman, Michael S.	Vernon
Garden, Murray E.	Chapman Camp
Gerhart, Helen A.	Vancouver
Gibbard, Harold A.	Burnaby
Gilbert, W. Delmar	North Vancouver
Gill, Arthur T.	Cranbrook
Gillanders, Lloyd H.	Vancouver
Gillespie, Charlotte R. L.	Vancouver
Gittus, Stephen D.	Vancouver
Gleed, Ellen E.	Okanagan Centre
Gloster, Virginia M. E.	New Westminster
Goodyear, Phyllis N.	Vancouver
Goranson, Ewald	Vancouver
Gordon, Douglas	Whitehorse, Yukon
Gould, John R. G.	Vancouver
Graham, Kenneth	Milner
Grantham, Nina L.	Vancouver
Gray, David	Vancouver
Gray, J. Gardiner	New Westminster
Green, James J.	Vancouver
Green, Olive E.	Nanaimo
Greenlees, Eleanor D.	Vancouver
Grove, Florence M.	Vancouver
Groves, Philip S.	Vancouver
Haase, Rudolph E.	Vancouver
Hager, A. Robert	Vancouver
Hall, Edith L.	Vancouver
Hall, Helen F.	Vancouver
Halley, Elizabeth M.	Sandal, North Salt Spring Island
Hamilton, John D.	Revelstoke
Hamilton, Marion M.	Vancouver
Hamlin, O. Guthrie	Vancouver
Hammett, Joseph F.	Brighouse
Hanes, Marion A.	North Vancouver
Hardie, Lorna E. M.	Vancouver
Harrell, Bert F.	Vancouver
Harris, Laurence G.	Vancouver
Harris, Marjorie P.	New Westminster
Harrison, Audrey E.	Vancouver
Harvey, Alfred M.	Vancouver
Harvey, H. Stuart	Vancouver
Harvey, Patricia M.	Vancouver
Hattie, J. Ernest	Lynn Creek
Hayr, Arthur H.	Vancouver
Heaps, J. Morton	New Westminster
Hemsworth, Edward	Vancouver
Henderson, Margaret T.	Vancouver
Henning, Josephine M.	Vancouver
Herchmer, Lawrence S.	Fernie
Hewer, Jack M.	Vancouver
Hicks, Audrey P.	Vancouver
Hill, Muriel F.	North Vancouver
Hill, Sybil A.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Hillary, Clifford F. H.	Vancouver
Hininger, Frances May	Milner
Hisette, André	Vancouver
Hogg, Gilbert P.	Vancouver
Hogg, Rowland V. H.	Vancouver
Holland, George P.	Vancouver
Hood, Vivian K.	Vancouver
Horbury, John	Cumberland
Horowitz, Louis N.	Vancouver
Houston, Ruth A.	Vancouver
How, Thomas G.	Vancouver
Hulbert, Anna I.	Sardis
Humphreys, M. Gweneth	Upper Lynn
Hunter, B. Maurice	Vancouver
Hurum, Grace R. C.	Matsqui
Hutchinson, Grace M.	Vancouver
Hutton, Aimée A. I. M. E. E.	Vancouver
Hutton, Gwendolyne L.	Vancouver
Idiens, Gladys	Royston Station
Inglis, Effie F.	New Westminster
Irving, Edward C.	Vancouver
Irwin, W. R. Bruce	North Vancouver
Iwasa, Tatsumi	Cumberland
Jackson, Sidney K.	Vancouver
Jacob, J. Kenneth	Vancouver
Jacob, Marian D.	Vancouver
Jacob, Molly	Vancouver
Jakeway, J. Frederick	Vancouver
Jamieson, Grace A.	Vancouver
Jaynes, Richard	Nanaimo
Johnson, Constance C.	Vancouver
Johnston, George H.	Upper Capilano
Johnstone, J. Wallace	Arrowhead
Jorgensen, Ralph H.	Prince Rupert
Jure, Roy	Vancouver
Keen, W. Kathleen	Vancouver
Kell, Robert G.	New Westminster
Kellington, Harold A.	New Westminster
Kelly, Peter H.	Nanaimo
Kennedy, Bessie	Vancouver
Kidd, Evelyn S.	Vancouver
Knowlton, Grace	Vancouver
Koenigsberg, Ruth L.	Vancouver
Kolle, Louise	Vancouver
Kumagai, Sakae P.	New Westminster
Lalonde, Louis P.	Vancouver
Lansdowne, Laura I.	Kingcome Inlet
Larson, Bertil F.	New Westminster
Lauchland, Pauline M.	Vancouver
Lauder, W. Stuart	Chapleau, Ontario
Law, Annie S.	North Vancouver
Law, Christian B.	North Vancouver
Law, Florence N.	Lumby
Layton, Audrey L.	Vancouver
Layton, Felix	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Leach, D. John	Vancouver
Leck, Florence M.	Vancouver
Leckie, B. M. Joan	Vancouver
Leckie, Dola E.	Vancouver
Leckie, Phyllis E. G.	Hollyburn
Lecky, John	Vancouver
Lee, J. Wilfred	Bonnington Falls
Lee, T. Kong	Vancouver
Lee, W. Cyril	Sheffield, Ontario
Leeson, R. Bligh	Didsbury, Alberta
Lewis, Evelyn I.	Vancouver
Lindsay, Thomas	Copper Mountain
Little, Archie F.	Vancouver
Little, Mary I.	Union Bay
Livingstone, Annie S.	North Vancouver
Lockhart, Ruby E.	Vancouver
Logan, Kenneth C.	Vancouver
London, Hazel I.	Ladner
Long, Cecilia E.	Vancouver
Macey, Norman F.	New Westminster
Magee, J. Elizabeth	Port Haney
Mains, Nora M.	Vancouver
Malpass, J. Russell	Nanaimo
Manley, Douglas V.	Vancouver
Mann, Annie G.	Cumberland
Mann, Doris M.	Vancouver
Manuel, William D.	Creston
Margison, Donald C.	Vancouver
Marinelli, Victor	Cumberland
Mason, Miller H.	Trail
Mathers, William W.	New Westminster
Matheson, Donald A.	Vancouver
Maxwell, E. D. Wesley	Vancouver
Maxwell, Harold W. T.	Vancouver
Meikle, David R.	Courtenay
Mellin, Richard J.	Duncan
Mercer, Arthur F.	Vancouver
Mermoz, Roger	Vancouver
Metcalf, Berna	Vancouver
Metcalf, Josephine M. M.	Gibson's Landing
Mitchell, Joseph	Vancouver
Moilliet, Theodore K.	Vavenby
Moore, J. Dickson	Fort Fraser
Moore, Sanderson E.	Vancouver
Moorhead, Harold P. J.	Vancouver
Morgan, Donald J.	Vancouver
Morrison, Florence C.	Vancouver
Morrison, Ian C.	Vancouver
Mouat, Thomas W.	Vancouver
Muir, Wallace T.	Vancouver
Murray, Muriel M.	Vancouver
MacArthur, M. Isobel	Vancouver
McArthur, Munro	Vancouver
Macaulay, Alexander D.	Vancouver
McCague, Mary L.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
McCulloch, Arthur G.	Revelstoke
McCulloch, Nova F.	Kamloops
McCulloch, Ruth E.	Penticton
MacDermot, Eve K.	Vancouver
Macdonald, Blanche H.	Vancouver
McDonald, Frances G.	Vancouver
McDonald, Hector	Vancouver
McDonald, Jessie A.	Vancouver
Macdonald, Marie T.	Vancouver
MacDonald, Mary V.	Vancouver
MacDonald, William R.	Ruskin
McEachern, Ronald G.	Coalmont
McEachern, S. Helen	Coalmont
McElroy, Helen	Vancouver
McGill, Evelyn B.	Vancouver
McGinness, John H.	Eburne
McHattie, George T.	Vancouver
McHugh, J. Laurence	Vancouver
MacInnes, Ian	Vancouver
MacInnes, William E.	Vancouver
McKay, Margaret L.	Vancouver
McKellar, Neil L.	Vancouver
McKelvie, Dorothy J.	Vancouver
MacKenzie, Donald A.	Vancouver
MacKenzie, Margaret M.	Vancouver
McKenzie, Melbourne W.	Vancouver
McKeown, Thomas	New Westminster
McKie, C. Marion	Vancouver
MacLean, Lachlan M.	Vancouver
McLean, Sinclair S.	Shelley
Macmillan, Alexander E.	Vancouver
McMurray, Mamie E.	Vancouver
McNicol, Margaret C.	Vancouver
MacPherson, Donald W.	Vancouver
McPherson, Ellen M.	Grand Forks
Macpherson, Mary	Vancouver
McPherson, Muriel E.	Eburne
McQuarrie, Colin D.	New Westminster
McRae, Roderick B.	Vancouver
McWilliams, Harold C.	Vancouver
Napier, John P.	Victoria
Newcombe, Clair F.	North Vancouver
Newson, John A.	Vancouver
Nollie, Kenneth J.	Trail
O'Hagan, Patricia M.	Vancouver
Olund, Anna V.	Mount Lehman
Olund, Edwin C.	Mount Lehman
Ormsby, Hugh	Vernon
Orr, Margaret I.	Vancouver
Palmer, Arthur B.	Vancouver
Palmer, E. Irene	Vancouver
Park, Margaret	Vancouver
Parr, Eric H.	New Westminster
Patmore, William H.	Prince Rupert
Patterson, Alexander S.	New Westminster

<i>Name.</i>	<i>Home Address.</i>
Patterson, Margery S.	Vancouver
Paulson, P. Edwin	New Westminster
Pearson, Muriel	Port Coquitlam
Perdue, Frank S.	Vancouver
Pinkerton, Stanley	Vancouver
Platt, Carolyn G.	Vancouver
Pollock, Arthur J.	Burnaby
Poole, Dorothy M.	Vancouver
Porter, Sydney M.	New Westminster
Potts, Jerrald A.	Alert Bay
Prendergast, Mildred A.	Squamish
Punnett, Trevor R.	Duncan
Ramage, E. Irene	Vancouver
Rankin, Elizabeth	Powell River
Rathie, Margaret	Vancouver
Rea, Winifred M.	Milner
Reid, John A.	Vancouver
Richmond, Richard H.	Chilliwack
Roberts, Hesketh	Vancouver
Roberts, L. Katherine	Vancouver
Robinson, Helen M.	Vancouver
Rome, David	Vancouver
Root, Gordon	Vancouver
Ross, Hector C.	Vancouver
Ross, Helen H.	Vancouver
Ross, John F.	Vancouver
Round, Mildred R.	New Westminster
Russell, Hilda J.	West Vancouver
Russell, Jean McD.	Vancouver
Russell, Ronald C. M.	Powell River
Sadler, Mary F.	Peachland
Sanders, Gislie E.	Vancouver
Savage, John P.	Vancouver
Scott, Annie E.	Vancouver
Scott, Frank E.	Vancouver
Scott, J. Douglas	Kaslo
Scott, Marjory M.	Vancouver
Scott, William H.	Vancouver
Selby, Cyril C.	Kimberley
Sellars, Carol	Vancouver
Semple, Sidney W.	Wexford, Ireland
Shannon, Jean M.	Vancouver
Shelly, Margaret E.	Vancouver
Shopland, Stella	Galiano
Simpson, Eric McL.	Burnaby
Simpson, Hugh E.	Vancouver
Sims, Adice M.	Vancouver
Smith, Dorothy H.	Allenby
Smith, Elizabeth W.	Burnaby
Smith, George J.	Hollyburn
Smith, Harold W.	Matsqui
Smith, Marlon E.	Vancouver
Smith, William J.	Vancouver
Solomon, Lily K.	New Westminster
Sorensen, Edwin W.	New Westminster

<i>Name.</i>	<i>Home Address.</i>
Spitzen, Jacob	Vancouver
Spohn, F. Elizabeth	Vancouver
Spohn, Margaret G.	Vancouver
Spragge, Elsie M.	Vancouver
Stead, Gordon W.	Vancouver
Stearman, Margaret R.	Vancouver
Stenner, Edwin T.	Vancouver
Stephenson, E. Gloria	Vancouver
Stevenson, Jane E.	Vancouver
Steves, Madelyn S.	Steveston
Steves, Jocelyn S.	Steveston
Stewart, A. Patricia	Vancouver
Stewart, Douglas G.	Prince Rupert
Stewart, Ernest J. C.	Vancouver
Stewart, Mary P.	Vancouver
Stewart-Lough, Robert G.	Vancouver
Stirling, Andrew G.	Kelowna
Strain, Robert E.	Vancouver
Stratton, Muriel A.	Vancouver
Stuart, James F. A.	North Vancouver
Sturdy, Edith H.	Revelstoke
Sutherland, Donald F.	Vancouver
Sutherland, Fiona J.	Vancouver
Sutherland, Margaret C.	Vancouver
Swanson, Olga K.	Vancouver
Tamboline, Dorothy M.	Ladner
Taylor, Anna E.	Palo Alto, California
Terry, Norman K.	Vancouver
Thacker, Yvonne B.	Hope
Thomas, Audrey M.	Vancouver
Thomson, Alexander	North Vancouver
Thomson, Betty	Vancouver
Thomson, John W.	Duncan
Thornton-Trump, Belva V.	Vancouver
Tingley, Rettie	Vancouver
Tomlinson, F. Edith	Vancouver
Tryon, Kenneth G.	Vancouver
Tulloch, Marion D.	Vancouver
Turin, Alexandra	Vancouver
Turnbull, Betty	Vancouver
Turnbull, Robert H.	Vancouver
Turpin, Dorothy H.	Vancouver
Turvey, Jack M.	Vancouver
Uchiyama, Ritsuko	Royston
Vance, Earl J.	Vancouver
Vigner, Marion E.	Vancouver
Voigt, Austin H.	Vancouver
Wallace, W. Douglas	Fernie
Ward, Gordon O.	Vancouver
Ward, Robert C. W.	Victoria
Wark, W. Carter	Steveston
Warr, James H. A.	Esquimalt
Washington, A. Day C.	Vancouver
Webb, Kathleen S.	Heffley Creek
Weir, Evelyn A.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Westmacott, Thomas R.	Vancouver
Whiles, Bill O.	Vancouver
Whitchelo, Phyllis F.	Vancouver
White, Phyllis M.	Vancouver
White, Reginald R.	Vancouver
Wiggins, Winifred M.	Vancouver
Wiley, Rudolph C.	Eburne
Wilkie, Helen S.	Vancouver
Willard, J. H. William	Vancouver
Williams, Percy A.	Vancouver
Williams, Reynold P.	Vancouver
Williams, W. Enid	Vancouver
Wilson, E. Bernice	Vancouver
Wilson, J. Ronald	Vancouver
Wilson, Margaret W.	Vancouver
Wilson, Thomas H.	Vancouver
Witbeck, Jean	Vancouver
Woolner, Arthur N.	Vancouver
Wrinch, C. William	Vancouver
Wrinch, Harold F.	Hazelton
Yarrow, Isabel M.	Vancouver
Yoshy, George	Vancouver
Young, Alice F.	Vancouver
Young, John N.	Vancouver
Young, William D.	Vancouver

