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The University of Minnesota Bulletin

COLLEGE OF EDUCATION

ANNOUNCEMENT

1906-1907

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THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

The University

The University of Minnesota comprises the following named colleges, schools, and departments:

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE DEPARTMENT OF MEDICINE
- The College of Medicine and Surgery
- The College of Homeopathic Medicine and Surgery
- The College of Dentistry
- The College of Pharmacy
- The Six-Year Medical Course

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actively engaged in the manufacture of butter and cheese.

The Short Course for Farmers' Sons is designed to be of the greatest help possible to those actually engaged in farming.

The Complete Course in Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-year course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMŒOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homœopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the goverment and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

*By the later act the President has been given a vote.

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act

relating to the University of Minnesota, approved March 4, 1864," as the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the right of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The new Board of Regents shall succeed to and have control of the books, records, buildings, and other property of the University, and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for: Provided, that all contracts made at their times, holding over in the Board, shall be and and all obligations by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to select a suitable farm, which shall be, pursuant to the act of Congress aforementioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to erect such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the Uni-

versity during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the notes and results of all important experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., D. C., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee.
The University press committee.
The committee on athletics.
The committee on University relations to other institutions of higher learning.
The committee on health and sanitation.
The committee on commencement and other University functions.
The committee on catalogue, programs and courses of study.
The committee on student entertainments and social affairs.
and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

The representatives to the Council from the several colleges of the University are as follows:

The College of Science, Literature and Arts

DEAN JOHN P. DOWNEY,
PROFESSOR F. L. MCVEY,
PROFESSOR [illegible],
PROFESSOR [illegible] CACHARER.

The College of [illegible]

DEAN [illegible],
PROFESSOR [illegible] PARDSON.

The School of [illegible]

DEAN [illegible] ALLEN.

The School of [illegible]

DEAN [illegible] FOULER.

The College of [illegible]

DEAN [illegible] ES.

The Graduate School

DEAN [illegible].

The College of [illegible] School of Agriculture

[illegible] M. [illegible].
PROFESSOR [illegible] SLAYER.

The College of Law

DEAN WM. S. [illegible],
JUDGE [illegible] HEISMAN.

The College of Medicine and Surgery

DEAN F. P. WISEBOOK.
PROFESSOR THOMAS G. LEE.

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN.

The College of Dentistry

DEAN ALFRED OWEN.

The College of Pharmacy

DEAN FREDERICK JOHN [illegible]

University Council Committees

The University Auditing Committee.
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics.
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation.
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study.
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee.
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions.
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs.
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning.
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures.
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library.
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

University Calendar, 1906-1907

THE UNIVERSITY YEAR.

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September, commencement day being always the second Thursday in June.

FIRST SEMESTER.

SEPTEMBER	10 M	Entrance examinations and registration.	
	11 T	Entrance examinations and registration.	
	12 W	Entrance examinations and registration.	
	13 Th	Entrance examinations and registration.	
	14 F	Entrance examinations and registration.	
	15 S	Examinations end and registration completed....	1 w
	17 M	Classes called for regular work. (First College classes organized, 1869).	
	22 S	.....	2 w
	29 S	.....	3 w
OCTOBER	6 S	.....	4 w
	13 S	.....	5 w
	20 S	.....	6 w
	27 S	.....	7 w
NOVEMBER	3 S	.....	8 w
	10 S	.....	9 w
	17 S	.....	10 w
	24 S	.....	11 w
	29 T	Thanksgiving Day. Recess three days	
DECEMBER	1 S	.....	12 w
	8 S	.....	13 w
	15 S	.....	14 w
	22 S	Holiday recess begins (no classes).....	15 w
	25 T	Christmas Day.	
JANUARY	1 T	New Year's Day.	
	8 T	Work resumed in all departments.	
	12 S	.....	16 w
	19 S	.....	17 w
	26 S	Semester Examinations VII and VIII hour classes.	18 w
	28 M	Semester Examinations I hour classes	
	29 T	Semester Examinations II hour classes	
	30 W	Semester Examinations III hour classes	
	31 Th	Semester Examinations IV hour classes	
FEBRUARY	1 F	Semester Examinations V hour classes	
	2 S	Semester Examinations VI hour classes	

SECOND SEMESTER.

FEBRUARY	4 M	Second semester begins. Classes called for regular work.
	9 S	..... 1 w
	12 T	Lincoln's Birthday—Holiday.
	16 S	..... 2 w
	18 M	University Charter, 1868. General Bibley died 1891.
	22 F	Washington's Birthday—Holiday.
	23 S	..... 3 w
MARCH	2 S	..... 4 w
	9 S	..... 5 w
	16 S	..... 6 w
	23 S	..... 7 w
	30 S	..... 8 w
APRIL	6 S	..... 9 w
	13 S	..... 10 w
	20 S	..... 12 w
	27 S	..... 13 w
MAY	4 S	..... 11 w
	11 S	..... 14 w
	18 S	..... 15 w
	25 S	..... 16 w
	27 M	Senior examinations begin.
JUNE	1 S	..... 17 w
	3 M	Semester examinations. I hour classes.
	4 T	Semester examinations. II hour classes.
	5 W	Semester examinations. III hour classes.
	6 Th	Semester examinations. IV hour classes
	7 F	Semester examinations. V hour classes.
	8 S	Semester examinations. VI hour classes..... 18 w

COMMENCEMENT WEEK 1907.

SUNDAY	June 9	Summer Vacation Begins.
MONDAY	June 10	Baccalaureate Service.
TUESDAY	June 11	Senior Class Exercises.
WEDNESDAY	June 12	Sigma Xi Address. Senior Promenade.
THURSDAY	June 13	Alumni Day.
FRIDAY	June 14	Commencement Day—The Thirty-fifth Annual Commencement.

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over $800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about $450,000 and the equipment of the buildings at about $300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at $400,000, and the sub-stations located at Crookston and Grand Rapids, at $30,000 more. The buildings and equipment of the department of agriculture are valued at over $400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated $350,000 for the erection of a "Main Building," of which $200,000 is available in 1906, and $150,000 will be available in 1907: this amount will be supplemented by $60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of $410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

The Legislature of 1903 appropriated the sum of $100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100 feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least $125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medica. Department of the University.

The Hon. Thomas H. Shevlin has donated to the University $60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this

building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to $1,400,000. The annual interest on these bonds is at present about $53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of $15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of $25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts	$53,000.00	
U. S. Government, Hatch Bill appropriation	15,000.00	
U. S. Government, Morrill Bill appropriation	25,000.00	
Total from the Government		$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of $846,000,000, which will give about	$194,000.00	
A flat appropriation called a deficiency appro. of	60,000.00	
An appropriation for support of School of Mines	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		$263,500.00

Amount received from Student's fees	$126,000.00	
Dental Infirmary receipts	12,000.00	
Station & School, sales and fees	14,000.00	
Miscellaneous Receipts, University	2,000.00	
Total from University		$154,000.00
Total estimated current expense receipts for 1906		$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*

2 *College Libraries,* including those in Law, Medicine, Engineering, Agriculture.

3. *Departmental Libraries,* including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, History, Mathematics, Military Science, Pedagogy, Physics, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D, who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy:* All the material collected by the State Zoölogist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English:* A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design..

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum*: This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics*: This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3840 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean,* 35, men; *Forum,* 30, men; *Minerva,* 30, women; *Law Literary,* unlimited, law students; *Castalian,* 35, men; *Theta Epsilon,* 30, women; *Thalian,* 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of the board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, $4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of $5,000, amounting to $250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of $100, $50 and $25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of $25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of $75 for the members of

the team winning the inter-sophomore debate, and another prize of $25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of $100, established by her father, the late Frank H. Peavey. This prize consists of $75 for the members of the team winning the freshman-sophomore debate, and another prize of $25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of fifty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of $200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers $75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of $3,000, which will yield an annual income of about $175. A prize of $100 will be given

to the winner of the first place, $50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

College of Education Calendar

1906-1907.

September 10.	Registration begins
September 15.	Registration completed
September 17.	Classes called for regular work
November 29.	Thanksgiving day. Holiday
December 22.	Holiday recess begins. (No classes.)
December 25.	Christmas day.
January 7.	Work resumed
January 28.	First semester examinations begin
February 1.	First semester examinations end
February 4.	Second semester begins
February 12.	Lincoln's birthday. Holiday
February 22.	Washington's birthday. Holiday
May 27.	Senior examinations begin
June 1-6.	Semester examinations

COMMENCEMENT WEEK

SUNDAY,	June 9.	Baccalaureate service
MONDAY	June 10.	Senior class exercises
TUESDAY,	June 11.	Senior promenade.
WEDNESDAY,	June 12.	Alumni day. Meeting at 3 p. m. at college
THURSDAY,	June 13.	Commencement day—the thirty-fifth annual commencement
FRIDAY,	June 14.	Summer vacation begins

The College of Education

FACULTY

CYRUS NORTHROP, LL. D., *President.*
GEORGE F. JAMES, Ph. D., *Dean and Professor of Education.*
A. W. RANKIN, B. A., *Associate Professor of Education.*
JOHN F. DOWNEY, M. A., C. E., *Professor of Mathematics.*
JOHN G. MOORE, B. A., *Professor of German.*
CHRISTOPHER W. HALL, M. A., *Professor of Geology and Mineralogy.*
JOHN C. HUTCHINSON, B. A., *Professor of Greek.*
MARIA L. SANFORD, *Professor of Rhetoric and Elocution.*
CHARLES W. BENTON, M. A., Litt. D., *Professor of French.*
HENRY F. NACHTRIEB, B. S., *Professor of Animal Biology.*
FREDERICK S. JONES, M. A., *Professor of Physics.*
WILLIS M. WEST, M. A., *Professor of History.*
J. J. FLATHER, Ph. B., M. M. E., *Professor of Mechanical Engineering.*
GEORGE F. FRANKFORTER, Ph. D., *Professor of Chemistry.*
FRANCIS P. LEAVENWORTH, M. A., *Professor of Astronomy.*
JOSEPH BROWN PIKE, M. A., *Professor of Latin.*
FRANK L. MCVEY, Ph. D., *Professor of Political Economy.*
SAMUEL G. SMITH, Ph. D., LL. D., *Professor of Sociology.*
NORMAN WILDE, Ph. D., *Professor of Philosophy and Psychology.*
WILLIAM A. SCHAPER, Ph. D., *Professor of Political Science.*
LOUIS J. COOKE, M. D., *Director of Gymnasium.*
HAROLD L. LYON, Ph. D., *Assistant Professor of Botany.*
FRANCIS B. POTTER, M. A., *Assistant Professor of English.*
JAMES BURT MINER, Ph. D., *Assistant Professor of Psychology.*
D. D. MAYNE, *Principal of the School of Agriculture.*
CARLYLE M. SCOTT, *Assistant Professor of Music.*

INSTRUCTORS.

MARGARET BLAIR, *Domestic Art.*
ANNA M. BUTNER, *Physical Culture.*
HENRIETTA CLOPATH, *Drawing.*
CHARLES M. HOLT, *Education.*
WILLIAM H. MERRIMAN, *Machine Work.*

JUNIATA SHEPPERD, *Domestic Science.*

JAMES M. TATE, *Sloyd and Woodwork.*

LECTURERS.

GEORGE B. AITON, *Inspector of the State High Schools, Minnesota.*

E. W. BOHANNON, *President of the State Normal School, Duluth.*

S. A. CHALLMAN, *Inspector of the State Graded Schools, Minnesota.*

CHARLES H. COOPER, *President of the State Normal School, Mankato.*

R. E. DENFIELD, *Superintendent of Schools, Duluth.*

S. L. HEETER, *Superintendent of Schools, St. Paul.*

CHARLES M. JORDAN, *Superintendent of Schools, Minneapolis.*

GUY E. MAXWELL, *President of the State Normal School, Winona.*

JOHN W. OLSEN, *Superintendent of Public Instruction, Minnesota.*

C. G. SCHULZ, *Assistant Superintendent of Public Instruction, Minnesota.*

W. A. SHOEMAKER, *President of the State Normal School, St. Cloud.*

FRANK A. WELD, *President of the State Normal School, Moorhead.*

THE COLLEGE OF EDUCATION

The College of Education is authorised by special enactment of the Legislature of Minnesota and established by the Regents of the University. It offers a practical and theoretical training for high school teachers and principals, for principals of elementary schools, for supervisors of special studies and for superintendents of school systems. This bulletin is issued as a preliminary announcement of the college and describes the courses arranged for the first year.

ADMISSION.

Entrance examinations are held only at the beginning of the college year. Students prevented from entering at that time may be admitted later if the circumstances justify this action. Such students are however at a great disadvantage and all students expecting to enter the college are urged to be present at the beginning of the year.

All applicants should present themselves to the Registrar, who will furnish them with application blanks and directions how to proceed with their examinations and registration. Before filling out the blanks obtained from him, applicants are advised to consult with the Dean of the College of Education in regard to their work.

CONDITIONS OF ADMISSION.

Students who have completed with credit at least two full years of college work will be admitted to the College of Education. During these two years they should have pursued one or more of the subjects which they expect to teach and in addition at least one course in general psychology. Students in the College of Literature, Science and the Arts of the University of Minnesota, who plan to enter the College of Education are advised to consult with the Dean in regard to their courses of studies as early as the first semester of the sophomore year.

ADMISSION TO ADVANCED STANDING.

1. *From other colleges.*

This college accepts records from all colleges of equal rank for credit to advanced standing. All candidates for graduation must however meet the conditions established by this college as indicated in a succeeding paragraph.

II. *From Minnesota Normal Schools.*

Graduates of the "advanced graduate course" of a Minnesota State Normal School, who have received one year's credit in the College of Science, Literature and the Arts, and who have completed, in addition, a full year of the work required of these graduates by that college, will be admitted to the College of Education, but will not be permitted to elect either Course V, or Course VII in education. Individual graduates of either of the five-year courses of a Minnesota State Normal School will be admitted under the same regulations.

UNCLASSED STUDENTS.

Applicants who present satisfactory reasons for not taking the regular course may be admitted as unclassed students upon proof of fitness to profit by the work. The same general attainments are expected of these students as are required of those who enter the regular course. Unclassed students must take the same number of hours as regular students, except that men and women actually engaged in teaching may be allowed to enter certain classes as hearers.

EXAMINATIONS.

At the close of each semester examinations are held and students are reported as "excellent","good","conditioned","passed","incomplete", or "failed". An "incomplete" must be removed within one month from the opening of the following semester, or it becomes a "condition."

A "condition" not made up before the subject is offered again becomes a "failure," subject to rules governing failures. "Failures" must be pursued again in class. A student who at any time is deficient in more than half a year's work loses his class rank and is regarded as a member of the next lower class. Students whose absences in any term exceed four weeks in the aggregate, are not permitted to take the term examinations without special permission of the faculty.

FAILURE TO KEEP UP WITH THE CLASS.

Any student receiving conditions or failures in 60 per cent of the work the first semester shall be dropped from the rolls and shall not be allowed to re-enter the University until the opening of the following year.

Any student failing to pass in one-half of the work of any year shall not be allowed to register until reinstated by action of the faculty upon recommendation of the committee on students' work.

FEES.

All students in the college, who are residents of the state, are charged an incidental fee of ten dollars a semester. Non-residents are charged double the fee required of residents of the state, or twenty dollars a semester. No reduction is made for late entrance or for leaving before the end of the semester. Save in the case of the first registration, the incidental fee is increased by twenty-five cents for each day's delay in registration beginning with the first day set for recitations. The usual fees for shop work are required of students in manual training.

COURSE OF STUDY.

The College of Education offers a three-year course of study. At the end of the second year, students may receive the degree of Bachelor of Arts and the University Teachers' Certificate. The third year will be given to advanced studies in education and on the completion of this work the candidates will receive the degree of Master of Arts. The course of study will be theoretical and practical, and, after the first year, will include observation and practice teaching, in both the elementary and the secondary schools.

THE DEGREE OF BACHELOR OF ARTS.

The degree of Bachelor of Arts will be granted by the College of Education to candidates on the following conditions.

a. The completion of college courses amounting to one hundred and twenty-six (126) credits, in addition to required exercises in Drill, Gymnasium and Physical Culture. Of these credits not less than sixty and not more than seventy-two shall be elected within the College of Education. A credit is one hour per week through one semester.

b. At least fifteen credits in Education, including courses I and II, which are specified for the Teachers' Certificate.

c. An amount of work in at least three other departments sufficient to secure one "major" and two "minor" recommendations. Each "minor" recommendation will require not less than twelve credits or more at the discretion of the department concerned, and each "major" will require the completion of from eighteen to twenty-four credits.

THE UNIVERSITY TEACHERS' CERTIFICATE.

The University Teachers' Certificate will be granted to all graduates of the College of Education, who have maintained a good average of scholarship through four years of college work. Graduates of the College of Literature, Science and the Arts, who have maintained a good average

of scholarship through four years, will receive the certificate, if they secure one "major" recommendation and have completed one course in general psychology, and three courses in education, including courses I and II.

THE DEGREE OF MASTER OF ARTS.

Graduates of the University of Minnesota, and of other institutions of equal rank, will be admitted to work leading after one year of study to the degree of Master of Arts, upon the usual conditions attaching to that degree. They will be expected, however, to have given considerable attention in their collegiate work to psychology and to the history, the theory and the practice of teaching. This graduate year is planned for college students who desire further academic and professional training, before entering upon the work of teaching, and for experienced teachers, who wish to prepare for the work of principals, superintendents and supervisors.

SPECIAL LECTURES.

In addition to the courses announced for the College of Education, special lectures will be given from time to time, open to all students, by men closely identified with public education in Minnesota. Educational organization, ideals and methods, will be treated from the point of view of those concerned with the state department of public instruction, the inspection of state graded and high schools, the state normal schools, city schools systems, and with the conduct of schools in smaller communities.

Public lectures will be given also by men familiar with the educational conditions, experiments, and tendencies in other states.

THE EDUCATIONAL CLUB.