Conditioned

Dollar, Margaret L.	Vancouver
Durham, Kathleen H.	Usk
Fraser, Frances M.	Vancouver

Partial

Archibald, Marjorie D.	Vancouver
Bains, Chanan Singh	Punjab, India
Bardsley, John H.	Vancouver
Briggs, S. Isabelle	Vancouver
Buchanan, Richard D.	Vancouver
Cameron, William F.	Vancouver
Carpenter, Grace E.	Vancouver
Carstairs, George D.	Vancouver
Cherrington, James	Creston
Cleveland, Courtney E.	Vancouver
Cotterell, Howard C.	Vancouver
Crisp, Adam	England
Deshpande, Kashinath K.	Akalkot, India
Donaldson, Clarence H.	Grand Forks
Dunfee, Clifford	Vancouver
Fannin, Jean G.	Vancouver
Fernie, W. Vacy	Kamloops
Fougner, Milo A.	Bella Coola
Freedman, Harry C.	Vancouver
Gelin, Phil	Vancouver
Harrison, Margaret W.	Vancouver
Knowlton, Edna M.	Vancouver
Lloyd, Douglas	Vancouver

<i>Name.</i>	<i>Home Address.</i>
McBride, Clarke F.	Vancouver
McDonald, James T.	Vancouver
McEwen, Phyllis K.	Vancouver
McKenzie, Evelyn M.	Vancouver
McMurphy, Jessie M.	New Westminster
McWilliams, Kenneth R.	Vancouver
Parsons, George R.	Vancouver
Pollock, Leslie E.	Vancouver
Read, John R.	Vancouver
Ritchie, Edith M.	Banff, Alberta
Robins, Frederick J.	New Westminster
Robinson, J. Ripley	Vancouver
Roray, James A.	Vancouver
Schulte, Arthur B.	West Vancouver
Smith, Maxine E.	Vancouver
van Sickle, Vernon B.	London, England
Weld, George F.	Vancouver
Wentworth, Charles F.	Santa Monica, Calif.
Willis, Clarence H.	Regina, Saskatchewan
Wohlgeleinter, Solomon P.	Vancouver

SECOND YEAR

Full Undergraduates

Acorn, Jessie I.	Vancouver
Allan, Margaret McM.	Vancouver
Anderson, Gordon M.	Vancouver
Armstrong, A. Helen	Vancouver
Bailey, Alice T.	Vancouver
Bain, Violet B.	Murrayville
Baker, Ronald J.	Yellow Grass, Sask.
Ball, Mary E.	Sandwich
Ball, Mary O. B.	Vancouver
Banno, Edward C.	Vancouver
Barnett, Thomas S.	Brea, California
Barr, Helen I.	Vancouver
Barrington, Norma M.	Calgary, Alberta
Beall, Desmond	New Westminster
Beamish, W. Randolph	New Westminster
Bickford, Edith P.	Vancouver
Black, Bertie A. F.	Vancouver
Black, Peter	Prince Rupert
Bolton, Verna M.	Vancouver
Bostock, A. Ruth	Monte Creek
Boutlier, Helen R.	Vancouver
Bowell, Lyla A.	Vancouver
Bowes, Howard E.	Vancouver
Brent, Norma M.	Vancouver
Brissenden, Pearley R.	Vancouver
Brown, Edgar N.	Vancouver
Bryant, Beverly	Vancouver
Buckland, Elizabeth C.	Vancouver
Burnham, Frank L.	Vancouver
Burns, Ronald M.	Vancouver
Butorac, Jeanne B.	Trail

<i>Name.</i>	<i>Home Address.</i>
Cameron, Jean G.	Vancouver
Campbell, Alan T. R.	Vancouver
Campbell, Phyllis M.	Vancouver
Carpenter, Margaret E.	Vancouver
Carlidge, Annie	North Vancouver
Cassidy, Eugene H.	Vancouver
Chappell, John G.	Vancouver
Clark, Gordon A.	Port Moody
Clarke, Maurice C.	Trail
Clarke, Norma R.	Vancouver
Clement, Maurice G.	Vancouver
Cowan, Ian McT.	North Vancouver
Cowlard, Reginald L.	Vancouver
Creelman, Margaret W.	Vancouver
Cross, Lillian M.	Prince Rupert
Crowe, M. Loraine	Vancouver
Dawson, Barbara L.	Vancouver
Dickie, Mildred O.	Vancouver
Edwards, Joan E.	Steveston
Ellison, Florence R.	Vancouver
Ferguson, Ann B. S.	Vancouver
Finlay, Margaret G.	Vancouver
Fisher, Alexander W.	Fernie
Fisher, Kathleen P.	Ladner
Fishman, Solomon	Vancouver
Fletcher, Margaret G.	Victoria
Forsyth, Agnes J.	Vancouver
Foss, I. Harriet	Vancouver
Foster, B. Joan	Kelowna
Fox, Clara G. B.	Thurlow
Fox, Jack W.	Vancouver
Fraser, Frances L.	Vancouver
Fridleifson, Leif F.	Vancouver
Frost, John W.	Vancouver
Fulton, William R.	Vernon
Galloway, Verna E.	Nanaimo
Gansner, Leo S.	Taghum
Gaul, Katharine L. C.	Vancouver
Gaul, Robert W.	Vancouver
Gavin, Mary F.	Burnaby
Gleave, Edward	Kamloops
Graham, Dorothy M.	Vancouver
Graham, Mary H. S.	Vancouver
Grant, Donald B.	Vancouver
Grant, George	Burnaby
Grantham, Ronald	Vancouver
Gray, Alice G.	Vancouver
Greenwood, Dorrie	Vancouver
Greenwood, F. Marjorie	Vancouver
Greig, Laurence	Vancouver
Griffin, Herbert H.	Vancouver
Harford, Barrie H.	Burnaby
Harvey, John	Vancouver
Harvey, William H.	Vancouver
Healey, Agnes M.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Hebb, Malcolm H.	Vancouver
Henderson, Jean A. B.	Vancouver
Hendry, Alexander	Vancouver
Henniger, William F.	Grand Forks
Herbison, Mary	Vancouver
Hill, M. E. Frailey	North Vancouver
Hipperson, Margaret A.	Nelson
Hockin, Katharine B.	Vancouver
Holloway, Mavis M. E.	Vancouver
Hood, Jean A.	Dundarave
Horn, Howard J.	Vancouver
Howard, John D.	Victoria
Hudson, Sheila F.	Nelson
Hulbert, Ethel M.	Sardis
Hunt, Cicely R.	Vancouver
Hutchison, Donald F.	Vancouver
Hutson, A. Maud	Vancouver
Jestley, H. Lyle	Nakusp
Johnson, Edwin B.	Vancouver
Johnson, Harriet E.	Vancouver
Johnston, Viola M.	Vancouver
Keeling, F. Temple	New Westminster
Kummer, Marian I.	Cranbrook
Lang, Lawrence A.	Vernon
Langton, R. Eric G.	Port Hammond
Large, F. Margaret	Vancouver
Larson, May E.	Vancouver
Lawrance, John C.	North Vancouver
Lawson, William P.	Victoria
Lea, Margaret	Vancouver
Lockhart, Myra R.	Vancouver
Lowe, Ronald H.	Sidney
Lugsdin, Claribel	New Westminster
Madeley, Frank St. J.	Vancouver
Magee, Edith M.	Bowen Island
Maguire, Helen K.	Vancouver
Makepeace, Ronald A.	Vancouver
Malm, Carl A.	Britannia Beach
Martin, Berna A.	Vancouver
Masterson, Robert V.	New Westminster
Matsuzaki, Susumu	Steveston
Matthews, Helen M.	Vancouver
Mawby, Vera B.	Vancouver
Mayse, Shirley I.	Vancouver
Mellish, Humphrey W.	Vancouver
Meredith, George M.	Vancouver
Millar, Robert D.	Vancouver
Mitchell, Ernest A.	Rossland
Mitchell, Jack D.	Rossland
Moore, Elizabeth E.	Vancouver
Morgan, Edward H.	Vancouver
Morris, Rhoda	Vancouver
Morrow, Alice I.	Vancouver
Morrow, James W.	New Westminster
Morse, John J.	Vernon

<i>Name.</i>	<i>Home Address.</i>
Moscrop, Margaret A.	Vancouver
Muirhead, Margaret O.	Vancouver
Mulholland, Georgina R.	Vancouver
Mundie, John A.	Vancouver
Murdoch, David C.	Okanagan Mission
Murdoch, Mary J.	Vancouver
Murray, Grace W.	Burnaby
Murray, M. Kathleen	Vancouver
Mussallem, Nicholas	Port Haney
Myers, Dorothy	Vancouver
McCharles, Donald M.	Vancouver
McColl, Edythe M.	North Vancouver
McDonald, A. Ruth	Vancouver
MacDonald, Catherine	Vancouver
McDonald, Mabel L.	Vancouver
Macdonald, Marion S.	Vancouver
MacDonald, Wilfred J.	Vancouver
McIntosh, Edith J.	Vancouver
Mackay, J. Fraser	Kamloops
McKee, Kenneth M.	Vancouver
McKenzie, Francis J.	Vancouver
McLarty, Robert L.	Vancouver
McLean, John F.	Vancouver
McLellan, Marion C.	Vancouver
McMillan, Donald C.	Vancouver
Newlands, Patricia	Oswego, Oregon
Nicholson, Laurence J.	Vancouver
North, W. Eric	Armstrong
Oates, Creswell J.	Vancouver
O'Hagan, Eileen	Vancouver
Osborne, Rhuna	Vancouver
Owens, Frances M. M.	Vancouver
Parker, Clifford F.	Vancouver
Parker, Hugh	Vancouver
Partridge, Margaret E.	Vancouver
Patmore, Dorothy E.	Prince Rupert
Patten, Robert W.	Chilliwack
Pearson, Jack M.	Vancouver
Peel, Marjorie F.	Vancouver
Philpott, Margaret S.	New Westminster
Pigou, Elfrida M.	Vancouver
Platt, Dorothy L.	Vancouver
Poole, Louise E.	Port Hammond
Proctor, Fred T.	Vancouver
Retallack, Henry R.	Vancouver
Ritchie, Agnes C.	Vancouver
Roberts, Loretta S.	New Westminster
Robertson, Bessie E.	Vancouver
Robinson, Frances T.	New Westminster
Ross, Kathleen MacK.	Vancouver
Rowbottom, Annie M.	Nanaimo
Royce, Gladys	Vancouver
Rutherford, J. Murdoch	Revelstoke
Savage, Gertrude M.	Vancouver
Selfe, Olive F.	Vancouver

<i>Names.</i>	<i>Home Address.</i>
Shaneman, Russell D.	Vancouver
Siddall, Kathleen Y.	Ladner
Simmonite, Stella A.	North Vancouver
Simonds, Peter	Victoria
Smith, Alexander G.	Vancouver
Smith, Alice M.	Vancouver
Smith, Norma F.	Vancouver
Smith, Phyllis G. B.	Vancouver
Smith, Ronald N.	Vancouver
Smyth, Roberta L.	Vancouver
Sproule, Marion A.	Vancouver
Stanley, Beatrice M.	Vancouver
Stewart, Beatrice J.	Vancouver
Swain, Lyle A.	Vancouver
Sweeting, Alma T.	Vancouver
Symons, Edward J.	Victoria
Taylor, John R.	Vancouver
Telford, Jean R.	Vancouver
Timmons, Talosa V.	Vancouver
Tonberg, Max S.	Vancouver
Tourtellotte, Lois M.	Vancouver
Tregidga, Angus C.	Vancouver
Trites, Helen L.	Vancouver
Truax, Clarence W.	Grand Forks
Vollum, Clarence H.	Vancouver
Watson, Wilma	Vancouver
Whalen, John J.	Vancouver
Wilson, James R.	Vancouver
Woodworth, Margaret E.	Vancouver
Wright, Margaret J.	Vancouver
Wrinch, L. Austin	Chilliwack
Wylie, Dorothy E.	Vancouver
Young, Alfred B.	Prince Rupert
Young, John T.	Vancouver
Zarrelli, Elvira E.	Vancouver

Conditioned

Aitken, Stirling C.	Vancouver
Bruce, Dorothy M.	Agassiz
Carnwath, Velma S.	Vancouver
Clark, Edward A.	Vancouver
Dunham, Burtt	Abbotsford
Dunn, Stella B.	Nanaimo
Edwards, H. Gwendoline S.	North Vancouver
Efford, Ruby E.	Vancouver
Farris, John L.	Vancouver
Fowler, Jean R.	Vancouver
Gillespie, Charles R.	Vancouver
Gillies, Eleanor M. D.	Vancouver
Glover, Herbert G.	Vancouver
Griffin, Eileen B.	Vancouver
Hallett, Joan E.	Nelson
Hill, Victor R.	Vancouver
Huycke, Barbara S.	Vancouver
Keate, William L.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Knight, Gladys E.	Coronation, Alberta
Kokoros, Antonio	Vancouver
Koshevoy, Himie	Vancouver
Lawson, Martha E.	Vancouver
Mellicke, Marian E.	Vancouver
McAfee, Jessie A.	Prince Rupert
McKnight, Wilfred T.	Vancouver
McLean, Ola M.	Hollyburn
McNab, Zora	Waldo
Nomoto, Kyuichi	Vancouver
Read, Ralph E.	Kaslo
Roberts, F. Ernest C.	Chilliwack
Robson, Margery J.	New Westminster
Shilvock, Winston A.	Vancouver
Smith, Marion W.	Vancouver
Stewart, James D.	Vancouver
Streight, Jack M.	New Westminster
Tipping, Vera L.	Vancouver
Wakely, Charlene V. L.	Vancouver
Watson, G. Fraser S.	Whitehorse, Yukon
Westrup, Ernest L.	Vancouver
Wheeler, Marjorie A.	Vancouver
Whyte, Jean	Vancouver
Wilson, John A. R.	Kamloops
Wilson, W. George	Vancouver
Wolfe, Paul B.	Vancouver
Woodbury, Charles P.	Vancouver
Yasuda, Toyoyoshi	Vancouver