This organization is made up of those giving instruction in the College of Education and of students registered for advanced work. Meetings are held from time to time during the college year for the discussion of current questions in education and for reports and discussions upon recent educational literature, books, magazines and journals.

Courses of Instruction

Unless otherwise specified, all courses are three credit-hour courses.

In the following outline of courses of instruction, the work offered in the history, the theory and the practice of education, is first mentioned. Then follows the outline of the courses offered in various subjects, which fall within the secondary curriculum. In each case there is indication of the work which a student of the College of Education should advisedly have taken in the first two years of collegiate study. The distinction between work naturally preceding matriculation in the College of Education and that which falls within the course of study of this college is not absolute. A student, for example, who desires a "major" recommendation in history, English, Latin or German should pursue this work from the beginning of his freshman year. A student who desires a similar recommendation in zoology or botany may possibly secure this by beginning work in the department in the sophomore year, while a "minor" credit in some subject may be secured by two years' work within the College of Education.

Fuller descriptions of some of the courses offered may be found in the Bulletins of the College of Literature, Science and the Arts, the College of Engineering, the School of Chemistry and the College of Agriculture.

EDUCATION.

I. The History of Education to the Renaissance.

I. Dean James and Mr. Holt.

An introductory study of early educational history, conducted by means of lectures, assigned readings, reports and discussions. The purpose of the course is to arouse an interest in educational problems, to secure some perspective for use in current investigation, with some command of the facts and some ease in the methods of educational history and study. An attempt is made to bring out education as one phase of civilization, and to show the connection of schools with other social institutions.

II. The History of Modern Education. II. Dean James and Dr. Holt.

A continuation of Course I with a somewhat intensive study of certain men, periods and systems in the history of modern education. This course is a direct preparation for an understanding of the educational systems, theories and practices of the present.

III. Educational Psychology. I, OR II. DR. MINER.

The study of mental development in its relation to heredity and training. Lectures and student reports on the facts and theories of childhood and adolescence with special reference to their bearing on education. Open only to those who have completed Course I in Psychology. This course is announced also as Course II in Philosophy.

IV. Secondary Education. I. DEAN JAMES.

This course is a study of secondary education in the United States, with such references to secondary schools of other countries as will lead to a clearer understanding of the place and function of the high school, its curriculum, the problems of present-day importance, and the relation of the high school to other parts of the system of public instruction. The course will be conducted by lectures, reports and discussions.

V. Practice of Elementary Teaching. I. PROFESSOR RANKIN.

This course includes a consideration of the principles of teaching, which underlie the best methods of instruction, and is both theoretical and practical. It is conducted by means of lectures, assigned readings, discussions and reports, accompanied by either observation or practice in the elementary schools under the direction of the instructor. It is planned for all students who expect to teach in the high schools or to be principals or superintendents. No credit is given in this course to graduates of normal schools, receiving one year's credit at the University.

Prerequisite: Course I in Philosophy.

VI. Practice of Secondary Teaching. II. PROFESSOR RANKIN.

This course includes lectures on the general methods of secondary teaching, assigned readings, reports and discussions, with either observation or practice of secondary teaching under the charge of the instructor. It is planned more particularly for those who expect to teach in high schools.

Prerequisite: Course IV in Education.

VII. The Theory of Education. II. DEAN JAMES.

This is an introductory course in educational theory and includes a somewhat detailed study of the principles which underlie a scientific theory of education. No credit is given in this course to graduates of normal schools, receiving one year's credit at the University.

Prerequisite: Course I in Philosophy.

VIII. School Administration. I, OF II. PROFESSOR RANKIN.

An introductory study of school administration, conducted by lectures, reports and discussions; the organization of school systems—the work of school boards, superintendents, principals and teachers—school buildings, and hygiene. This course is planned especially for students, without any teaching experience, who hope later to do work in supervision.

IX. School Supervision. II. PROFESSOR RANKIN.

An advanced course, treating of the duties of school principals and superintendents, intended, primarily, for graduates with experience in teaching. (Credit will not be given both for course VIII and for course IX.).

X. Comparative Study of School Systems. I. DEAN JAMES.

This course deals with the school systems of Germany, France, England and the United States, different phases receiving attention in alternate years. The course is conducted partly by lectures and partly by assigned readings, reports and discussions.

XI. Modern Educational Theories. II. DEAN JAMES.

An advanced course in educational theories, dealing particularly with the contributions of Rousseau, Froebel and Herbart.

Prerequisite, Course III in Education.

XII. Current Problems in Elementary Education. I. PROFESSOR RANKIN.

A seminar course for senior and graduate students.

XIII. Current Problems in Secondary Education. II. DEAN JAMES.

A seminar course for senior and graduate students.

AGRICULTURE.

I. Elements of Agriculture. I. PRINCIPAL MAYNE.

This course is planned to meet the increasing demand for a knowledge of the elements, at least, of agriculture on the part of graded school principals, rural school teachers, county superintendents of schools and others concerned with education in the agricultural sections of the state. The course is given at the School of Agriculture, on Tuesday and Saturday afternoons, and carries with it three credits.

II. Elements of Agriculture (continued).

II. PRINCIPAL MAYNE AND OTHERS.

This is a continuation of course I and is planned to give the student some familiarity with the underlying principles and the simple processes connected with various forms of agricultural work. Tuesday and Saturday afternoons, three credits. Mr. Mayne will have the cooperation of others connected with this branch of the University. Students who are interested are advised to read the Bulletin of the School of Agriculture and to note the various opportunities which are there afforded, for all of these, will be made available to some extent in connection with these courses.

ANIMAL BIOLOGY.

Preliminary—I. General Zoology.

I, II. PROFESSOR SIGERFOOS, ASSISTANT PROFESSOR OESTLUND AND ASSISTANTS.

Textbooks, quizzes, lectures and laboratory work.

This course at least should be taken in the first or second college year by all who expect to teach the subject.

II. Zoology. Extension of Course I.

I, II. PROFESSOR SIGERFOOS AND ASSISTANT PROFESSOR OESTLUND.

Those who wish a "major" credit in zoology should take this course during the sophomore year.

III. Histology. I, II. PROFESSOR NACHTRIEB AND MR. DOWNEY.

VI. Comparative Anatomy of Vertebrates. I, II. MR. BROWN.

Courses III or VI may also be taken during the second college year, to be followed in the College of Education by one or more of the courses hereafter named.

IV. Embryology of Vertebrates. I, II. PROFESSOR NACHTRIEB.

V. Embryology of Invertebrates. I, II. PROFESSOR SIGERFOOS.

VIII. Physiology. I. PROFESSOR SIGERFOOS.

IX. Nature Study. II. PROFESSOR SIGERFOOS AND ASSISTANTS.

Courses VIII and IX alternate, only one being given in each college year. Courses VIII will be given in 1906-7.

X. TEACHER'S COURSE. (1) I. PROFESSOR NACHTRIEB.

This course consists of one lecture and discussion each week during the first semester on the ends to be attained through courses in general zoology and the methods and means by which such ends may be gained.

Additional courses in Animal Biology announced in the Bulletin of the College of Science, Literature and the Arts will be accepted also for credit in the College of Education.

ASTRONOMY.

I. General Astronomy. I, II. PROFESSOR LEAVENWORTH.

Open to those who have completed trigonometry.

II. Practical Astronomy. (3 or 6). I, II. PROFESSOR LEAVENWORTH.

BOTANY.

Preliminary—*I. General Botany.* I, II. ASSISTANT PROFESSOR LYON.

II. General Plant Morphology. First year. I, II. ASSISTANT PROFESSOR TILDEN.

III. General Plant Morphology. Second year. I, II. PROFESSOR MACMILLAN AND ASSISTANT PROFESSOR ROSENDAHL.

Course I, or Courses II and III, may be taken during the Freshman and Sophomore years by those who expect to teach Botany, to be followed in the College of Education by the courses mentioned hereafter.

IV. Taxonomy. I, II. ASSISTANT PROFESSOR ROSENDAHL.

V. Cytology. I, II. PROFESSOR MACMILLAN AND ASSISTANT PROFESSOR LYON.

DOMESTIC SCIENCE AND DOMESTIC ART.

These courses cover specifically the science and the art of the home. In the reactionary movement, away from the theoretical, and toward the practical in education, the need of teachers of scientific and artistic home-making has become marked. To meet this demand the following courses have been organized:

DOMESTIC ART.

Domestic art has to do with the very beginning of home-making, the selection of a site, the adaptation of architecture to the needs of the family, the choice of materials, colors, etc. and their relation to the surroundings, the interior of the home, its furniture and keeping. All of these topics are viewed in both their economic and their social aspect. In addition a full course is offered in needle-work in all its branches.

I. A Study in Textiles. I. MRS. BLAIR.

Animal and vegetable fibers, weaves and dyes, testing fabrics for household use and personal wear, the hygienic values of various fabrics, harmony of color. This course is designed especially to assist the teaching of sewing in graded schools, and includes the preparation, explanation and making of models suited to grade work in the public schools. This course will be given upon Monday and Thursday afternoons, at the School of Agriculture; three credits.

II. Design and Garment Drafting. II. MRS. BLAIR.

This course is in the design and drafting of children's and adults' garments and includes also a series of lectures upon the home. This course will be given upon Monday and Thursday afternoons at the School of Agriculture; three credits.

DOMESTIC SCIENCE.

Domestic science has to do with the chemistry of the table, the science of cooking, and the house-wifely care of the kitchen and dining-room; household accounts, and the administration of the home upon an economical basis, are discussed in their various relations in these courses and the effort is toward system, economy and effectiveness in home management. Students who look forward to teaching are trained to assist in the teaching or supervision of this work in city schools or to have the entire charge of the work, in connection with other teaching, in the smaller high schools.

I. Laundering and Food Economics. I. MISS SHEPPERD.

In this course the subject of domestic and commercial laundering and cleaning is first considered, with a study of removing stains, dyeing, setting colors, cleaning delicate fabrics, the use of cleaning agents, starches and bluing. By far the larger part of the semester is given to a study of food economics, with a consideration of all phases of the selection of food materials and the preparation of food. The course is conducted by means of lectures, readings, with the

XII. TEACHERS' COURSE. II. ASSISTANT PROFESSOR LYON.

This course consists of one lecture and one discussion a week during the second semester, on the objects to be secured through the high school teaching of Botany and on the methods by presentation.

Additional courses in Botany announced in the Bulletin of the College of Science, Literature and the Arts will be accepted also for credit in the College of Education.

CHEMISTRY.

Preliminary—*I* (a) *General Chemistry.* I, II. MISS COHEN.
(b) *Advanced General Chemistry.* I, II. PROFESSOR FRANKFORTER.

II. Qualitative Analysis. I. ASSISTANT PROFESSOR NICHOLSON.

III. Identification of the Acids. II. ASSISTANT PROFESSOR NICHOLSON.

During the first two college years I (a) or I (b) should be taken by all who expect to teach Chemistry and those who desire a "major" credit should take also courses II and III. The following courses are suggested for students in the College of Education:

IV. Quantitative Analysis (gravimetric). I. PROFESSOR SIDENER.

V. Quantitative Analysis (volumetric). II. PROFESSOR SIDENER.

VI. Organic Chemistry. I, II. PROFESSOR FRANKFORTER.

VII. TEACHER'S COURSE. (1) II. PROFESSOR FRANKFORTER.

This course is arranged especially for the students in the College of Education. The course will be largely didactic with experimental work necessary to a thorough understanding of the new methods and theories. For technical courses, see catalogue of the School of Chemistry.

DRAWING.

Preliminary—Students who expect to teach Drawing should take in the first two college years, course I, II, and III, as announced in the Bulletin of the College of Science, Literature and the Arts. In the College of Education selection may be made from the following:

IV. Historical design. I, II. MISS CLOPATH.

V. Drawing as Related to Education. II. MISS CLOPATH.

Exercises in all the different kinds of art work used in the schools. Advanced work in black and white and in color.

VI. The Teaching of Drawing. I. MISS CLOPATH.

This course is conducted by lectures and collateral reading on the methods and educational value of drawing, as revealed through a study of the instincts and mental processes of the child.

writing of a thesis and by full individual practical experience in all parts of the work.

The course is given on Wednesday and Friday afternoons at the School of Agriculture; three credits.

II. Management of Kitchen and Dining Room. II. MISS SHEPPERD.

(a) The kitchen, equipment, sanitation, labor saving devices, etc.
(b) The dining room, equipment, furniture, decorations, management, etc.
(c) Household inventories, bills of fare, fancy cookery, etc.

The above course is made, as far as possible, both practical and scientific. It requires three hours of work on each of two afternoons, and students who successfully complete it receive three credits. Students who are interested in this line are advised to read a fuller description, which will be found in the Bulletin of the School of Agriculture.

ECONOMICS.

Students expecting to give instruction in Economics should take the following courses as a minimum requirement for thorough preparation.

I. Elements of Economics. I, or II. PROFESSOR MCVEY.

A thorough course in the elements of economics. The aim is to inculcate accepted doctrine, and show the nature and bearing of economic theory on present day problems. Textbook, problems, lectures and discussions.

III. Money and Banking. II. PROFESSOR MCVEY.

A course in the elements of money and banking; deals with the principles of both, illustrating them by reference to monetary legislation and experience. Textbook, lectures, papers and discussions.

IV. Modern Industrial Problems. II. PROFESSOR MCVEY.

A course based upon McVey's Modern Industrialism. This course deals with the problems and legislation arising from industrial conditions such as labor questions, trusts, monopolies, etc. Assigned topics, lectures and collateral reading.

VIII. Advanced Economics. I. PROFESSOR MCVEY.

In this course further consideration is given to selected topics from elementary economics. Carver's Distribution of Wealth is used as a text, supplemented by reading and problems. Lectures, papers and discussions.

XII. Methods of Investigation. (1). II. PROFESSOR MCVEY.

A course in methods of using libraries, collecting and organizing material, followed by the actual investigation of important questions. Attention is given to graphic methods of presenting economic facts and theories.

For other courses in Economics, see the Bulletin of the College of Science, Literature and the Arts.

ENGLISH LANGUAGE AND LITERATURE.

Preliminary I. Chaucer. I. MISS PECK AND MR. FIRKINS.

II. Spenser.
II. PROFESSOR KLAEBER, MISS PECK AND MR. FIRKINS.

III. Early English, I. II. PROFESSOR KLAEBER.

IV. Sixteenth and Seventeenth Century Lyric.
II. MISS PECK.

V. Shakespere's Predecessors. I. MISS PECK.

VI. Milton. I. ASSISTANT PROFESSOR POTTER.

VII. The Lake Poets. II. ASSISTANT PROFESSOR POTTER.

During the first two college years students who expect to teach English should take three or more of the above courses. In the College of Education selection may be made from the following courses;

VIII. Construction and Development of Modern Drama.
I. MISS PECK.

IX. Late Nineteenth Century Drama. II. MISS PECK.

X. Early Nineteenth Century Poetry.
I. ASSISTANT PROFESSOR POTTER.

XI. Late Nineteenth Century Poetry.
II. ASSISTANT PROFESSOR POTTER.

XIII. TEACHERS COURSE: The English Critics. (2)
I. II. ASSISTANT PROFESSOR POTTER.

XIV. Introduction to Middle English Language and Literature.
I. PROFESSOR KLAEBER.

XV. Piers the Plowman. (2) I. PROFESSOR KLAEBER.

Courses XIV and XV will be given in alternate years.

XVI. English Prose. II. PROFESSOR BURTON.

XVII. Literary Criticism. I. PROFESSOR BURTON.

XVIII. Browning. II. PROFESSOR BURTON.

XIX. Tennyson. II. PROFESSOR BURTON.

XX. Nineteenth Century Essays. II. MR. FIRKINS

The above courses are merely suggested for the consideration of students. Those who desire either a "major" or a "minor" credit should consult with the head of the department. All students who seek a "major" credit in English literature should have also, at least, a "minor" credit in rhetoric.

FRENCH.

Preliminary I. French, beginning (5)
MR. FRELIN, MADAME BERTIN, MR. MELOM.

II. French, second year's work.
I, II. MR. FRELIN AND MADAME BERTIN.

IV. Conversation. (2)
PROFESSOR BENTON AND MADAME BERTON.

The three courses above should be taken in the first two college years by students who begin work here. The following two courses are for those who entered with two years of French.

III. Advanced Grammar and Composition. MR. FRELIN.

VI. Advanced Conversation. (2)
PROFESSOR BENTON AND MR. FRELIN.

V. Classical French Writers. PROFESSOR BENTON.

This course is conducted by lectures and conversations, with some reading of modern authors, for the purpose of comparison.

VII. Nineteenth Century Literature. I. II. PROFESSOR BENTON.

This course is conducted by lectures in French.

Courses V, VI and VII are required for a "major" credit, in addition to the elementary courses, and courses I, II and IV, or III and IV, for a "minor" credit.

GEOLOGY.

I. General Geology. I. PROFESSOR HALL.

II. The Essentials of Physical Geography. I. PROFESSOR HALL.

A discussion of the principles of earth structure and description of the structural features of continents, with special reference to the earth's movements and the commercial activities of mankind.

III. Industrial Geography. II. PROFESSOR HALL.

(a) Influence of the physical structure of North America upon its resources and development.

(b) The industrial development of the countries of North America, and its relation to geographical conditions and environment.

(c) A study of industries, products and the growth of industrial countries. With excursions.

Open to those who have taken course I or II.

IV. Geography and Geology of Minnesota. II. PROFESSOR HALL.

(a) A review of the salient features of the geography of the state, embracing its climate, surface features, rivers, and lakes, with industrial conditions under development.

(b) An historical survey of the facts and principles of pre-Cambrian geology as exemplified in the geological features of the Lake Superior region and of Northern and Eastern Minnesota.

(c) A discussion of the geology and mineral resources of the state, particularly with reference to its deposits of clay, building stones and ores.

Open to all who have taken course I.

Students who desire either a "major" or a "minor" credit in Geology should confer with the head of the department. Other courses in Geology and courses in Mineralogy are announced in the Bulletin of the College of Science, Literature and the Arts.

GERMAN LANGUAGE AND LITERATURE.