Partial

Alexander, Hugh J.	Vancouver
Bischoff, Harold D.	Hilversum, Holland
Brock, Arthur E.	Port Haney
Brown, Ralph MacL.	Vancouver
Chapman, Robert J.	New Westminster
Dick, Margaret B.	Vancouver
Easton, Anthony	Victoria
Edwards, Byron	Vancouver
Evans, Alfred A.	Vancouver
Haley, Francis E.	Santa Monica, Calif.
Harris, Thomas O. D.	New Denver
Inglis, James W.	Courtenay
Lang, George W.	Vancouver
Lee, Evelyn G.	Vancouver
Lyle, L. Margaret	Vancouver
Matheson, Alvah S.	Vancouver
Mearns, William L.	Vancouver
Mitchell, Alexander S.	Prince Rupert
Morgan, John G.	Vancouver
McDonald, Mary F.	Vancouver
McDowell, Ethel F.	Vancouver
McEwen, Theodore S.	New Westminster
McGauley, Belle K.	Castlegar
McIntosh, Veronica A.	Vancouver
MacKenzie, Helen J.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
McSweyn, Edward L.	Vancouver
Pigott, Arnold A. D.	Vancouver
Ritchie, Thomas H. A.	Banff, Alberta
Robson, Lawrence A.	New Westminster
Ruttan, Henry R.	Victoria
Selder, William J.	Vancouver
Turner, David B.	Edmonton, Alberta
Ullock, John F.	Vancouver
Weir, Elizabeth	Vancouver
Willis, Philip E.	Victoria

THIRD YEAR

Full Undergraduates

Abramson, Nicolas H.	Vancouver
Allan, Elizabeth M.	Victoria
Archibald, Reginald MacG.	Vancouver
Baker, Maurice G.	Vancouver
Baker, Russell K.	Vancouver
Barton, Mary K.	Vancouver
Beall, Geoffrey	New Westminster
Bedford, Margaret MacK.	Salmon Arm
Bell, Helen V.	Hollyburn
Birch, Robert H.	New Westminster
Bolton, Dorothy G.	Vancouver
Boothroyd, Gordon S.	Surrey Centre
Bowen, Marjorie M.	Vancouver
Bowman, Edith A.	Vernon
Brain, Kathleen F.	Calgary, Alberta
Brazier, Charles W.	Vernon
Brock, David H.	Vancouver
Brown, Kathleen M.	Victoria
Bruce, Winnie M.	Vancouver
Bryson, Margaret A.	Ashcroft
Burgess, Thomas E.	Vancouver
Campbell, Cherrie	Stewart
Campbell, Mary E.	Vancouver
Chalmers, Thomas M.	Burnaby
Chapman, Maxine F.	Trail
Clayton, John N. C.	Vancouver
Coates, A. Caroline	Vancouver
Coleman, John U.	Vancouver
Colledge, M. Elaine	Vancouver
Collier, Sally I.	Vancouver
Conlan, Jack R.	Vancouver
Coope, Margaret	Vancouver
Cornish, Naomi H.	Hollyburn
Crawford, Muriel M.	Stewart
Creelman, Arthur G.	North Vancouver
Cupit, Ernest H.	Vancouver
Dawley, George E.	Victoria
Dee, Isabel M.	Victoria
Dow, Marion E.	Vancouver
Downing, Dorothy M.	Vancouver
Dunn, James	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Edwards, Howard I.	Vancouver
Edwards, T. Bentley	Steveston
Elliott, Edgar N. R.	West Summerland
Engelbrecht, William B.	Salmon Arm
Felton, Barbara	Victoria
Fisher, J. Frederick	Eburne
Fleming, Rena Y.	Victoria
Freeman, Harold	Vancouver
Gilley, H. Frances	New Westminster
Goard, Dean H.	Vancouver
Gray, Kenneth R.	Vancouver
Gray, Roland C. V.	New Westminster
Greenlees, Margaret M.	Vancouver
Grossman, Peter F.	Chilliwack
Guy, R. D. Jordan	Victoria
Hall, Gordon W.	Kelowna
Hallonquist, Frank W.	New Westminster
Hanes, F. E. Evelyn	North Vancouver
Hardy, Ella	New Westminster
Hargreaves, Marion E.	Victoria
Harvie, M. Muriel	Vancouver
Hay, Letitia A.	Vancouver
Helliwell, Hilary R. B.	Vancouver
Henderson, Ena M.	Victoria
Henderson, E. Ruth	Vancouver
Henderson, Percy H.	Vancouver
Hickman, Walter H.	Lavington
Hill, Dorothy R.	Vancouver
Holliday, Elizabeth M.	Armstrong
Holmes, A. Constance	Vancouver
Horton, Ruby J.	Vancouver
Ingram, Dorothy H.	Vancouver
Irvine, Margaret C.	New Westminster
Itter, Stuart	Vancouver
Jenkins, Ernest A.	Vancouver
Johnson, Daniel E.	Ocean Falls
Johnson, Thelma H. C.	Vancouver
Johnston, A. Elizabeth	Vancouver
Keillor, Dorothy E.	Vancouver
Kelly, Eric	Vancouver
Kidd, Kathleen M.	New Westminster
King, E. Gray	Vancouver
King, Harold F. A.	Vancouver
Kinnimont, Russell J.	North Vancouver
Kostman, Harry L.	Vancouver
Laing, L. Muriel	Victoria
Langridge, Marion H.	Vancouver
Linfield, Arthur G.	Vancouver
Loch, Margaret S.	Vancouver
Logan, Margaret C. N.	Vancouver
Madigan, Stephen E.	Vancouver
Mahon, Thelma H.	Vancouver
Malcolm, Olive C.	Vancouver
Mathers, Alice S.	Vancouver
Mathers, M. Kathleen L.	Burnaby Lake

<i>Name.</i>	<i>Home Address.</i>
Menten, R. Claire	New Westminster
Mitchell, Yrma Z.	Victoria
Morell, Douglas	Vancouver
Morris, John R.	Vancouver
Morrison, Clarke V.	Vancouver
Munn, R. Russell	Summerland
McDiarmid, Donald S.	Trail
Macdonald, David W.	Vancouver
Macdonald, Douglas	North Vancouver
McGougan, Jean	North Vancouver
McGregor, Malcolm F.	Vancouver
MacIntosh, Jean	Vancouver
McKay, Georgie A.	Vancouver
McKay, Marjorie D.	Upper Lynn
McKee, M. Ruth	Vancouver
McKellar, Andrew	Vancouver
McKenzie, Betty	Vancouver
McKeown, Olive E.	New Westminster
McQuarrie, Mary F. C.	New Westminster
McRae, Donald E.	Vancouver
Nakano, Thomas T.	Cumberland
Negoro, Tsuyuko	Vancouver
Nichols, Wallace K.	Prince George
Palmer, V. Elvira	Vancouver
Paul, George H. G.	Vancouver
Petrak, Milshie	Vancouver
Pilkington, Roderick A.	Vancouver
Pollock, Douglas B.	Vancouver
Pound, Dorothy R.	Vancouver
Pretty, J. Malcolm	Vancouver
Reece, Frances C.	Vancouver
Rendle, Frank	Mount Tolmie
Reynolds, Frances E.	Vancouver
Riggs, Margaret I.	Vancouver
Risk, Sydney J.	Vancouver
Robbins, William	Victoria
Roberts, Bernice M.	Vancouver
Robertson, Barbara M.	Vancouver
Ross, Margaret	Victoria
Salter, Jean R. G.	Vancouver
Sanderson, Thomas J.	Burnaby
Savage, Dorothy E.	Ladner
Scroggie, Katherine M. S.	Victoria
Shandley, Vida E.	Victoria
Silbernagel, Benedict L.	Vancouver
Sinclair, Isabelle T.	Vancouver
Smith, William G.	Vancouver
Solly, Nicolas O.	West Summerland
Speed, Marjorie E. J.	Victoria
Stedman, Cecil K.	Vancouver
Stinson, Verna C.	Vancouver
Sutherland, Helen E.	Vancouver
Taylor, James A.	Cranbrook
Thomas, Olwen E.	Vancouver
Thorlakson, Samson E.	Vernon

<i>Name.</i>	<i>Home Address.</i>
Tobin, Bernard	Vancouver
Tobin, Brian A.	Victoria
Underhill, Fabian	Burnaby
Urquhart, Catherine McD.	Rossland
Waites, Marjorie E.	Victoria
Walker, Kathleen	Vancouver
Ward, Kathleen J.	Vancouver
Watson, Donald S.	Victoria
Webber, G. Cuthbert	Vancouver
Whiteford, Florence E.	Nicola
Whiteside, Elizabeth M.	New Westminster
Whittaker, William R.	Kaslo
Wilson, Arthur R.	Vancouver
Wilson, Roger	Victoria
Winch, Eileen	New Westminster
Wood, Berton M.	Vancouver
Woodward, Geoffrey G.	Vancouver
Woodworth, Jean D.	Vancouver
Wright, Basil O.	West Summerland
Young, Allan C.	Vancouver
Young, Doris I.	Vancouver
Young, Eileen F. M.	Revelstoke

Conditioned

Ashby, Barbara M.	Vancouver
Borden, Elizabeth-Anne R.	Nelson
Brand, George A.	Victoria
Bush, Dora M.	Chilliwack
Campbell, Marion I.	Abbotsford
Caverhill, Mervyn R.	Victoria
Daniells, J. Roy	Victoria
Davis, Beatrice E.	Vancouver
Duncan, Campbell	Vancouver
Garratt, H. Jean	Vancouver
Grant, Marion R.	Vancouver
Hale, John S.	North Vancouver
Harris, Irene M.	West Summerland
Hartley, Basil S. S.	Vancouver
Hutson, Andrew H.	Vancouver
Kirk, Ada	Vancouver
Kirk, Marjorie M. S.	Vancouver
Lauriente, Miranda	Trail
Morrison, Hugh M.	Vancouver
Muncey, Neenah M.	Vancouver
McEwen, Enid C.	New Westminster
McMorris, May A.	Vancouver
McNeill, Douglas F.	Vancouver
Phillips, Paul	Vancouver
Sargent, H. Marguerite	Victoria
St. Pierre, Ella M.	Vancouver
Van Vooght, B. Angela E.	Victoria
Wilson, Muriel T.	Vancouver

<i>Name.</i>	<i>Partial</i>	<i>Home Address.</i>
Anders, Charles H.		Vancouver
Barr, A. Jean		Vancouver
Bolton, Lorraine DeH.		Vancouver
Brown, Robert C.		Vancouver
Carl, G. Clifford		Vancouver
Gilmour, Hazel V. H. S.		Vancouver
Harvey, G. Lloyd		Vancouver
Healy, Justine		Vancouver
Hyndman, Ernest E.		Vancouver
Inglis, Hugh F.		Gibson's Landing
Kirby, W. J. Cameron		Rocky Mountain House, Alberta
Litch, John B.		Vancouver
Meredith, J. Laurence R.		Vancouver
Morikawa, Teizo		Kyoto, Japan
Morley, Frank S.		Huntsville, Ontario
McIntosh, William B.		Vancouver
Paulding, Harold		New Westminster
Rendell, Victoria J.		Dawson, Yukon
Shields, Gordon J.		Vancouver
Shore, Julius		Vancouver
Southam, Harold D.		Vancouver
Todd, Alan L.		Vancouver
Webster, Gladys		Vancouver
Wilson, Isabel M.		Vancouver