The introductory courses in German are announced in the Bulletin of the College of Science, Literature and the Arts.

VIII. Advanced Conversation, Grammar and Composition. (2)
I, II. PROFESSOR SCHLENKER AND ASSISTANT PROFESSOR WILKIN.

Essays on assigned subjects; letter writing: oral exercises in German by means of discussions on every day subjects; debates, narration and the like. This course is intended as a preparation for Course XVI and is open to students who have taken or are taking course VI. It is recommended that students shall have taken course V.

IX. German Literature of the Classic Period.
I. II. PROFESSOR MOORE.

First semester.—Goethe's Faust; its genesis; Faust legend; its treatment in literature before and since Goethe's time. Plan of Goethe's Faust; change in the order of the scenes; solution of the Faust problem in Part II. Lectures and collateral reading; essays by the class. Schiller's ballads and other representative poems of this period. German versification.

Second semester.—Reading and discussion of Lessing's more important critiques: the Laocoon and Dramaturgie. Open to those who have completed course VI or VII.

X. Modern Authors. German Literature of the Nineteenth Century.
I. II. PROFESSOR MOORE.

First semester.—Romantic school and Junge Deutschland.
Second semester.—German literature since 1848.

XVI. TEACHERS' COURSE. (2) I, II. PROFESSOR MOORE.

This course is especially designed for students who intend to become teachers in the high schools.

A "minor" in German is given to students who complete courses VIII and IX; a "major" to those who complete, in addition, courses XI and XVI.

GREEK.

In addition to the preliminary courses students who expect to teach Greek in the high school should take at least the following:—

IV. Oratory. I. ASSISTANT PROFESSOR SAVAGE.

V. Philosophy. Plato. II. ASSISTANT PROFESSOR SAVAGE.

VII. Poetry. Tragedy. Aeschylus or Sophocles.
II. PROFESSOR BROOKS.

X. Poetry, Epic (advanced course) II. PROFESSOR HUTCHINSON.

XIV. Greek Composition, (advanced course) [1]
I. II. PROFESSOR HUTCHINSON.

All of the above courses are expected of candidates for teaching although in exceptional cases one or two might be omitted. A list of additional courses in Greek will be found in the Bulletin of the College of Science, Literature and the Arts.

HISTORY.

Preliminary II. English Constitutional History, to the Accession of Geo. I. I, II. ASSISTANT PROFESSOR WHITE AND MISS JUDSON.

V. Constitutional History of the United States to 1840
I. II. PROFESSOR WEST.

As to courses in history for the College of Education, students are urged to consult early with the head of the department as to the best choice among the various sequences offered. Students who desire a "major" credit should take at least four year-courses, one of which must be an intensive course, (see list below) and students who desire a "minor" credit should take at least three year-courses, in addition to the "Teachers' Course." The following are intensive courses;

VII. The Making of the Constitution of the United States.
I. II. PROFESSOR WEST.

VIII. American History since 1789. PROFESSOR WEST.

IX. Studies in American Biography. I. PROFESSOR ANDERSON.

X. A Critical Study of Historical Masterpieces.
II. PROFESSOR ANDERSON.

XI. The History of American Diplomacy.
I. PROFESSOR ANDERSON.

XII. The History of European Diplomacy since 1789.
II. PROFESSOR ANDERSON.

XIII. Colonial Expansion and Administration. II. PROFESSOR WEST.

XIV. A Critical Study of Authorities of early New England History. (2) I. II. PROFESSOR WEST.

XV. Historical Method and Bibliography. (2)
II. ASSISTANT PROFESSOR WHITE.

XXII. An Intensive Course in a Special Field of Greek or Roman History. II. ASSISTANT PROFESSOR WESTERMANN.

XVI. A "TEACHERS' COURSE" (1) I, II. PROFESSOR WEST.

Designed for those who intend to teach history in the high schools. Other courses in History are announced in the Bulletin of the College of Science, Literature and the Arts.

LATIN.

Students who expect to teach Latin are required to take courses I, II, III and IV, during the first two college years.

V. Teacher's Course in Caesar. I. PROFESSOR PIKE.
A review and teacher's drill upon Books I-IV of the Gallic War. A review of grammar and elementary Latin Composition; a discussion of various problems connected with the teaching of Latin.

VI. Teacher's Course in Virgil. II. PROFESSOR PIKE.
A review and drill upon Books I-VI of the Aeneid, a review of prosody and practice in the quantitative method of pronouncing Latin verse.

The above courses are required for a credit in Latin and students are advised to take also the following.

VII. Advanced Latin Composition. (2) II. PROFESSOR PIKE.

X. Correspondence of Cicero. (2) I. PROFESSOR CLARK.

Additional courses in Latin are announced in the Bulletin of the College of Science, Literature and the Arts.

MANUAL TRAINING.

PROFESSOR FLATHER.

These courses have been established for the benefit of teachers and others who desire to obtain instruction in the various lines of manual training.

For the work in Sloyd and manual training in woodwork, a carefully graded series of models has been chosen and will be taken up systematically. In the selection of these exercises the utilitarian idea has been prominent, and the construction of the models illustrates primarily fundamental principles and processes rather than mere exercises.

The aim of the course is to teach the proper use of the various tools and appliances. While facility of execution is gained by the use of the tools, the main object is to prepare the teacher for carrying out similar lines of work in his own school.

A course is also offered in ironwork in order to meet the requirements of those who wish to fit themselves to teach this subject, and also to provide instruction for teachers desiring to broaden their knowledge of the subject or to perfect themselves along special lines.

For those who choose to pursue any of the special lines of work indicated in the schedule, the course will be extended beyond the scope of the work given to the class, in so far as the qualifications of the student and the equipment will permitt.

MANUAL TRAINING IN WOODWORK.

I. MR. TATE.

I. Carpentry.
Wood working tools; a systematic course in the use of the saw, plane, gauge, paring chisel and kindred tools.

II. Sloyd. II. MR. TATE.

Training in the use of carving tools in Sloyd, geometrical and chip carving.

III. Wood Turning. I. MR. TATE.

Exercises in lathe work; use of gouge, chisel and other turning tools. Chuck work, ornamental turning.

IV. Pattern-making. II. MR. TATE.

Construction of patterns, core prints, core boxes. Lectures and practice. Preparation required courses I, and III.

MANUAL TRAINING IN IRONWORK.

V. Bench and Lathe Work. I. MR. MERRIMAN.

This embraces practice in wrought and cast iron with the hammer, chisel and file at the vise; also training in the use of file and scraper on wearing surfaces. Practice on the engine lathe, in connection with which are taught the elementary features of boring, turning and screw cutting. Lectures and practice.

VI. Machine Construction. II. MR. MERRIMAN.

Construction of machine parts, use of planer, shaper, drill press and milling machines, gear cutting. Lectures and practice. Preparation required, course IV.

Each course in Manual Training calls for four double periods each week and carries four credits.

A description of the equipment and fees for this work will be found in the Bulletin of the College of Engineering.

MATHEMATICS.

Preliminary-III. Second Part Higher Algebra.
I. ASSISTANT PROFESSOR BAUER, DR. MANCHESTER, DR. DUNKEL AND MR. SHUMWAY.

IV. Trigonometry.
II. ASSISTANT PROFESSOR BAUER, DR. MANCHESTER, DR. DUNKEL AND MR. SHUMWAY.

V. Analytical Geometry. (3 and 2) I. DR. DUNKEL.

VI. Differential Calculus. (3 and 2)
II. PROFESSOR DOWNEY AND DR. DUNKEL.

The above courses should be taken in the first two college years by those who desire a "major" credit in mathematics. In addition they should take the following.

VII. Integral Calculus. I. PROFESSOR DOWNEY AND DR. DUNKEL.

XII. MATHEMATICAL PEDAGOGY. (1)
I. ASSISTANT PROFESSOR BAUER.

Students who desire a "major" credit will do well to elect also course XI in the Theory of Equations. Students who desire a

"minor" credit in Mathematics will take courses III, IV, and XII. Other courses in Mathematics will be found announced in the Bulletin of the College of Science, Literature and the Arts.

MUSIC.

I. Theory of Music-Harmony (thorough bass) (2)
I, II. ASSISTANT PROFESSOR SCOTT.

II. Advanced Musical Theory-Counterpoint (2)
I, II. PROFESSOR OBERHOFFER OR ASSISTANT PROFESSOR SCOTT.

III. Choral culture (2) I, II. PROFESSOR OBERHOFFER.

IV. Pianaforte (advanced)
I, II. PROFESSOR OBERHOFFER AND ASSISTANT PROFESSOR SCOTT.

A full description of the above courses, with a statement of fees, will be found in the Bulletin of the College of Science, Literature and the Arts.

V. TEACHERS' COURSE. (elementary) [1]
I, II. ASSISTANT PROFESSOR SCOTT.

This is an elementary course open to all students possessing a fair voice and a good ear and is given as a partial preparation for teaching music in the public schools. It includes the fundamentals of music and will aid students in their preparation to teach music in the advanced grammar grades and in the high schools. Especial attention will be given to chorus direction. One hour each week is given to this work and the course is planned to continue through three semesters, two in elementary music and the third a semester of harmony such as is announced in course I. The fee for this work will be four dollars for each semester; three credits for the complete course.

PHILOSOPHY AND PSYCHOLOGY.

All students who expect to teach are advised to take the course in the Elements of Psychology during the second college year. The course in Educational Psychology, announced also under the head of Education, is commended to all future teachers. In addition attention is called to the following courses:

III. Analytic Psychology. II. MR. SWENSON.

IV. Outline of Experimental Psychology. II. DR. MINER.

V. Experimental Psychology—the Senses. I. DR. MINER.

VI. Experimental Psychology—Higher Mental Processes.
II. DR. MINER.

VII. Psychological Interpretations. I. DR. MINER.

All of the above courses have direct bearing upon the problems of

education. The attention of future teachers is directed also to the courses in Logic, Ethics and the History of Philosophy, a full description of which will be found in the Bulletin of the College of Science, Literature and the Arts.

PHYSICS.

Preliminary-I. Mechanics. Properties of Matter, Heat, Sound. (6)
I. PROFESSOR JONES AND ASSISTANTS.

II. Light, Electricity and Magnetism. (6)
II. PROFESSOR JONES AND ASSISTANTS.

The above courses are required of all students who expect a "minor" credit in physics.

III. Electrical Measurements. I. ASSISTANT PROFESSOR A. ZELENY.

VI. Advanced Laboratory Work. I. PROFESSOR J. ZELENY.

XVII. TEACHERS' COURSE [1] II. PROFESSOR JONES.

The above courses also are required of students who want a "major" credit in physics. Additional courses in this department will be found in the Bulletin of the College of Science, Literature and the Arts.

PHYSICAL CULTURE.

FOR WOMEN.

Miss Butner and Miss Barbour.

Preliminary—The course in Phyical Culture is offered to the women of the University as a regular part of their work in the freshman year, and may be taken in any of the following years. The work consists of systematic exercises for the development of all parts of the body. Women pursuing this course are required to provide themselves with a gymnasium suit, consisting of a blouse waist and bloomers, with the regulation gymnasium shoes. All suits must be of black material.

It is a common observation that students often enter the University with an imperfect physical development because of an excessive use of some muscles, while others are weakened through disease. This occasions attitudes and movements that are unseemly in appearance and unhealthful in their general effect.

The purpose of this course is to develop a strong and symmetrical physique with a graceful and easy carriage.

A physical examination is made of each student and physical measurements are taken in the fall and again in the spring.

In addition to the regular class work, "sports and pastimes" are open to all young women of the University. These include basket ball, battle ball and numerous other ball games, and also running games, all of which tend to cultivate the play instinct and give the nerve stimulus that comes from natural play.

TEACHERS' COURSE. I, II. MISS BUTNER.

Students who expect to teach should have additional work in physical culture, even if they are not called upon to give special instruction in this line. "A Teachers' Course" is accordingly offered by Miss Butner to continue through two semesters, three times a week. This course is open to all students who have had two years of gymnasium work, and carries with it three credits, or one and one-half credits, for each of the two semesters. It will be conducted by means of lectures, readings and practice drills, bearing especially upon the calisthenic and gymnasium work of the elementary schools and the gymnasium work and games of the secondary schools.

FOR MEN.

A well equipped Gymnasium in charge of a professional Medical Director is open for the young men. The training and exercise is under the immediate oversight and authority of the Medical Director and is wholly with a view to the healthful physical development of the whole student body.

All young men are required to be examined by the Medical Director of physical culture upon registration and during the course as often as the indications of the physical condition may require.

The decision of the Director will be either:

1. Advisory, indicating what course of hyigene and exercise will best sustain and improve the health of the student, or

2. Mandatory, requiring the students to pursue the course of hygiene and physical exercise necessary for the proper care of health and the discharge of their duties as students.

Gymnasium work is required of all men in the freshman class, one hour per week (in two half-hour periods if the director so decides) throughout the year. The required work includes a course of lectures on personal hygiene, during the first term.

TEACHERS' COURSE I, II. DR. COOKE.

This course is designed to meet the demand for teachers trained in accordance with methods pursued at the University.

Elementary Physiology:—Lectures on circulation, respiration, digestion, assimilation, excretion, nerve impulses, etc.

Personal Hygiene:—Lectures on diet, exercise, bathing, sleep, clothing, etc.

Applied Anatomy:—Lectures and demonstrations on the action of muscles and the best methods of developing them.

First aid to the injured:—Lectures and demonstrations.

Physical examinations and prescriptions of exercise:—Demonstrations and practice in taking physical measurements and strength tests, and the application of special exercises for special parts of the body.

Testing for normal vision and hearing.

FLOOR WORK.

Free movements:—Exercises without apparatus for accelerating the circulation, stretching the muscles, and correct carriage of the body.

Calisthenics:—Exercises with dumb-bells, Indian clubs, wands, barbells.

Apparatus work:—Class drills, buck, horse, parallel bars, horizontal bar—high and low, flying rings, mat work.

Exercises for the prevention and treatment of common deformities of school children.

Class evolutions and gymnastic games.

Suggestions on conducting a Gymnastic Exhibition.

ATHLETICS.

Track and field events, both indoor and outdoor.

Suggestions on conducting an Athletic meet.

This course is given on Monday, Wednesday, and Friday, through two semesters, open to those who have completed all required gymnasium work and students who successfully complete it, will receive three credits, one and one-half for each semester. An increasing demand for men competent to direct athletics in state high schools in connection with other teaching, makes this course of interest to young men who expect to teach.

POLITICS.

I. Elements of American Government. I, OR II. PROFESSOR SCHAPER.
An elementary course on American Government intended as a preparation for an advanced course in Politics, and for teaching in secondary schools.

II. Comparative Government. I. PROFESSOR SCHAPER.
Open to all students who have taken course I.

VII. Municipal Administration. I. PROFESSOR SCHAPER.
A comparative study in modern city charters and the methods of administration.

VIII. Theory of the State. II. PROFESSOR SCHAPER.
Open to students who have taken course I.
For a "minor" credit students should take courses I and II, for a "major" all of the above named courses. A fuller description of these courses, with an announcement of additional work in Politics, will be found in the Bulletin of the College of Science, Literature and the Arts.

RHETORIC AND ELOCUTION.

RHETORIC.

Preliminary-I. Rhetoric. I, II.
This course should be taken in the first college year, or for it should be substituted, with the approval of the department, course II.
II. Rhetoric. I, II. ASSISTANT PROFESSOR COMSTOCK.
This course is open to sophomores of whom at entrance Rhetoric was not required.

III. Literary Criticism. I. II. PROFESSOR SANFORD.

IV. Lectures upon the History of Art. II. PROFESSOR SANFORD.

V. Debate. I, II. PROFESSOR SANFORD.

VI. Advanced Rhetoric. I, II. ASSISTANT PROFESSOR COMSTOCK.

ELOCUTION.

Preliminary—*VII. Reading.* I, II. PROFESSOR SANFORD.

VIII. The Physical Side of Vocal Expression.
I. ASSISTANT PROFESSOR MCDERMOTT.

IX. The Psychological Side of Vocal Expression.
II. ASSISTANT PROFESSOR MCDERMOTT.

XII. American Oratory. I. ASSISTANT PROFESSOR MCDERMOTT.

XIII. British Oratory and Ancient Oratory.
II. ASSISTANT PROFESSOR MCDERMOTT.

Students who desire a credit in Rhetoric should take courses III and

VI. The attention of students expecting to teach English is directed, especially in the case of young men, to the courses in debate and oratory. A fuller description of these will be found in the Bulletin of the College of Science, Literature and the Arts.

SOCIOLOGY.

Students who expect to teach will find some of these courses valuable in leading to a comprehension of the sociological phase of educational theory and organization and in supplementing their studies in general and educational psychology.

I. Elements of Sociology.	I. ASSISTANT PROFESSOR JENKS.
II. Social Pathology.	I. PROFESSOR SMITH.
III. Social Theory.	I. PROFESSOR SMITH.
IV. Anthropology.	I. ASSISTANT PROFESSOR JENKS.
V. Social Groups.	I. PROFESSOR SMITH
VI. The Study of Institutions.	I. PROFESSOR SMITH.

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The College of Medicine and Surgery

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THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

For information relating to the COLLEGE OF MEDICINE AND SUR-RY, address

THE DEAN
College of Medicine and Surgery,
ersity of Minnesota Minneapolis, Minn.

MEDICAL HALL

The University

The University of Minnesota comprises the following named colleges, schools, and departments:

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the government and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872;

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

*By the later act the President has been given a vote.