FOURTH YEAR

Full Undergraduates

Adam, Jean H.	Nanaimo
Anderson, O. Elmer	Vancouver
Anderson, Robert N.	Rossland
Andrew, Jean E.	Vancouver
Arbuthnot, Eva V.	Eburne
Armstrong, Shiela M.	Vancouver
Ayton, Ernest R.	Victoria
Baker, H. Gordon	Vancouver
Ballard, Jean R.	Vancouver
Bell, Frances	Victoria
Berto, Thomas V.	Vancouver
Billings, John MacD.	Vancouver
Boggs, Teddy R.	Vancouver
Bowes, Muriel M.	Victoria
Brealey, Daisy J.	Hollyburn
Burdett, Mildred E.	Kimberley
Carlaw, D. Jeanne	Vancouver
Carter, Mary J.	Vancouver
Chandler, Thomas A.	Vancouver
Christie, Daisy	Vancouver
Christison, May H.	Shawnigan Lake
Clark, Mary E.	Vancouver
Clark, Norman	Cassidy
Cliff, Evelyn E. S.	Vancouver
Cole, Irene R. R.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Crompton, Doris I.	Vancouver
Crossman, Margaret L.	New Westminster
Cruickshank, Dorothy M.	Victoria
Cruise, M. Evelyn G.	Vancouver
Daniels, H. Muriel E.	Vancouver
Davis, A. Iola	Vancouver
Dee, Ethelwyn M.	Victoria
DesBrisay, Maurice P.	Vancouver
Dobson, Lily C.	Vancouver
Dow, Elizabeth	Vancouver
Dowler, Jean M.	Vancouver
Downes, Dorothy H.	Victoria
Duffell, Stanley	Vancouver
Dyer, Eleanor G.	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, William R.	Vancouver
Fowler, Frances L.	Riondel
Freeman, Phyllis M.	Vernon
Freshwater, Norman G. M.	Vancouver
Fullerton, Harold W.	Vancouver
Garner, F. O. Roswell	Duncan
Genser, Joseph	Vancouver
Gillespie, F. Margaret	Vancouver
Gilliland, Henry C.	Victoria
Glasgow, Mary Helen	Salmon Arm
Gold, Norman L.	Vancouver
Gourlay, Margaret T.	Victoria
Grant, Margaret I.	Vancouver
Green, George H. E.	Victoria
Green, Kathleen B.	Vancouver
Groves, Elizabeth A.	Vancouver
Hadgkiss, Annie L.	Vancouver
Hall, Winifred H.	Vancouver
Harrell, Milton M.	Vancouver
Hart, Josephine F. L.	Victoria
Hartness, Dunmail H.	Vancouver
Helmer, Dorothy E.	Vancouver
Hendry, Harry A.	Dundas, Ontario
Holroyd, Nora M.	Trail
Honeyford, C. Douglas	Vancouver
Horne, James W.	Victoria
Hull, Ralph	Mt. Vernon, Wash
Jackson, Lylian G.	Cranbrook
Jackson, Suzanne C.	Vancouver
Jenkins, N. Joyce	New Westminster
Johns, Harold P.	Victoria
Johnson, Margaret C.	Vancouver
Kajiyama, Toshio	Cumberland
Kay, William	Vancouver
Keyserling, Robert W.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Killam, Elizabeth D.	Vancouver
King, Norma L.	Vancouver
Kirk, T. Downie	Vancouver
Korenaga, George J.	Vancouver
Laing, Lionel H.	Victoria
Lamb, Robert S.	Vancouver
Lang, Barbara	Trail
Lanning, Marjorie	Vancouver
Madeley, E. Frances	Vancouver
Mahon, Harold S.	Vancouver
Marshall, Harry B.	New Westminster
Marshall, Hilda A. J.	Victoria
Mellish, Ellen F.	Vancouver
Mennie, Jessie R.	Burnaby
Mercer, Clara M.	New Westminster
Millar, Helen H.	Field
More, Kenneth R.	Vancouver
Morsh, Joseph E.	Peachland
Mouat, Olivia D.	Vancouver
Murphy, Denis W.	Vancouver
Murphy, Paul D.	Vancouver
McDonald, Ileen M.	Vancouver
McDonald, Jean G.	Vancouver
McInnes, M. J. Vera	North Bulkley
Mackay, Ronald D.	Vancouver
Macleane, Donald N.	Vancouver
McLean, Margaret F.	Prince Rupert
McPhail, Murchie K.	New Westminster
McPhee, Muriel I.	Courtenay
McRae, Alida B.	Vancouver
McSweyn, Edith G. M. L.	Vancouver
McTavish, Constance C.	Vancouver
Newall, Nathan	Vancouver
Nicholson, Howard G.	Vancouver
Ormsby, Margaret A.	Vernon
Oswald, Drummond W.	New Westminster
Owen-Jones, E. E. Doanie	Vancouver
Partridge, E. Douglas	Cumberland
Patrick, W. Beverly	Vancouver
Patterson, Dorothy J.	Vancouver
Pearce, Denis W.	Vancouver
Pendray, Gladys I.	Vancouver
Poole, Albert R.	Port Hammond
Rae, G. Gordon	Vancouver
Reid, John S.	New Westminster
Ricketts, Mary	Vancouver
Riggs, A. Eleanor C.	Vancouver
Rogers, David D. MacN.	Sullivan
Rouvier, Frank E.	Nanaimo
Rowland, Greville J.	Vancouver
Ryall, Grace A.	Mount Tolmie
Smith, Helen E.	Eburne
Sparks, Jack	Vancouver
Sparling, James F.	Port Hammond
Stangland, Louella M.	New Westminster

<i>Name.</i>	<i>Home Address.</i>
Sutherland, Helen M.	Victoria
Tait, Claudine P.	North Vancouver
Tervo, M. Winnifred	Victoria
Thurston, Kenneth T.	Port Moody
Todd, J. Ronald	Vancouver
Toimie, J. Ross	Vancouver
Unsworth, Edith	Vancouver
Watson, Neill McL.	Vancouver
Watts, Mary H.	Vernon
Whitaker, A. Geraldine	Vancouver
White, Alice M. G.	Vancouver
Wilson, Ruth	Vancouver
Woodworth, Hugh MacC.	Vancouver
Worthington, Iola A.	Victoria
York, Gladys	Abbotsford

Conditioned

Bailey, Jean G. K.	Vancouver
Caufield, Rose F.	Fernie
Colledge, M. Thelma	Vancouver
Dickson, G. Blair	Victoria
Douglas, Elizabeth M.	Vancouver
Fuller, Evelyn L.	Vancouver
Garesché, Cecilia	Victoria
Holland, Virginia C.	Vancouver
Horton, Edward W.	Vancouver
Lyons, Ronald A.	Penticton
Maikawa, Fred H.	Vancouver
Mathers, Lillian	Vancouver
Murray, John V.	Nanaimo
Oldfield, Frederick A.	Vancouver
Shore, Maurice	Vancouver
Simpkins, E. Grace	Vancouver
Steele, David A.	Vancouver
Sutton, Arthur	Burslem, England
Switzer, John G.	North Vancouver
Tamura, Miyoko	Port Haney
Teetzel, Grace E.	Vancouver
Wilson, Reginald A.	Vancouver

Partial

Carrick, Robert B.	Vancouver
Fournier, Frank L.	Vancouver
Griffis, Robert S.	Vancouver
Lloyd-Jones, D. Alan	Kelowna
Loomer, J. Claire	Hedley
Moloney, Mamie P.	Vancouver
Oulton, Reta W.	Vancouver
Plommer, J. Wilfrid	Vancouver
Waterfield, Jean K. M.	Nakusp
Winram, Mary M.	Vancouver

FACULTY OF APPLIED SCIENCE

SECOND YEAR

Full Undergraduates

<i>Name.</i>	<i>Home Address.</i>
Bain, Kenneth M.	Vancouver
Barratt, Philip S.	Vancouver
Bartlett, Eugene	North Bend
Bassett, Harold V.	Victoria
Baynes, George E.	Vancouver
Bolton, Reginald S.	Vancouver
Brown, C. E. Gordon	Liverpool, England
Callan, Lawrence A.	Vancouver
Cameron, James E.	Vancouver
Cameron, Wilfred M.	Vancouver
Camozzi, R. Oliver	Bellingham, Wash.
Campbell, J. Kenneth	Prince George
Carey, Davis M.	Victoria
Carre, Stephen N.	Vancouver
Carswell, Ernest R.	Vancouver
Coles, Albert E.	Vancouver
Cowan, Sydney G.	Victoria
Crawford, Thomas E.	Vancouver
Creighton, George L. D.	Vancouver
Cross, Frank	New Westminster
Cummings, J. M.	Cranbrook
Dirom, Gavin A.	Duncan
Doherty, Thomas H.	North Vancouver
Ellett, Alec S.	Vancouver
Ellison, Robert	Trail
Emery, Philip C. B.	New Westminster
Fladgate, Francis W. G.	Vancouver
Fleck, William J.	New Westminster
Flynn, J. Benjamin	Vancouver
Frattinger, Peter A.	Vancouver
Giles, Harold F.	North Vancouver
Givins, Henry C.	Vancouver
Graham, Stewart J.	Victoria
Green, Maxwell L.	New Westminster
Hay, Kenneth	Nelson
Hedley, John B.	Victoria
Hemsworth, Frederick J.	Vancouver
Henderson, Gibb G.	Vancouver
Hodnett, Lisle	Vancouver
Holmes, Terence C.	Victoria
Horton, R. Donald	Vancouver
Jackson, Ross A.	West Vancouver
Johnson, James R.	Revelstoke
Johnston, John	New Westminster
Kennett, William T. E.	Vancouver
Ladner, Frank E.	New Westminster
Lawley, J. E. Ryan	Vancouver
Lind, J. Walter	Sidney
Loggie, John M.	North Vancouver
Lucas, Richard B.	Vancouver
Madsen, Christy	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Mathews, James D.	Vancouver
Mitchell, Robert F.	Rossland
Munro, Neil F.	Regina, Sask.
Maconachie, J. Roy	Victoria
McEwen, Horace A.	Vancouver
McEwen, Norman	Hatzic
McMullan, D. Lawrence	Salmon Arm
Macqueen, Ian C.	Victoria
Nakano, Isao A.	Cumberland
Nesbitt, Lyman M.	Victoria
Norman, Telfer E.	Nelson
Parker, David B.	Vancouver
Pike, Albert E.	Vancouver
Read, Verne	Erie
Reid, Harold A.	Coleman, Alberta
Richardson, Edward W.	Vancouver
Rossiter, Philip D.	Vancouver
Saiga, Fred S.	Vancouver
Shayler, Stanley V.	Vancouver
Smith, Cyril H.	Matsqui
Smith, Donald S.	Vancouver
Smith, John Y.	Victoria
Stelmaschuk, Michael	Vancouver
Tyerman, Donald McI.	Vancouver
Van Allen, Harry M.	Vancouver
Webster, Alan	Burnaby
West, Henry A. S.	Mayne Island
<i>Conditioned</i>	
Carlson, Oscar H.	Vancouver
Fairley, John J.	Vancouver
Fox, John S.	Victoria
Gordon, Frank	Anyox
Kuwabara, Hiro	Vancouver
Lammers, Walter A.	Vancouver
Lind, C. Arthur A.	Golden
Matheson, Robert K.	Prince Rupert
Mayers, E. Wallace	New Westminster
Miles, Leonard C.	Vancouver
Parker, James E.	Prince Rupert
Smith, Wilbert B.	Vancouver
Speed, Arthur T.	Victoria
Thorlakson, Harold	Vernon
Tough, William J.	Vancouver
Vandervoort, W. D.	Vancouver
Wiles, Gordon A.	Burnaby
Wilmot, Richard C.	Bridge River
Woods, Reginald J.	North Battleford, Sask.
<i>Partial</i>	
Rogers, Philip T.	Vancouver
Rosenzveig, David	Harbin, China
Sidhu, Nahar Singh	Punjab, India
Straight, Harold LeB.	Vancouver
Williams, Charles	Vancouver
Yatskin, Michael C.	Harbin, China

THIRD YEAR	
<i>Name.</i>	<i>Home Address.</i>
Aalbersberg, Willem J. G.	Vancouver
Alpen, Robert R.	Vancouver
Anderson, Roddy V.	Vancouver
Barnes, Elmer G.	Vancouver
Bews, Kenneth F.	New Westminster
Black, Ross M.	Kelowna
Buckland, Francis C.	Vancouver
Cornwall, George L.	Vancouver
Cruise, Kenneth A.	Vancouver
Dalton, V. John	North Vancouver
Dobson, William K. A.	Oyama
Dunham, Charles B.	Vancouver
Estabrook, Alan D.	Vancouver
Graham, Leslie W.	Vancouver
Green, J. Lloyd	New Westminster
Halet, Robert A.	Victoria
Hall, John C.	Nelson
Hall, William	Victoria
Harris, Malcolm A. A.	Cranbrook
Henderson, Arnold E.	Vancouver
Kershaw, Ernest McD.	Ladner
Klinck, Ronald W.	Vancouver
Latta, William S. B.	Victoria
Legg, Maxwell	New Westminster
LePage, David H. L.	Victoria
Lewis, Frank A.	Kelowna
Lovitt, Edward H.	Vancouver
Martin, Clarence G.	Masset
Mason, Ralph P.	West Vancouver
Matheson, William M.	Vancouver
Monroe, J. Lewis	Vancouver
Murray, Walter A.	Vancouver
Plant, John L.	Victoria
Player, Elliot G. N.	Victoria
Sanderson, Adrian B.	Vancouver
Schultz, Charles D.	Vancouver
Scott, Norman V.	Vancouver
Smith, Irving C.	Vancouver
Smith, James W.	New Denver
Smith, Robert H.	Victoria
Thomas, Melvin A.	Vancouver
Trant, Geoffrey A.	Vancouver
Watson, Dalton H.	Vancouver
Williams, Lloyd	Vancouver
Wong, Charles	Vancouver
Wood, Wellesley A.	Victoria
Wright, Howard R.	Vancouver

Conditioned

Barratt, Herbert J.	Vancouver
Brookes, Norman F.	Vancouver
Campbell, Robert K.	Grand Forks
Chapman, Ray E.	Vancouver
Conklin, J. S. Armit	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Davis, Harry V.	Revelstoke
Evans, George E.	Wellington
Haggerty, Wilmer P.	Vancouver
Halley, John K.	North Salt Spring Island
Hamilton, Rognvald T.	Vancouver
Madeley, W. Arthur	Vancouver
Martin, Kenneth W.	Vancouver
Merrett, Edward J.	Mt. Tolmie
Munn, Thomas H.	Vancouver
McDowall, Vere Y.	Vernon
MacLaurin, Donald J.	Victoria
Nesbitt, Michael C.	Victoria
Nixon, George R. W.	Victoria
Okulitch, Vladimir	Abbotsford
Shiels, Thomas	Vancouver
Swannell, Lorne F.	Victoria
Yolland, Clifford A. C.	Summerland

Partial

Abraham, Francis J.	Vancouver
Crawford, Elmer J.	Oyama
Cumming, John E.	Vancouver
Groves, Tom D.	Westholme
Inouye, Kuramitsu	Vancouver
Saunders, Milton E.	Vancouver
Symons, Harold E.	Vancouver
Thorne, Harry L.	Calgary, Alberta

FOURTH YEAR

CHEMICAL ENGINEERING

Bailey, Basil E.	Vancouver
†Hadgkiss, James	Vancouver
Rhodes, Audsley V.	Victoria
†Somerton, Thomas W.	Prince George

CIVIL ENGINEERING

Deans, Charles W.	Victoria
Hrennikoff, Alexander	Vancouver
†Sparks, W. H.	Vancouver

ELECTRICAL ENGINEERING

Adam, Ian M.	Vancouver
Barclay, Guy	Sugar Lake
†Canfield, Orra W.	New Westminster
Fraser, W. A. Schubert	Victoria
Hadwin, Thomas F.	Hollyburn
Harrower, George A.	New Westminster
Hay, Edward C.	Vancouver
Lunn, Edward O.	Hollyburn
†McDonald, Hugh J.	Vancouver
Roberts, James C.	Cranbrook
†Sangha, Ajaib Singh	Punjab, India
Woodland, Harold E.	Grand Forks
†Workman, W. R.	Fernie

† Partial.