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act

relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The said Board of Regents shall succeed to and have control of the books, records, buildings, and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for. Provided, that all contracts made at that time, binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress, above mentioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the Uni-

versity during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the nature and results of all important experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS . . . . The President of the University	*Ex-Officio*
The HON. JAMES T. WYMAN, MINNEAPOLIS, ... The President of the Board	1907
The HON. JOHN A. JOHNSON, ST. PETER, . . . The Governor of the State	*Ex-Officio*
The HON. JOHN W. OLSEN, ALBERT LEA . . . . The State Superintendent of Public Instruction	*Ex-Officio*
The HON. STEPHEN MAHONEY, MINNEAPOLIS . .	1907
The HON O. C. STRICKLER, NEW ULM	1907
The HON. S. G. COMSTOCK, MOORHEAD	1909
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910

C. D. DECKER, AUSTIN,
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee.
The University press committee.
The committee on athletics.
The committee on University relations to other institutions of higher learning.
The committee on health and sanitation.
The committee on commencement and other University functions.
The committee on catalogue, programs and courses of study.
The committee on student entertainments and social affairs.
and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

The representatives to the Council from the several colleges of the University are as follows:

The College of Science, Literature and Arts
DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering
DEAN F. S. JONES,
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines
DEAN WM. R. APPLEBY

The School of Chemistry
DEAN GEO. B. FRANKFORTER

The College of Education
DEAN GEO. F. JAMES

The Graduate School
DEAN H. T. EDDY

The College of the School of Agriculture
DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law
DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery
DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery
DEAN EUGENE L. MANN

The College of Dentistry
DEAN ALFRED OWRE

The College of Pharmacy
DEAN FREDERICK JOHN WULLING

University Council Committees

The University Auditing Committee.
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics.
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation.
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study.
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee.
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions.
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs.
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning.
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures.
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library.
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over $800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about $450,000 and the equipment of the buildings at about $300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at $400,000, and the sub-stations located at Crookston and Grand Rapids, at $30,000 more. The buildings and equipment of the department of agriculture are valued at over $400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated $350.000 for the erection of a "Main Building," of which $200.000 is available in 1906, and $150,000 will be available in 1907: this amount will be supplemented by $60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of $410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

The Legislature of 1903 appropriated the sum of $100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100 feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least $125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medical Department of the University.

The Hon. Thomas H. Shevlin has donated to the University $60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this

building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to $1,400,000. The annual interest on these bonds is at present about $53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of $15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of $25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts	$53,000.00	
U. S. Government, Hatch Bill appropriation	15,000.00	
U. S. Government, Morrill Bill appropriation	25,000.00	
Total from the Government		$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of $846,000,000, which will give about	$194,000.00	
A flat appropriation called a deficiency appro. of	60,000.00	
An appropriation for support of School of Mines	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		$263,500.00

Amount received from Student's fees	$126,000.00	
Dental Infirmary receipts	12,000.00	
Station & School, sales and fees	14,000.00	
Miscellaneous Receipts, University	2,000.00	
Total from University		$154,000.00
Total estimated current expense receipts for 1906		$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*

2 *College Libraries,* including those in Law, Medicine, Engineering, Agriculture.

3. *Departmental Libraries,* including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, Histology and Embryology, History, Mathematics, Military Science, Pathology and Bacteriology, Pedagogy, Physics, Physiology, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D, who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy:* All the material collected by the State Zoölogist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English:* A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design..

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum*: This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics*: This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3840 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean,* 35, men; *Forum,* 30, men; *Minerva,* 30, women; *Law Literary,* unlimited, law students; *Castalian,* 35, men; *Theta Epsilon,* 30, women; *Thalian,* 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of the board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, $4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of $5,000, amounting to $250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of $100, $50 and $25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of $25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of $75 for the members of

the team winning the inter-sophomore debate, and another prize of $25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of $100, established by her father, the late Frank H. Peavey. This prize consists of $75 for the members of the team winning the freshman-sophomore debate, and another prize of $25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of fifty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of $200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers $75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of $3,000, which will yield an annual income of about $175. A prize of $100 will be given

to the winner of the first place, $50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

General Information

THE ONE-MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

MILITARY DRILL.

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in Military Science and Tactics at all institutions that are its beneficiaries. The Armory is located on the University campus and has all the facilities usually provided in a modern Armory. The United States Government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

EXPENSES OF STUDENTS.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from $217.00 to $397.00. The same students earning sums varying from $237.00 to $272.00. The young women reported expenses varying from $150.00 to $355.00. These figures do not include fees, and, as the cost of living has increased decidedly, probably 25 per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortablly nor to have as many privileges as these students had.

Board can be had at prices ranging from $2.10 to as high as the student

can afford to pay. In private families board ranges from $3.00 to $5.00.

Furnished rooms vary in price from $8 to $20 per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the young men's or young women's Christian association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their own way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

demonstration. The dissecting room affords material and opportunity for

Calendar, College of Medicine and Surgery, 1906-7

FIRST SEMESTER.

SEPTEMBER	13	Th.	Entrance and condition examinations. Registration.	
	14	F.	Entrance and condition examinations. Registration.	
	15	S.	Entrance and condition examinations. Registration.	
	17	M.	Registration and classification of students. Opening lecture, 8:00 P. M.	
	18	T.	Classes called for regular work.	
	22	S.		1 wk.
	29	S.		2 wk.
OCTOBER	6	S.		3 wk.
	13	S.		4 wk.
	20	S.		5 wk.
	27	S.		6 wk.
NOVEMBER	3	S.		7 wk.
	10	S.		8 wk.
	17	S.	First half semester ends.	9 wk.
	19	M.	Second half semester begins.	
	24	S.		10 wk.
	29	Th.	Thanksgiving Day. Recess three days.	
DECEMBER	1	S.		11 wk.
	8	S.		12 wk.
	15	S.		13 wk.
	22	S.	Holiday recess begins. No classes.	14 wk.
JANUARY	8	T.	Work resumed in all classes.	
	12	S.		15 wk.
	19	S.		16 wk.
	26	S.		17 wk.
FEBRUARY	2	S.	End of first semester.	18 wk.

SECOND SEMESTER.

FEBRUARY	5	T.	Second semester begins. Work resumed in all classes.	
	9	S.		1 wk.
	12	T.	Lincoln's Birthday—Holiday.	
	16	S.		2 wk.
	22	F.	Washington's Birthday—Holiday.	
	23	S.		3 wk.
MARCH	2	S.		4 wk.
	9	S.		5 wk.
	16	S.		6 wk.
	23	S.		7 wk.
	30	S.		8 wk.
APRIL	6	S.	First half semester ends.	9 wk.
	13	S.		10 wk.
	20	S.		11 wk.
	27	S.		12 wk.
MAY	4	S.		13 wk.
	11	S.		14 wk.
	18	S.		15 wk.
	25	S.		16 wk.
JUNE	1	S.		17 wk.
	7	F.	Annual Faculty meeting.	
	8	S.	End of second semester.	18 wk.

COMMENCEMENT WEEK, 1907.

Sunday,	June 9	Baccalaureate Service.
Monday,	June 10	Senior Class Exercises.
Tuesday,	June 11	Senior Promenade.
Wednesday,	June 12	Alumni Day.
Thursday,	June 13	Commencement Day—The Eighteenth Annual Commencement.
Friday,	June 14	Summer Vacation begins.

SCHEDULE OF EXAMINATIONS FOR ADVANCED STANDING AND TO REMOVE CONDITIONS.

September 13-15, 1906.

Thursday, Sept. 13, 9:00 a. m.

I. Year Chemistry
II. Year Chemistry
III. Year Principles of Surgery
IV. Year Surgical Pathology, Tumors

2:00 p. m.

I. Year Histology and Embryology, practical and didactic
II. Year Histology and Embryology, practical and didactic.
III. Year Surgery.
IV. Year Surgery.

Friday, Sept. 14, 9:00 a. m.

I. Year Physiology
II. Year Physiology
III. Year Practice of Medicine
IV. Year Practice of Medicine

2:00 p. m.

I. Year
II. Year General Pathology and Bacteriology, practical and didactic
III. Year Special Pathology and Bacteriology, practical and didactic
IV. Year Obstetrics

Saturday, Sept. 15, 9:00 a. m.

I. Year Anatomy
II. Year Anatomy
III. Year Surgical Anatomy
IV. Year Clinical Microscopy

2:00 p. m.

I. Year
II. Year Materia Medica
III. Year Therapeutics
IV. Year

Examination for advanced standing and to remove conditions in the following third and fourth-year subjects will be held by *appointment* during September 13-15: Operative Surgery, Diseases of Children, Medical Jurisprudence, Physical Diagnosis, Nervous and Mental Diseases, Gynecology, Ophthalmology and Otology, Genito-Urinary Diseases, Orthopaedia, Skin and Venereal, Rhinology and Laryngology, Hygiene.

Students must register for examinations in Dean's office at least twenty-four hours prior to any examination they may wish to take. See also under Rules.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

S.	M.	T.	W.	T.	F.	S.
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
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SEPTEMBER

S.	M.	T.	W.	T.	F.	S.
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

S.	M.	T.	W.	T.	F.	S.
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
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NOVEMBER

S.	M.	T.	W.	T.	F.	S.
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18	19	20	21	22	23	24
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DECEMBER

S.	M.	T.	W.	T.	F.	S.
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23	24	25	26	27	28	29
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1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
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FEBRUARY

S.	M.	T.	W.	T.	F.	S.
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MARCH

S.	M.	T.	W.	T.	F.	S.
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

S.	M.	T.	W.	T.	F.	S.
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21	22	23	24	25	26	27
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MAY

S.	M.	T.	W.	T.	F.	S.
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19	20	21	22	23	24	25
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JUNE

S.	M.	T.	W.	T.	F.	S.
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

College of Medicine and Surgery

FACULTY

CYRUS NORTHROP, LL. D., *President.*

CHARLES A. WHEATON, M. D., *Emeritus Professor of Surgery.*

J. W. BELL, M. D., *Emeritus Professor of Medicine and Physical Diagnosis.*

PARKS RITCHIE, M. D., *Dean and Professor of Obstetrics.*

PROFESSORS.