† Conditioned.

<i>Name.</i>	<i>Home Address.</i>
FOREST ENGINEERING	
Curtis, James D.	North Vancouver
GEOLOGICAL ENGINEERING	
Graham, Roy	Milner
Hedley, Mathew S.	Vancouver
Holland, Stuart S.	Vancouver
Horwood, H. Clare	Kingston, Ontario
Macdonald, Alan J.	Vancouver
†McKechnie, Neil D.	New Westminster
Rayner, G. Eric	Naramata
Stevenson, John S.	Vancouver
MECHANICAL ENGINEERING	
Abernethy, Emerson	Vancouver
Craster, James E.	Vernon
Foerster, Fred S.	Vancouver
Locke, Charles W. E.	Victoria
Macdonald, John E.	Vancouver
†Thornber, William	Summerland
Unsworth, Arthur	Vancouver
MINING ENGINEERING	
‡Bebb, Elon	Portland, Oregon
Hill, Henry L.	Vancouver
Matheson, Don N.	Prince Rupert
†Mathews, L. Gerard	Vancouver
Pike, James A.	Vancouver
Selby, William R.	Kimberley
Terhune, Stuart J.	Rossland
Wilson, George H.	Vancouver
FIFTH YEAR	
CHEMICAL ENGINEERING	
Blankenbach, William W.	Victoria
Carpenter, R. Burton	Vancouver
Fell, Arthur T.	Victoria
Hall, Wilfred N.	Vancouver
Robertson, Francis McG.	North Vancouver
‡Stanley, Thomas R.	Vancouver
CHEMISTRY	
Todd, Eric E.	Vancouver
CIVIL ENGINEERING	
‡Carver, Stanley C.	Victoria
Cornish, Charles R.	North Vancouver
Duckering, Charles E.	Vancouver
McDonald, Walter V.	Vancouver
Peebles, Archie	Vancouver
Pretious, Edward S.	Hollyburn

‡ Partial.

† Conditioned.

<i>Name.</i>	<i>Home Address.</i>
ELECTRICAL ENGINEERING	
‡Andresen, Sigurd	Vancouver
Bergquist, Rubert A.	Vancouver
Blackett, Harold W.	Victoria
Dhami, Bhagat Singh	Punjab, India
Emery, Donald J.	New Westminster
Mooyboer, A. Peter	Grand Forks
Morrison, Robert L.	Vancouver
McLean, Alexander	Vancouver
Rudnicki, A. H.	Ferne
FOREST ENGINEERING	
Crickmay, James L.	North Vancouver
Gormely, Marcus W.	Vancouver
†Ogawa, Thomas T.	Vancouver
GEOLOGICAL ENGINEERING	
Lord, Clifford S.	New Westminster
Warden, Tom	Vancouver
MECHANICAL ENGINEERING	
Bishop, Joseph W.	Vancouver
Jagger, Albert E.	Vancouver
Richmond, W. Osborn	Chilliwack
METALLURGICAL ENGINEERING	
Fraser, James S. C.	Victoria
MINING ENGINEERING	
Arland, Andrew J.	Cloverdale
Odlum, Victor E. C.	Vancouver
Wallis, John C.	Britannia Mines
NURSING	
FIRST YEAR	
<i>Full Undergraduates</i>	
Barlow, Ada A.	Vancouver
Castle, Joan R.	Stockton, Manitoba
Dorgan, Henrietta J.	New Westminster
Hardy, Margaret E.	New Westminster
King, Margaret A.	Vancouver
Lewis, Leila F.	Vernon
Mills, Nancy E.	Vancouver
MacLean, Marian E.	Regina, Sask.
Orr, Dorothy H.	Vancouver
Phelps, Dorothy L.	Whitehorse, Y. T.
Purvis, Muriel A.	Vancouver
Tate, Dorothy E.	Vancouver

‡ Partial.
† Conditioned.

<i>Name.</i>	<i>Partial</i>	<i>Home Address.</i>
Hill, Evelyn S.		Vancouver
Moffat, Margaret E.		Vancouver

SECOND YEAR

Full Undergraduates

Cumming, Jean I.		Morden, Manitoba
Dezall, Ivy C.		Cranbrook
Gowen, Winnifred M.		Vancouver
Miles, Marion C.		Cranbrook
Tisdall, Sheila M.		Duncan

Conditioned

Clegg, E. Beatrix		Vancouver
Elliott, Ethel L.		Vancouver

THIRD YEAR

Full Undergraduates

Hillas, Hedwig		Vancouver
Homfray, Geraldine E.		Kamloops
Kilpatrick, Heather		Vancouver
MacKenzie, Dorothy E.		New Westminster
Smith, Muriel R.		Vancouver
Sutherland, Margaret F.		Vancouver
Young, M. Fyvie H.		Victoria

FOURTH YEAR

Full Undergraduates

Armstrong, Mary		Burnaby
Cardwell, Marion T.		Vancouver
Henderson, Isobel M.		Vancouver
Kilpatrick, M. Elspeth		Vancouver
McPhee, Mary L.		Vancouver
Ross, Mary		Victoria

Conditioned

Hilton, Grace		Vancouver
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FIFTH YEAR

Full Undergraduates

Anderton, Evelyn		Ft. William, Ont
Aske, Jessie		Vancouver
Dorsett, Margaret		Vancouver
Henderson, Mary E.		Vancouver
Tisdall, Edith W.		Vancouver
Upshall, Edna M.		Vancouver

FACULTY OF AGRICULTURE

FIRST YEAR

Full Undergraduates

<i>Name.</i>	<i>Home Address.</i>
Fisher, Ralph E.	Eburne
Henderson, Wilson	Vancouver
Leech, Hugh B.	Salmon Arm
Savage, William F.	Vancouver
Shaw, Henry A.	New Westminster

SECOND YEAR

Full Undergraduates

Cato, John S.	Deep Cove
Cianci, Joseph A.	Vancouver
Ellis, Herbert W.	Vancouver
Falls, Herbert D.	Vancouver
Ingledeew, Norman H.	Vancouver
Leach, Thomas A. L.	Vancouver
Lerner, I. Michael	Harbin, China
Roberts, Bertram B.	New Westminster
Stuart, Ruth A. K.	Kelowna
Tait, Wilfred J. C.	Van Anda
Taylor, William A.	New Westminster
Winram, J. Mills	Vancouver
Zaitzeff, Anatole	Harbin, China

Conditioned

Cliffe, Harold L.	Comox
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THIRD YEAR

Full Undergraduates

Aspinal, Thomas E.	Fauquier
Christmas, Irene M.	Cloverdale
Grauer, Frederick W.	Eburne
Preston, Shirley G.	Vanderhoof

Conditioned

Sutherland, Donald	Vancouver
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FOURTH YEAR

Full Undergraduates

Black, Lindsay McL.	Vancouver
Brooke, Ralph E.	Salmon Arm
Odium, Roger M.	Vancouver
Swanson, John R.	Vancouver
Yarwood, Cecil E.	Huntingdon

Partial

Bowman, Sydney J.	Vancouver
Currie, Lyall A.	Cloverdale
DesBrisay, Eileen	Vancouver
Dial, Puran Singh	Punjab, India
Forsyth, Rolfe M.	Vancouver
Godfrey, Langford M.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Ink, Joseph C.	Kootenay Bay
Kabalkin, Jacob S.	Harbin, Manchuria
Koga, Vernon	Vancouver
Labzoffsky, Nicholas	Urga, Mongolia
Mayers, R. J. Neville	Vancouver
MacKenzie, C. Duncan	New Westminster
MacKenzie, James C.	New Westminster
Okulitch, George	Abbotsford
Peden, Ernest E.	Victoria
Roach, William	Vancouver
Spilsbury, Richard H.	North Vancouver
Stevenson, William H.	Vancouver
Strachan, Charles C.	Tranquille

GRADUATES

FACULTY OF ARTS AND SCIENCE

Allen, J. Stanley	New Westminster
Boyes, Francis C.	Vancouver
Burritt, Flora M.	Vancouver
Campbell, Mildred H.	Vancouver
Davidson, George F.	New Westminster
Duncan, Cedric J.	Vancouver
English, John F. K.	Haney
Fowler, Horace W.	Vancouver
Gale, A. Moira	New Westminster
Grace, John	Vancouver
Griffith, W. Ivor	Vancouver
Hallonquist, Earland G.	New Westminster
Hansen, Edna B.	New Westminster
James, Ralph D.	Vancouver
Kask, Marie K.	Burnaby
Knott, W. Widnell D.	Victoria
Langdridge, Gertrude A.	Vancouver
Logie, Russell M.	Vancouver
Lopatin, Ivan	Vancouver
Lucas, Verna Z.	Vancouver
Meredith, Joan O. F.	Blakeburn
Morell, A. Ernest	Vancouver
Morrison, Duncan G.	Seattle, Wash.
Munro, Ferdinand L.	Vancouver
Neil, Alice C.	Vancouver
Noble, Kenneth F.	Vancouver
Northrop, Harold	Vancouver
Patten, C. Gordon	Armstrong
Pillsbury, Richard W.	Prince Rupert
Pollock, M. Elizabeth	Vancouver
Riley, Christopher	Celista
Salisbury, Dorothy E.	Vancouver
Sansum, Victor H.	Vancouver
Smith, Harold D.	Vancouver
Smith, James E.	Vancouver
Stevens, Francis H.	Vancouver
Streight, H. R. Lyle	New Westminster
Telford, Gordon D.	Vancouver
Thrupp, Sylvia L.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Waddington, Guy	Victoria
Wodlinger, David B.	Vancouver
Yeo, Emsley L.	Vancouver

FACULTY OF APPLIED SCIENCE

Nunn, E. Hazen	Woodfibre
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FACULTY OF AGRICULTURE

Etter, Harold C.	Penticton
Mallory, Lester D.	Sardis
Mathers, William G.	Vancouver
Snesarev, Vladimir	Vancouver

TEACHER TRAINING COURSE

Allan, Donald S.	Vancouver
Barr, Bruce A.	Hatzic
Berry, Ethel	Vancouver
Bowering, Ella M.	West Summerland
Brown, William MacB.	Vancouver
Cameron, Eugene F.	Vancouver
Clarke, Sidney V.	Vancouver
Cole, Mary R.	Vancouver
Fraser, James A.	Vancouver
Fraser, Jean H.	Vancouver
Gammie, Margaret H.	Vancouver
Gibbs, Enid A.	Vancouver
Greig, Margaret L.	Vancouver
Gwyer, Patricia E. K.	Penticton
Haddock, Norah	Vancouver
Harkness, John A. C.	New Westminster
Hillas, Gertrude	Vancouver
Hornsby, Ruth M.	Prince George
Jackson, Wilfred A.	Vancouver
Johnson, Juliet P.	West Vancouver
Kendall, Elizabeth V. H.	Vancouver
Kerr, Ruby E.	Vancouver
Lane, Joseph H.	Nanaimo
Lanning, Walter	Vancouver
Lee, Gerald H.	Bonnington Falls
Leeming, Helen H.	Victoria
Maginess, Marie E.	Lisburn, Ireland
Mann, Doris E.	New Westminster
Marshall, M. Alexander	West Summerland
Matheson, Helen D.	Vancouver
Matheson, Jean U.	New Westminster
Matheson, Priscilla L.	Vancouver
Mattice, Clarence R.	Keremeos
Milley, Elva M.	Vancouver
McAlpine, Gladys C.	Vancouver
McBain, Wilberta J.	Vancouver
MacDonald, Margaret C.	Vancouver
MacDonald, Norman D.	New Westminster
MacIver, Dolina C.	Vancouver
MacKay, Muriel A.	Vancouver
McLennan, Edna C.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
McLuckie, Kathleen L.	Vancouver
McSweyn, Maxine M. M.	Vancouver
Nordberg, Elsie	New Westminster
Page, Edna L.	Vancouver
Painter, Francis M.	Vancouver
Pratt, Frances E.	Bengough, Sask.
Ralph, Kathleen M.	Vancouver
Reid, Marjorie S.	Vancouver
Skelton, Jean W.	Victoria
Smith, Margaret S.	Vancouver
Stephens, Harriette G.	Vancouver
Stevenson, Alan M.	North Vancouver
Sturdy, David A. H.	Revelstoke
Swanson, Gladys E.	Vancouver
Taylor, Grace E.	Vancouver
Thompson, Alfreda E.	Vancouver
Tufts, Evelyn E.	Vancouver
Wagg, Elda B.	Vancouver
Wales, Bertram E.	Vancouver
Washington, Norma R.	Vancouver
Woods, Doris J.	Vancouver

SUMMER SESSION, 1928*

Partial

Baynes, Margaret A.	Vancouver
Clements, Nora D.	Nanaimo
Crummy, Richard B.	Vancouver
Daniells, J. Roy	Victoria
Darling, Gordon	Vancouver
Davidson, Donald	Hollyburn
DeBou, Ethel F.	Vancouver
Driscoll, Mother A.	Vancouver
Duncan, Jean M.	Victoria
Elliott, Jennie	Calgary, Alberta
Ellison, Dora	Trail
Farina, Pauline M.	Kamloops
Feakes, Harry J.	New Westminster
Gillanders, M. Phyllis	Vancouver
Goldberg, Rose	Vancouver
Grieve, T. Pearl	Chilliwack
Hart, Margaret P.	Portland, Oregon
Henderson, James	Vancouver
Hunter, Mary T.	Victoria
Hutson, Edith M.	London, England
Hyndman, William	Vancouver
Jantz, Leo	Spokane, Wash.
Keefer, Audrey J.	Vancouver
Linnitt, Constance E. I.	Vancouver
Lockie-Brown, Elizabeth	New Westminster
Lovick, A. Wyndiatte	Vancouver
Marshall, Sadie E.	Merritt
Miller, Ivan R.	Vancouver
Mockridge, Geraldine I.	Victoria
Moore, John H.	New Westminster

<i>Name.</i>	<i>Home Address.</i>
Moore, Samuel	Cambria, Quebec
Murray, Harold E.	Cumberland
McConnell, H. Myrtle ..	Chilliwack
McLean, Donald R.	Vancouver
McNab, James W.	Kamloops
McNaughton, Elizabeth ..	Slocan City
Noble, Mother A.	Vancouver
Peake, L. Arthur M.	Nanaimo
Pickles, Martha D. L. ...	Denman Island
Plischke, Francis J.	Winnipeg, Manitoba
Pullinger, Percy	Vancouver
Qualtrough, Frances	Vancouver
Quinan, Mother J.	Vancouver
Reid, Elmer	Vancouver
Skelding, Cecil H.	Vancouver
Smythe, Wentworth A. ...	Revelstoke
Stevenson, Arthur	Vancouver
Thomas, Aubrey L.	Victoria
Ullock, John F.	Vancouver
Wadleigh, Annie A.	Coaticook, Quebec
Waugh, John	Nanaimo
Whyte, Olive J.	Carleton Place, Ont.
Wohlgeleitner, Solomon P.	Vancouver

FIRST YEAR

Alderson, Eva M.	Vancouver
Alexander, Hugh J.	Vancouver
Allen, Isobel B.	Vancouver
Baynes, George E.	Vancouver
Blacklock, Marion	Langley Prairie
Blanchard, Herbert E.	Alert Bay
Bolton, Dorothy G.	Vancouver
Bournes, Ellen E.	New Westminster
Boyd, Ian D.	Vancouver
Bradley, Harold J.	Esquimalt
Brealey, Ida U.	Hollyburn
Brown, Ralph M.	Vancouver
Brundrett, Mary E.	Vancouver
Bruneau, Edna M.	Vancouver
Bryant, Winifred	Vancouver
Bryson, Margaret A.	Ashcroft
Buckpitt, Matthew M. B.	New Westminster
Caspell, Edmund V.	Vancouver
Cavalier, Eva E.	Prince Rupert
Chandler, Dorothy G.	Vancouver
Cianci, Vito	Vancouver
Colbert, J. Arthur	Victoria
Cornell, Grace	Vancouver
Davis, Alice M.	Victoria
Dempsey, Dan C.	North Vancouver
Dickinson, A. Emelyn	Nanaimo
Douglas, Norma P.	Fernie
Duclos, Blanche H.	Vancouver
Duclos, Noel G.	Quesnel
Duncan, Eldred C.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Edgar, Edmund G.	Vancouver
Etter, Enid	Nelson
Evans, Eldred K.	Vernon
Ferguson, Hugh C.	Nanaimo
Ferguson, Jessie M.	Vancouver
Ferguson, Margaret B. M.	Nanaimo
Fletcher, Marjorie E.	Vancouver
Ford, Euphemia G.	Armstrong
Ford, Kate E.	Victoria
Gillies, Eleanor M. D.	Vancouver
Gillis, Mary B.	Vancouver
Glass, J. Campbell	New Westminster
Goddard, Ernest A.	New Hazelton
Graham, Mabel M.	Natal
Gray, David P.	New Westminster
Green, Bertha M.	Pemberton Meadows
Grimwood, Annie A.	New Westminster
Groves, Philip S.	Vancouver
Hager, A. Robert	Vancouver
Hand, Florence E. M.	Vancouver
Hardy, Garnet R.	Agassiz
Hargitt, Francis W.	Vancouver
Harris, Ernest A.	Vancouver
Harrison, William E.	Victoria
Healey, Agnes M.	Vancouver
Heywood, Robert H.	Vancouver
Hill, Edith M.	Mayne
Hine, Robert F.	Nelson
Hinsley, Gladys M.	Eburne
Hogben, F. May	White Rock
Hunter, Alice S.	Victoria
Hutchinson, Alec	Esquimalt
Jacquot, Marjory D.	Vancouver
James, Richard V.	Mount Tolmie
Jamieson, Gordon T.	Vancouver
Jones, Wilfred C.	Ladysmith
Kelly, Bertha M.	Vancouver
Kennedy, Bessie	Vancouver
King, Sibyl N.	Victoria
Kipling, Rudyard T.	Victoria
Kirk, James O.	Vancouver
Lane, Annie M.	Nanaimo
Leach, D. John	Vancouver
Lightbody, Frank P.	Vancouver
Lovick, James E.	Vancouver
Magee, E. Margo	Bowen Island
Manley, Reginald J.	Vancouver
Manuel, Harold K.	Chilliwack
Marriott, Earl	Chilliwack
Martin, M. Constance	Nelson
Maynard, Elvina J.	Chilliwack
Mellish, Humphrey W.	Vancouver
Moore, M. Virginia	Vancouver
Mossop, Zirene	Victoria
Murdoch, Margaret J. M.	Vancouver

<i>Name.</i>	<i>Home Address.</i>
Murphy, Eva B.	Vancouver
Myers, Harry E.	Vancouver
McConnachie, Mae T. W.	Vancouver
McCurdy, James A.	Salmon Arm
MacDonald, Margaret M.	Vancouver
McDonald, M. Frances	Vancouver
McElwain, Lena M.	New Westminster
McEwen, Horace A.	Vancouver
McLeod, Margaret A.	Vancouver
McMurphy, Jessie M.	New Westminster
McNish, Garnet	Vancouver
Newman, Mitchell E.	New Hazelton
Nixon, Earle	Vancouver
Orser, Raymond B.	Celista
Owens, Kathleen M.	Salmon Arm
Pack, D. Mary	Langley Prairie
Pack, Joan	Langley Prairie
Papin, Patricia L. F.	New Westminster
Parkes, Jessie F. B.	Vancouver
Patmore, Gertrude E.	Cranbrook
Randle, Marian O.	Nanaimo
Read, John R.	Vancouver
Reece, Frances C.	Vancouver
Richards, Flora L.	Victoria
Richards, Kathleen M.	New Westminster
Ritchie, Cecil E.	Vancouver
Roberts, Berniece M.	Vancouver
Roberts, Helen C.	Vancouver
Roberts, Jean G.	Victoria
Shannon, A. Jean	Kamloops
Shore, Julius	Vancouver
Smith, Brenda	Alberni
Smith, Edwina	Trail
Smith, Elsie K.	Victoria
Smith, Marion W.	Vancouver
Spracklin, Annie E.	Vancouver
Stearman, Margaret R.	Vancouver
Tait, Elsie M.	Vancouver
Terry, Joseph S.	Vancouver
Thomas, David J.	Vancouver
Threatful, Harry	Revelstoke
Timmins, Joseph	Nanaimo
Turner, Phyllis W.	Vancouver
Turner, Ronald A.	Nanaimo
Watson, Janet A.	Ladysmith
Webb, Albert H.	Nanaimo
Whyte, Jean	Vancouver
Williams, Florence E.	Vancouver
Wolfe, Paul B.	Vancouver
Wong, Wing Y.	Vancouver
Woodward, Geoffrey G.	Vancouver
Yard, Mabel F.	Victoria

<i>Name.</i>	<i>SECOND YEAR</i>	<i>Home Address.</i>
Apps, George E.		Mission
Ashworth, Reginald W.		New Westminster
Atkinson, J. Ray		Vancouver
Barclay, Walter J.		Vancouver
Barton, Mary K.		Vancouver
Bell, Alice		Vancouver
Black, Helen M.		New Westminster
Bournes, Beatrice M.		New Westminster
Brissenden, Pearley R.		Vancouver
Broome, Enoch B.		Vancouver
Brown, Hugh A.		Vancouver
Brown, Robert C.		North Vancouver
Burnett, John N.		Vancouver
Cameron, Gordon		Vancouver
Cameron, William M.		New Westminster
Cant, George B.		North Vancouver
Cartwright, Margaret		Vancouver
Caufield, Rose F.		Fernie
Creighton, James H.		Vancouver
Crisp, Allan G.		Vancouver
Currie, Ella M.		Sardis
Eckardt, Harold A.		Mission City
Farquhar, E. Lorraine		Victoria
Fletcher, M. G.		Victoria
Foubister, David W.		Victoria
Found, R. Keith		Vancouver
Frost, G. Herbert		Vancouver
Gilliland, Henry C.		Victoria
Goard, Helen W.		Vancouver
Godfrey, John D.		Vancouver
Gourlay, Edgar A.		Vancouver
Graham, G. Wilfred		Chilliwack
Green, Annie		North Vancouver
Green, George H. E.		Victoria
Hardwick, Walter H. W.		Vancouver
Harrop, Muriel		Harrop
Henderson, Gibb G.		Vancouver
Hockridge, C. Murray		Vancouver
Horne, Thomas P.		Victoria
Hunter, Gordon M.		Vancouver
Hutson, Andrew H.		London, England
Inghram, Ivy J.		Vancouver
James, William		Vancouver
Keeling, F. Temple		New Westminster
Keenan, John K.		Vancouver
Kennedy, Mervyn E.		Vancouver
Kirk, Ada		Vancouver
Kirk, N. Leslie		Vancouver
Kirk, William D.		Vancouver
Lacey, Oliver		Vancouver
Lane, Edwin I.		Nanaimo
Lee, Ernest		New Westminster
Livingstone, Ed. R.		Vancouver
Lower, J. Arthur		New Westminster

<i>Name.</i>	<i>Home Address.</i>
Lynn, Eileen M.	Vancouver
Marin, Joseph	Vancouver
Martin, Harry	Trail
Morgan, J. George	Vancouver
Mutch, Jean E.	Charlottetown, P.E.I.
McArthur, Harold	Nelson
McGauley, Belle K.	Castlegar
McInnes, Robert H.	Victoria
McIntosh, V. Ann	Vancouver
McKee, Kenneth M.	Vancouver
MacKenzie, Helen J.	Vancouver
Mackenzie, Mina E.	Nelson
MacLeod, William R.	Lynn Creek
O'Neill, W. Walter C.	Prince Rupert
Orr, John M.	Bellingham, Wash.
Ozard, W. Charles	Victoria
Patterson, H. Ervine	Vancouver
Pendray, Gladys	Vancouver
Perkins, Edgar E.	Kaslo
Pigott, Arnold D.	Vancouver
Plenderleith, William	Victoria
Pollock, Douglas B.	Vancouver
Pratt, Fred H.	New Westminster
Purdy, Millicent E.	New Westminster
Robertson, Archibald P.	Ganges
Robertson, Barbara M.	Vancouver
Robinson, Alexander F.	Vancouver
Russell, George	Vancouver
Savage, Edna M.	Vancouver
Savage, Gertrude M.	Vancouver
Sheasgreen, Evelyn	Dundarave
Shiels, Thomas	Vancouver
Sims, Edward S.	Vancouver
Smith, Alexander G.	Vancouver
Smith, Clyde M.	New Westminster
Smith, Robert R.	New Westminster
Snider, Everett E.	Ladysmith
Somerville, Chester E.	Vancouver
Southam, Harold D.	Hollyburn
Sproule, Marion A.	Vancouver
Stevenson, Fred C.	Vancouver
Stone, Harriet L.	Dawson, Yukon Ter.
Sugamori, Patricia H.	Aldergrove
Thompson, Doris M.	Rosedale
Tippett, Mary E.	Nanaimo
Turnbull, Alexander	New Westminster
Waites, Kenneth A.	Victoria
Weir, Elizabeth	Vancouver
Whiles, Dorothy E.	Vancouver
Wiedrick, Vernon	Vancouver
Wilson, Clara M.	Dundarave

THIRD YEAR

Anderson, Daniel J.	Vancouver
Bailey, Jean G. K.	Vancouver
Butler, Francis A.	New Westminster

<i>Name.</i>	<i>Home Address.</i>
Clark, Norman M.	Vancouver
Courtney, Dorothy L.	Vancouver
Dickson, G. Blair	Victoria
Felton, Barbara	Victoria
Fletcher, Donald M.	Vancouver
Frederickson, C. John	Kelowna
Hardwick, Francis C.	Vancouver
Hay, Letitia A.	Vancouver
Hodgson, Shirley W.	New Westminster
Holland, Virginia C.	Vancouver
Jones, David R.	Vancouver
Litch, Edith S.	Vancouver
Lyons, Ronald A.	Penticton
Mahon, Harold S.	Vancouver
Mercer, Clara M.	New Westminster
McIntosh, Donald J.	Vancouver
McLellan, Fred A.	Victoria
Oldfield, Fred A.	Vancouver
Phillips, Richard G.	Vancouver
Richardson, Edward R. G.	Victoria
Robinson, Audrey F.	Vancouver
Robinson, E. Patricia	Victoria
Simpkins, E. Grace	Vancouver
Tamura, Miyoko	Port Haney
Timberlake, Morley	Lynn Creek
Wilby, Elsie	Victoria
Wilson, Gordon S.	Vancouver

FOURTH YEAR

Boyes, F. Cecil	Vancouver
Buckley, J. Mervin	Vancouver
Fraser, James A.	Vancouver
Gamey, Harold W.	Vancouver
Gamey, Herbert T.	Vancouver
Hartness, Dunmail H.	Vancouver
Johnston, Ralph M.	Vancouver
McLuckie, Alan J.	Vancouver
Sansum, Victor H.	Vancouver
Towell, A. Seymour	Kelowna

GRADUATES

Armstrong, Francis A.	Vancouver
Brown, J. Everett	Victoria
Buckley, H. Leslie	North Vancouver
Clegg, E. Beatrix	Vancouver
Diller, Dorothy M.	Edmonton, Alberta
Edwards, Sarah	Vancouver
Elliott, M. Louise	Vancouver
French, Joan E. O.	Oak Bay
Graham, Mona N.	Vancouver
Grantham, Herbert H.	Vancouver
Heritage, Olive W.	Victoria
Kerr, Ruby E.	Vancouver
Lowe, Miriam S.	Sidney
Mitchell, James R.	Hollyburn

<i>Name.</i>	<i>Home Address.</i>
MacQueen, M. Evelyn	Victoria
Ralph, Kathleen M.	Vancouver
Shackleford, Charlotte	Tacoma, Washington
Smith, Charles D.	Vancouver
Swencisky, Laura M.	New Westminster
Taylor, Annie	New Westminster
Tervo, Esther F.	Victoria
Wright, Robert H.	Vancouver

COMMERCIAL

Abbott, Fern M.	Vancouver
Andruss, Catterina M. P.	North Vancouver
Clandinin, Gladys M.	Vancouver
Clark, Mary E.	Victoria
Clay, Carleton St. C.	Vancouver
Cluff, Alice F.	Vancouver
Conn, Jessie	Lethbridge
Dalin, M. Elsie A.	Celista
Dalziel, William	Vancouver
Delany, Mary	Vancouver
Dill, Roberta I.	Victoria
Eason, John S.	Vancouver
Galloway, Tessie A.	Cumberland
Green, L. Ethel	Vancouver
Gurney, William H.	Matsqui
Harper, John A.	Vancouver
Herd, James F.	Vancouver
Johns, Jessie	Vancouver
Jones, Myrtle E.	Vancouver
Jones, W. Roy	Victoria
Laffere, Elizabeth J.	Burnaby
Laverock, Doris	Vancouver
Lewis, Vera M.	Vancouver
Lindland, Petra	Vancouver
Moody, Elise	Vancouver
Munro, Muriel R.	Vancouver
McCallum, Sadie E.	Swift Current, Sask.
MacKay, Mary A.	Vancouver
Mackenzie, L. Margaret	New Westminster
McLeod, Florence	Vancouver
McMaster, David A.	Regina, Sask.
MacNeill, Lorne C.	Vancouver
Pearce, Frank B.	Rock Creek
Ross, Ethel C.	Williamstown, Ont.
Shaffer, Marion A.	Vancouver
Shannon, Myrtle E.	Vancouver
Sherwood, Persis V.	Vancouver
Shaw, S. Jean	Vancouver
Sillers, Myrtle A.	Vancouver
Smith, Grace P.	Vancouver
Smith, Lillian L.	Hampton, N. B.
Stringer, Lillian E.	Vancouver
Taylor, Ruth G.	Vancouver
Wall, Robert N.	Vancouver
Wright, Catherine M. J.	Vancouver

REGISTRATION FOR 1928-29

FACULTY OF ARTS AND SCIENCE

	Women	Men	Total
First Year	252	303	555
Second Year	162	150	312
Third Year	116	109	225
Fourth Year	101	81	182
			<u>1274</u>

FACULTY OF APPLIED SCIENCE

Second Year	—	103	103
Third Year	—	77	77
Fourth Year	—	44	44
Fifth Year	—	34	34
			<u>258</u>

FACULTY OF APPLIED SCIENCE (NURSING)

First Year	14	—	14
Second Year	7	—	7
Third Year	7	—	7
Fourth Year	7	—	7
Fifth Year	6	—	6
			<u>41</u>

FACULTY OF AGRICULTURE

First Year	—	5	5
Second Year	1	13	14
Third Year	1	4	5
Fourth Year	—	5	5
Partial	1	18	19
			<u>48</u>

GRADUATES

Arts and Science	12	30	42
Applied Science	—	1	1
Agriculture	—	4	4
			<u>47</u>

TEACHER TRAINING COURSE

Teacher Training Course	44	18	62
			<u>62</u>
			<u>1730</u>

Summer Session, Arts (1928)			402
Public Health Nursing			6
Occupational Course in Agriculture			7
Short Courses in Agriculture			138
Evening Class in Botany			24

DEGREES CONFERRED

MAY, 1928

Faculty of Arts and Science

THE DEGREE OF MASTER OF ARTS

(Names in alphabetical order)

Ball, Ralph H., B.A.	Major: Chemistry Minor: Physics
Campbell, Mildred Helena, B.A.	Major: Zoology Minor: Botany
Gallaughar, Arthur F., B.A.	Major: Chemistry Minor: Physics
Griffith, Braham, B.A.	Major: Botany Minor: Zoology
Guernsey, Mary Elizabeth, B.A.	Major: Bacteriology Minor: Zoology
Heaslip, Leonard W., B.A.	Major: Mathematics Minor: Philosophy
Johnston, Frederick B., B.A.	Major: Chemistry Minor: Physics
Lang, Arthur Hamilton, B.A.	Major: Petrology Minor: Palaeontology
Lewis, Hunter Campbell, B.A.	Major: English Minor: Philosophy
Mellish, A. Preston, B.A.	Major: Mathematics Minor: Physics
Millward, Louis G., B.A.	Major: Palaeontology Minor: Zoology
Portsmouth, Kathleen Madge, B.A.	Major: French Minor: Education
Sparks, Frederick Percival, B.A.	Major: Bacteriology Minor: Biology
Stedman, Ralph Elliot, B.A.	Major: Philosophy Minor: Education
Wallace, Bryce H., B.A.	Major: Sociology Minor: Education
Webster, Arnold A., B.A.	Major: History Minor: Sociology

THE DEGREE OF BACHELOR OF ARTS

*With Honours**(Names in alphabetical order)*

Allen, Donald S.	(1st class honours in Mathematics)
Beattie, Arthur S.	(2nd class honours in French)
Brown, William M.	(2nd class honours in Mathematics)
Cameron, Eugene F.	(2nd class honours in Chemistry)
Davidson, George F.	(1st class honours in Latin and French)
Donley, Wilfred G.	(1st class honours in Economics)
Haddock, Nora	(2nd class honours in French)
Hallonquist, Earland G.	(1st class honours in Chemistry)
Hill, Vernon R.	(1st class honours in Economics)

Hudson, Vivienne G.....	(2nd class honours in Bacteriology)
Jackson, W. Allin.....	(2nd class honours in Mathematics)
James, Ralph D.....	(1st class honours in Mathematics)
Lane, Joseph H.....	(1st class honours in History)
Lucas, Verna Z.....	(2nd class honours in Biology) (Zoology option)
Masterson, William J.....	(1st class honours in History)
Matheson, Priscilla L.....	(1st class honours in English and French)
Munro, Ferdinand L.....	(1st class honours in Chemistry)
Musgrave, Gwendolen M.....	(1st class honours in History)
MacKay, Muriel A.....	(1st class honours in French)
McLean, J. Beattie.....	(2nd class honours in English Language and Literature)
McMillan, John A.....	(2nd class honours in Biology) (Zoology option)
Oberg, Kalervo.....	(2nd class honours in Economics)
Petrie, Robert M.....	(1st class honours in Physics and Mathematics and Physics)
Pollock, Mary E.....	(2nd class honours in Mathematics)
Poole, F. Abner.....	(1st class honours in French and Latin)
Reid, William T.....	(1st class honours in Chemistry and Mathematics)
Sanders, Frederick H.....	(1st class honours in Physics)
Simpson, Samuel L.....	(1st class honours in English Language and Literature)
Skelton, Jean W.....	(1st class honours in English Language and Literature)
Swanson, Gladys E.....	(2nd class honours in French)
Taylor, Annie.....	(1st class honours in English Language and Literature)
Taylor, William H.....	(1st class honours in Economics)
Thompson, Alfreda E.....	(2nd class honours in French)
Tolmie, M. K. Jean.....	(1st class honours in Philosophy)
Waddington, Guy.....	(1st class honours in Chemistry)
Weaver, Alice L.....	(2nd class honours in English Language and Literature)
Whiteley, Albert S.....	(1st class honours in Economics)
Williams, John H.....	(1st class honours in Physics)
Wright, Robert H.....	(1st class honours in Chemistry and Physics)
Yerburgh, Richard E. M.....	(2nd class honours in Economics)

*In Pass Course**(Names in order of merit)**Class I***Taylor, Grace E.**

Class II

Salisbury, Dorothy E.
 Leeming, H. Hope
 O'Neil, Margaret V.
 Hurst, Flora E.
 Macdonald, Ruth E.
 Nicol, Grace A. M.
 Kerlin, Donald E.
 Tufts, Evelyn E.
 Gammie, Margaret H.
 Hatfield, Harley R.
 Bull, Ernest B.
 Gough, John
 Wodlinger, David B.
 Law, Margaret J.
 McGill, Esther M.
 Ross, Lucy K.
 Stevenson, Alan M.
 Telford, Douglas
 Johnson, Juliet P.
 Thomson, William E.
 Williamson, Marian A.
 Nordberg, Elsie
 Baird, Kathleen P.
 McQuarrie, George R.
 Lowe, Miriam S.
 Berry, Ethel
 McLuckie, Kathleen L.
 Pilkington, Francis C.
 Northey, Helen G.
 Smith, Margaret S.
 Kerr, Ruby E.
 Coles, Emma A.
 Delbridge, Clayton
 Hornsby, Ruth M.
 Eaton, G. Howard
 Burritt, Flora
 Hedley, Isabel B.
 Milley, Elva
 Macqueen, M. Evelyn

Farris, Donald
 Noble, Kenneth F.
 Heritage, Olive W.
 Knott, W. W. D.
 Robertson, Muriel A.
 MacDonald, Margaret C.
 Hipperson, Dorothy C.
 Buckley, Lawrence M.
 McAlpine, Gladys C.
 Davies, Dermott
 Brown, Harry L.
 Barr, Bruce A.
 How, H. Jessie
 Mann, Doris E.
 Matheson, Helen D.
 Bryson, Lawrence E.
 Stewart, C. Jean
 Lee, Gerald H.
 Mellor, Margaret B.
 Kelly, Gordon E.
 Mattice, Clarence R.
 McCharles, John A.
 Vosper, V. Lorine
 Frith, Mary K.
 Thompson, G. Hester
 Carter, Elizabeth B.
 McFarlane, Meredith M.
 Bulger, Russell J.
 Kendall, Elizabeth V.
 Stephens, Harriette G.
 Murphy, Lorna M.
 Hillas, Gertrude
 Craig, L. Margaret
 Paterson, Ethelwyn A.
 Burton, Helen J. M.
 Marshall, M. Alexander
 Spencer, Myrtle A.
 Corlette, Anita M.
 Swanson, Marion L.

Passed

Logie, Russell M.
 Neill, Ruth A.
 Robson, Annie O.
 Barnett, Thomas P.
 DeCew, Dorothy
 Elliott, Philip L.
 Kennedy, Dorothy N.
 Scouse, Nancy A. H.
 Clarke, Sidney V.
 McLennan, Edna C.
 Reid, Marjorie S.
 Maclean, Edwin U.
 McLennan, Reid L.
 Washington, Norma R.

Lamb, Helen A.
 Graham, Mona N.
 Kilpatrick, Heather
 Gould, Charles E. G.
 Bamber, Irene
 Noble, Robertson D.
 Wilson, Jean K.
 Currie, John H.
 Brown, J. Everett
 Osterhout, Victor H.
 Matheson, Jean U.
 Todd, Duncan K.
 McPhee, Angus L.
 Swanson, John D.

Mitchell, H. Inez
 Ralph, Kathleen M.
 McKay, Dorothy C.
 Sostad, Odin S.
 White, Helen A.
 MacInnes, W. Edmund

Gardiner, Pauline V.
 Allan, Kathleen
 Ruttan, Beatrice M.
 Kask, J. L.
 Thomson, Margaret M.

Passed (Unranked)

(Names in alphabetical order)

Allan, Dalton D.
 Campbell, Harold Lane
 Clegg, E. Beatrix
 Farris, Katherine H.

Fullerton, William E.
 Greig, Margaret L.
 Marrion, R. F. C.
 Sugarman, Howard W.

Passed (Aegrotat)

(Names in alphabetical order)

Douglass, Isobel G.
 Estey, Margaret J.

Lyons, Hermiena

Passed in Arts and Science

Double Course, Arts and Science and Applied Science

(Names in alphabetical order)

Blackett, H. W.
 Blankenbach, W. W.

Jagger, A. E.

Faculty of Applied Science

THE DEGREE OF MASTER OF APPLIED SCIENCE

Kania, Joseph Ernest Antony, B.A.Sc. Major: Economic Geology
 Minor: Crystallography

THE DEGREE OF BACHELOR OF APPLIED SCIENCE

(Names in order of merit)

Chemical Engineering

Passed

Rees, Arthur F.

Thomson, William G.

Civil Engineering

Class I

Marin, Joseph
 Morris, Wilfred H.

Sutherland, James B.

Class II

Logan, Gordon V. E.
 Stewardson, Alan
 McQuarrie, Hector N.

Bell, Douglas E.
 Mackay, J. Malcolm

Passed

Wolfe-Merton, Adrian W.

Electrical Engineering*Class II*

Duncan, John P.

Passed Unranked

Manson, Harold E.

Forest Engineering*Class I*

Hodgins, Hugh J.

Class II

Touzeau, Ernest G.

Geological Engineering*Class I*

Goranson, Edwin A.

Mechanical Engineering*Class I*

Sinclair, James

Class II

Tupper, Bert R.

Gustafson, Carl E.

Mining Engineering*Class I*

Farrington, John L.

Class II

Gibson, Swanston

Passed Unranked

Emmons, Edward Frets

Nursing*Class I*

Harvey, Myrtle E.

Class II

McKechnie, Flora

Yates, Anne T.

Passed Unranked

Johnston, Mabel G. J.

Swencisky, Victoria M.

Faculty of Agriculture**THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURE**

Tarr, Hugh Lewis Aubrey, B.S.A. Major: Dairying
 Minor: Chemistry

THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

(Names in order of merit)

Class I

Asher, Charles Richard

Class II

Moffatt, Kenneth Fraser
Thorneloe, Keith

Passed

Brown, William Charles
Boyes, Edgar Donald
Eden, Allan Harold
Noble, Grace Isabel

NOVEMBER, 1928

Faculty of Arts and Science

THE DEGREE OF MASTER OF ARTS

Bonsall, Henry Brash, B.A.

THE DEGREE OF BACHELOR OF ARTS

With Honours

Brooks, Leslie Gordon Douglas
(Second-class Honours in English Language and Literature)

In Pass Course

(Names in alphabetical order)

Boyes, Francis Cecil	Mulhern, Edmond Finnibar
Bride, William Wesley	MacDonald, Norman Dean
Cole, Mary Rhodes	MacIver, Dolina Catherine
Fraser, James Angus	Robinson, Audrey Fleming
Gwyer, Patricia Elizabeth King	Russell, Dorothy Burton
Lane, Mary Elizabeth	Sansum, Victor Harold
Litch, Edith Stacey	Towell, Albert Seymour
Morrison, Robert Laurence	Woods, Doris Jean

MEDALS, SCHOLARSHIPS, AND PRIZES

AWARDED MAY, 1928

MEDALS

1. The Governor-General's Gold Medal..... Jean White Skelton
(Head of Graduating Class in Arts)
2. The Historical Society Gold Medal..... Gwendolyn M. Musgrave
(History)

SCHOLARSHIPS FOR POST-GRADUATE STUDIES

1. University Scholarship, \$200..... George F. Davidson
2. The Anne Wesbrook Scholarship, \$100..... Arthur H. Lang
3. The French Government Scholarship, 10,000 francs,
Frederick Abner Poole
4. The Nichol Scholarship—No. 4 and Medal..... Kaye Lamb
No. 3 (renewed) Edith E. Lucas
No. 2 (renewed) Dorothy Dallas
5. The Brock Scholarship, \$100..... Joseph E. A. Kania
6. Special University Scholarships, \$100 each:
Joseph Marin Frederick P. Sparks
Louis G. Millward Guy Waddington

SCHOLARSHIPS FOR UNDERGRADUATES

I. IN ALL FACULTIES

1. The Rhodes Scholarship..... James Sinclair
2. The Captain LeRoy Memorial Scholarship, \$250,
Victor H. Sansum (Returned Soldier)
3. The Khaki University and Y. M. C. A. Memorial Scholarship Fund:
\$75.00 Each
H. Muriel E. Daniels William J. Masterson
Gordon William Hall Alan J. Macdonald
Barbara Lang David W. Macdonald
Olive M. C. Malcolm Alice V. Tullett
Hilda A. J. Marshall Lloyd Williams
4. University Scholarships for Returned Soldiers (First Year):
i. \$150—No award. ii. \$150—No award.
5. Special University Scholarships, \$100 each:
Ralph E. Brooke Albert R. Poole
James L. McKeever Norah L. Hughes
Murchie K. McPhail

II. IN ARTS AND SCIENCE

THIRD YEAR

1. University Scholarships (General Proficiency, proceeding to the
Fourth Year):
i. \$150—Ralph Hull ii. \$150—Kenneth R. More

SECOND YEAR

2. University Scholarships (General Proficiency, proceeding to the
Third Year):
i. \$150—Helen V. Bell ii. \$150—Cecil K. Stedman
3. The Shaw Memorial Scholarship, \$137.50..... Helen V. Bell
(First in English, Latin and Greek)
By reversion to Eileen Winch
4. The McGill Graduates Scholarship, \$137.50..... Helen V. Bell
(First in English and French)
By reversion to W. Henry Hickman
5. The Terminal City Club Memorial Scholarship, \$110,
R. Russell Munn
(First in English and Economics)
6. The Scott Memorial Scholarship, \$110..... Geoffrey Beall
(First in Biology)

FIRST YEAR

7. Royal Institution Scholarship, \$150..... Bertie A. F. Black
(First in General Proficiency)
8. University Scholarships:
(Second and Third in General Proficiency)
 - i. Mavis M. E. Holloway
 - ii. \$150—Malcolm H. Hebb
9. The P. E. O. Sisterhood Scholarship, \$75..... Bertie A. F. Black
(First Woman Student in English)
By reversion to Mavis M. E. Holloway; by reversion to
A. Maud Hutson
10. Special P. E. O. Sisterhood Scholarship, \$75..... Claribel Lugsdin
(Next in rank in English)

OPEN

11. The Native Sons of Canada Scholarship:
 - i. \$350—John R. Gough
 - ii. \$150—No award.
12. The Vancouver Women's Canadian Club Scholarship, \$110,
Charles W. Brazier
(Canadian History)

III. IN APPLIED SCIENCE

1. The Vancouver Women's Canadian Club Scholarship in Nursing
and Health, \$100..... Evelyn Anderton
2. The Dunsmuir Scholarship, \$165..... No Award
(Highest in M. E., proceeding to the Fourth Year)
3. University Scholarship, \$150..... Alexander Hrennikoff
(General Proficiency, proceeding to the Third Year)
4. Royal Institution Scholarship, \$150..... Michael C. Nesbitt
(General Proficiency, proceeding to the Second Year)

IV. IN AGRICULTURE

1. The B. C. Fruit Growers' Association Scholarship, \$100..... No Award
2. University Scholarship, \$150..... No Award
(General Proficiency, proceeding to Second Year)
3. The David Thom Scholarship, \$100..... Isadore M. Lerner
(General Proficiency, proceeding to Second Year)

PRIZES

I. IN ALL FACULTIES

1. The University Book Prize, \$25..... J. Lawrence R. Meredith
2. The Players' Club Prize, \$50..... No Award
(Original Play)

II. IN ARTS AND SCIENCE

1. The Gerald Myles Harvey Prize, \$25..... Wilfred G. Donley
(Essay in Economics or Political Science)
2. The Historical Society Prize, \$25..... No Award
(Essay on an Assigned Subject)
3. The Vancouver Women's Conservative Association Prize, \$25,
Bertie A. F. Black
(First in Mathematics 1, son or daughter of a deceased soldier)
4. The Letters Club Prize, \$25..... No Award

THE UNIVERSITY OF BRITISH COLUMBIA

UNIVERSITY SUMMER SESSION, 1929

Seven Weeks—July 2nd to August 24th

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 Classes 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.

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.

CANADIAN OFFICERS' TRAINING CORPS

The University has a contingent of the Canadian Officers' Training Corps. Membership is voluntary and is open to male students who are British subjects. Here they have an opportunity to secure a training in discipline and organization or to qualify for commissions in the country's auxiliary forces and render personal service with the least possible interference with their civil careers or to enter certain careers for which membership in the Canadian Officers' Training Corps gives them definite advantages. Among such careers are the Dominion of Canada Signals Service; aeronautics whether in the Canadian Air Force or Commercial Flying in Canada; the British Colonial Service.

The contingent is a unit of the Active Militia, but is governed by special regulations under which it cannot be called out as a unit for active service.

General supervision over the activities of the corps is exercised by a Committee of Military Education appointed by the

Senate of the University. This Committee consists of the President and the Commanding Officer, *ex officio*, together with the Chancellor, the President of the Alma Mater Society and the Deans of Arts and of Applied Science. The Commanding Officer and officers of the corps are selected from the teaching staff and students of the University. Assistance in instruction is given by members of Permanent Militia of Canada.

The Cadets are prepared for the examinations for Certificates A and B set for all contingents of the Officers' Training Corps throughout the Empire by the British Army. Certificate A qualifies its holder for the rank of Lieutenant; Certificate B for the rank of Captain not only in the non-permanent Active Militia of Canada, but anywhere within the Empire.

Lectures are given at the University throughout the session, and drill and range practices are carried out. Hours for this work convenient to the members of the corps are arranged so as not to interfere with the academic work of the University, and as little as possible with student activities.

The District Military authorities provide an annual camp, when possible, during either the summer or the winter vacation.

The following officers have been appointed to the corps:

Commanding Officer: Lt.-Col. H. T. Logan, M.C., Associate Professor of Classics.

Capt. A. H. Finlay, M.C., Assistant Professor of Civil Engineering.

Capt. G. M. Shrum, M.M., Associate Professor of Physics.

Capt. L. B. Stacey, Assistant Professor of Electrical Engineering.

Capt. G. B. Riddehough, Instructor in Classics.

Lieut. Pollock, Arts '30.

Lieut. M. L. Bird.

Capt. G. A. Lamont, Medical Officer.

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. Added to this is a compulsory levy of \$3.00 to go towards the Gymnasium Fund.

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 "Ubysey" and the "Annual." In the first of these an attempt is made to compile information valuable to the undergraduate. The "Ubysey," 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 Executive

The Literary and Scientific Executive 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 Debating Union, the Women's Literary Society and the Agriculture Discussion Club.

The following societies and clubs offer a field for discussion of engineering, scientific and social problems: The Chemistry Society, the Student Section American Institute of Electrical Engineers, the Student Section Canadian Institute of Mining and Metallurgy, the Biology Discussion Club, the Social Science Club, the Livestock Club, the G. M. Dawson Club, the Radio Club, and the Physics Club.

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, and also competes for Dominion championships.

The Women's Swimming Club competes in a City League, and also against Victoria during the annual trip, and sometimes sends a team to Banff.

The women may join the Badminton, Tennis, Golf, Ice-skating and Outdoor 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.

Sororities

Sororities, also, are officially recognized by Senate as active student organizations. The Women's Panhellenic Association is established to regulate all matters of common interest to the Sororities on the campus, and to advise and foster sorority and inter-sorority relations. Membership into sororities 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 Uni-

versity 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.

INTER-UNIVERSITY EXCHANGE OF UNDERGRADUATES

Through this plan the National Federation of Canadian University Students offers to Canadian students, without extra expense to themselves, the opportunity to study for one year at a university in another part of Canada. The favored students, whose number must not exceed one per cent. of the total enrolment, are chosen by a Selection Committee. The only prerequisite is that any student who desires to take advantage of this opportunity must have completed at least two years of study. Further information may be obtained from the Registrar.

VICTORIA COLLEGE

VICTORIA, B. C.

(In affiliation with The University of British Columbia)

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, Officier d'Académie (France), Assistant Professor of French.
J. A. CUNNINGHAM, B.A. (Queen's), Assistant Professor of Biology.
WALTER H. GAGE, M.A. (Brit. Col.), Assistant Professor of 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 or 2	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, Economics 2, 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.
(In affiliation with The University of British Columbia)

Principal

THE REV. J. G. BROWN, M.A., D.D.

Registrar

THE REV. R. B. Y. SCOTT, M.A., B.D., Ph.D.

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 72.)

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.

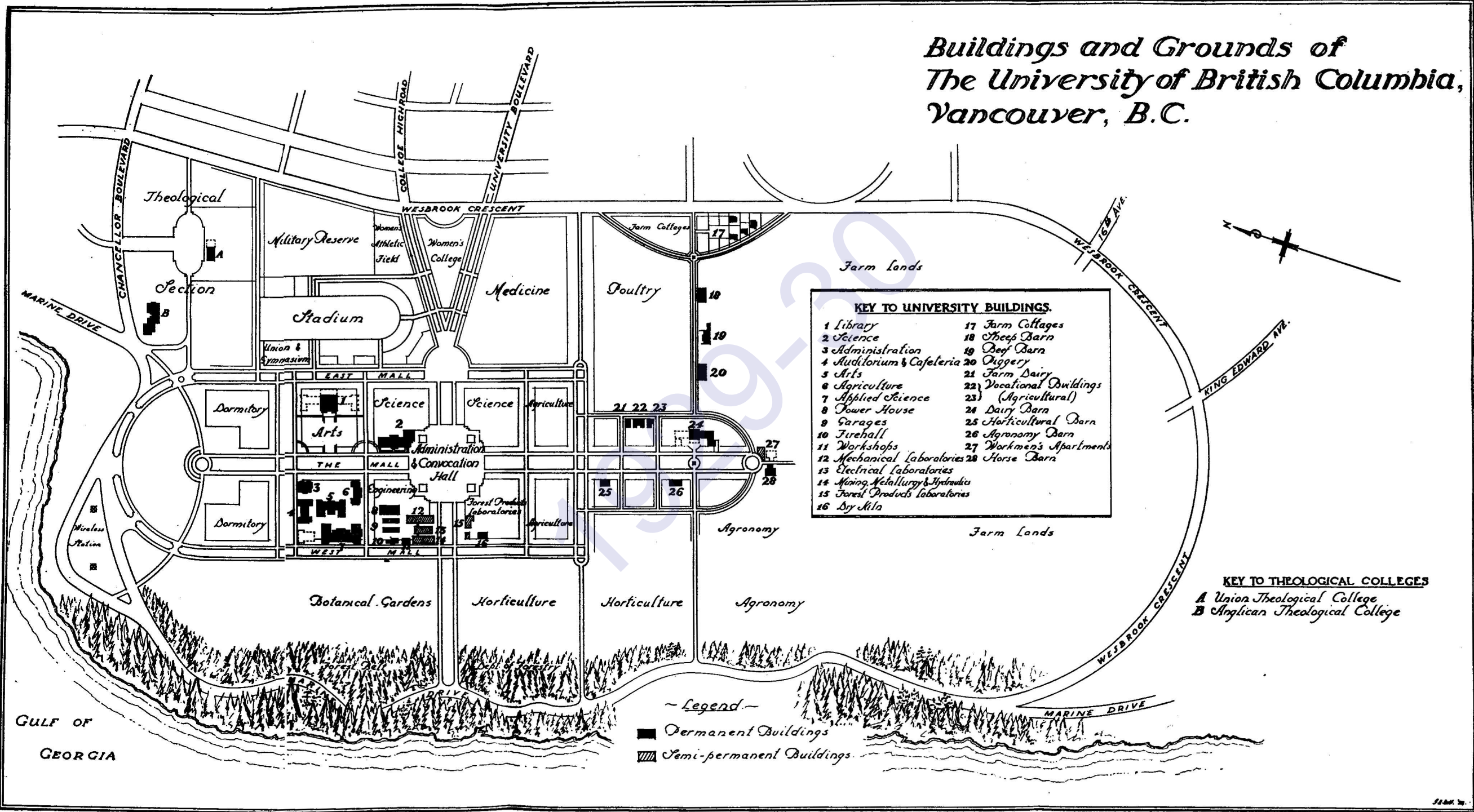
Registrar

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 72.)

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.



KEY TO UNIVERSITY BUILDINGS.

1 Library	17 Farm Cottages
2 Science	18 Sheep Barn
3 Administration	19 Beef Barn
4 Auditorium & Cafeteria	20 Diggery
5 Arts	21 Farm Dairy
6 Agriculture	22 Vocational Buildings
7 Applied Science	23 (Agricultural)
8 Power House	24 Dairy Barn
9 Garages	25 Horticultural Barn
10 Firehall	26 Agronomy Barn
11 Workshops	27 Workmen's Apartments
12 Mechanical Laboratories	28 Horse Barn
13 Electrical Laboratories	
14 Mining, Metallurgy & Hydraulics	
15 Forest Products Laboratories	
16 Dry Mill	

KEY TO THEOLOGICAL COLLEGES

A Union Theological College
B Anglican Theological College

~ Legend ~
 ■ Permanent Buildings
 ▨ Semi-permanent Buildings

GULF OF
GEORGIA