AMOS W. ABBOTT, M. D., *Clinical Professor of Diseases of Women.*

EVERTON J. ABBOTT, A. B., M. D., *Clinical Professor of Medicine and Chief of Medical Clinic.*

RICHARD O. BEARD, M. D., *Professor of Physiology.*

HENRY M. BRACKEN, M. D., L. R. C. S., Edin., *Professor of Materia Medica and Therapeutics.*

HUBERT C. CAREL, B. S., *Professor of Chemistry.*

A. B. CATES, A. M., M. D., *Professor of Obstetrics.*

JAMES T. CHRISTISON, M. D., *Clinical Professor of Diseases of Children.*

FREDERICK A. DUNSMOOR, M. D., *Professor of Operative and Clinical Surgery.*

CHARLES A. ERDMAN, M. D., *Professor of Anatomy.*

BURNSIDE FOSTER, M. A., M. D., *Clinical Professor of Diseases of the Skin and Lecturer upon the History of Medicine.*

GEORGE B. FRANKFORTER, M. A., Ph. D., *Dean of the School of Chemistry. Professor of Chemistry.*

ARTHUR J. GILLETTE, M. D., *Professor of Orthopedic Surgery.*

CHARLES L. GREENE, M. D., *Professor of the Theory and Practice of Medicine.*

GEORGE D. HEAD, B. S., M. D., *Professor of Clinical Microscopy and Medicine.*

CHARLES H. HUNTER, A. M., M. D., *Clinical Professor of Medicine and Chief of Medical Clinic.*

WILLIAM A. JONES, M. D., *Clinical Professor of Nervous and Mental Diseases.*

THOMAS G. LEE, B. S., M. D., *Professor of Histology and Embryology, Secretary of the Faculty, and Librarian.*

J. WARREN LITTLE, M. D., *Clinical Professor of Surgery.*

ARCHIBALD MACLAREN, A. B., M. D., *Clinical Professor of Surgery.*

JAMES E. MOORE, M. D., *Professor of Surgery.*

WILLIAM R. MURRAY, A. B., M. D., *Clinical Professor of Rhinology and Laryngology.*
LOUIS A. NIPPERT, M. D., *Clinical Professor of Medicine.*
CHARLES NOOTNAGEL, M. D., *Clinical Professor of Medicine and Physical Diagnosis.*
HENRY J. O'BRIEN, M. D., *Clinical Professor of Surgery.*
JUSTUS OHAGE, M. D., *Clinical Professor of Surgery.*
C. EUGENE RIGGS, A. M., M. D., *Professor of Nervous and Mental Diseases.*
THOMAS L. ROBERTS, M. D., *Professor of Diseases of Children.*
JOHN T. ROGERS, M. D., *Clinical Professor of Surgery.*
JOHN L. ROTHROCK, A. M., M. D., *Clinical Professor of Diseases of Women.*
JACOB E. SCHADLE, M. D., *Professor of Rhinology and Laryngology.*
GEORGE E. SENKLER, M. D., *Clinical Professor of Medicine.*
HENRY L. STAPLES, A. M., M. D., *Clinical Professor of Medicine.*
J. CLARK STEWART, B. S., M. D., *Professor of the Principles of Surgery.*
ALEXANDER J. STONE, M. D., LL. D., *Professor of Diseases of Women.*
ARTHUR SWEENEY, M. D., *Professor of Medical Jurisprudence.*
FRANK C. TODD, M. D., *Professor of Ophthalmology and Otology.*
MAX P. VANDER HORCK, M. D., *Professor of the Diseases of the Skin and Genito Urinary Organs.*
FRANK F. WESBROOK, M. A., M. D., C. M., *Professor of Pathology and Bacteriology.*

ASSISTANT PROFESSORS.

H. W. HILL, M. D., *Assistant Professor of Bacteriology.*
WINFIELD S. NICKERSON, Sc. D., M. D., *Assistant Professor of Histology and Embryology.*
S. M. WHITE, B. S., M. D., *Assistant Professor of Pathology and Bacteriology.*
LOUIS B. WILSON, M. D., *Assistant Professor of Clinical Pathology.*

CLINICAL AND LABORATORY INSTRUCTORS AND DEMONSTRATORS.

E. V. APPLEBY, M. D., *Clinical Instructor in Ophthalmology.*
A. E. BENJAMIN, *M. D., Clinical Instructor in Diseases of Women.*
JNO. B. BRIMHALL, M. D., *Clinical Instructor in Orthopedic Surgery.*
R. A. CAMPBELL, M. D., *Clinical Instructor in Rhinology and Laryngology.*
A. B. CARR, D. D. S., *Instructor in Medical Chemistry.*
A. R. COLVIN, M. D., *Clinical Instructor in Surgery.*
W. H. CONDIT, B. S., M. D., *Instructor in Materia Medica.*
GEORGE M. COON, M. D., *Clinical Instructor in Genito Urinary Diseases.*
J. G. CROSS, M. D., *Clinical Instructor in Medicine.*
H. W. DAVIS, M. D., *Clinical Instructor in Obstetrics.*
WARREN A. DENNIS, M. D., *Clinical Instructor in Surgery.*
IRA H. DERBY, B. S., *Demonstrator in Medical Chemistry.*
A. W. DUNNING, M. D., *Clinical Instructor in Nervous and Mental Diseases.*
JUDD GOODRICH, M. D., *Clinical Instructor in Surgery.*
GEORGE D. HAGGARD, M. D., *Instructor in Physiology.*
ARTHUR S. HAMILTON, M. D., *Instructor in Pathology of the Nervous System.*
P. A. HOFF, M. D., *Clinical Instructor in Medicine.*
H. W. JONES, M. D., *Clinical Instructor in Nervous and Mental Diseases.*
ARTHUR A. LAW, M. D., *Instructor in Operative Surgery.*
FREDERICK LEAVITT, M. D., *Clinical Instructor in Obstetrics.*

J. C. LITZENBERG, B. S., M. D., *Clinical Instructor in Obstetrics.*
A. T. MANN, B. S., M. D., *Clinical Instructor in Surgery.*
R. H. MULLIN, B. A., M. B., *Demonstrator in Pathology and Bacteriology.*
M. L. NICKERSON, A. M., M. D., *Instructor in Histology and Embryology.*
WALTER RAMSEY, M. D., *Clinical Instructor in Diseases of Children.*
H. K. READ, M. D., *Demonstrator of Anatomy.*
S. P. REES, B. S., M. D., *Instructor in Physical Diagnosis and Clinical Medicine.*
H. P. RITCHIE, Ph. B., M. D., *Clinical Instructor in Diseases of Women.*
HENRY L. ULRICH, M. D., *Instructor in Clinical Microscopy.*
M. R. WILCOX, M. D., *Demonstrator in Physiology.*
H. L. WILLIAMS, M. D., *Clinical Instructor in Diseases of Women.*
F. R. WRIGHT, M. D., *Clinical Instructor in Dermatology and Genito Urinary Diseases.*
VAN H. WILCOX, M. D., *Instructor in Operative Surgery.*

CLINICAL AND LABORATORY ASSISTANTS.

F. L. ADAIR, M. D., *Clinical Assistant in Medicine.*
W. H. AURAND, M. D., *Clinical Assistant in Medicine.*
JOHN M. ARMSTRONG, M. D., *Clinical Assistant in Genito Urinary Diseases.*
CHARLES R. BALL, M. D., *Clinical Assistant in Nervous and Mental Diseases.*
L. O. DART, M. D., *Clinical Assistant in Diseases of Children.*
R. E. FARR, M. D., *Clinical Assistant in Surgery.*
EMIL S. GEIST, M. D., *Clinical Assistant in Orthopaedia.*
JAMES T. GILFILLAN, M. D., *Clinical Assistant in Medicine.*
E. K. GREEN, A. B., M. D., *Clinical Assistant in Medicine.*
E. R. HARE, M. D., *Prosector in Anatomy.*
ALEX. R. HALL, M. D., *Clinical Assistant in Medicine.*
JOHN E. HYNES, M. D., *Clinical Assistant in Medicine.*
A. E. LOBERG, M. D., *Clinical Assistant in Nervous and Mental Diseases.*
J. S. MACNIE, M. D., *Clinical Assistant in Diseases of the Eye and Ear.*
JEANNETTE M. MCLAREN, M. D., *Clinical Assistant in Obstetrics.*
W. D. SHELDON, M. D., *Clinical Assistant in Medicine.*
THOS. W. STUMM, M. D., *Clinical Assistant in Medicine.*
S. E. SWEITZER, M. D., *Clinical Assistant in Dermatology and Genito-Urinary Diseases.*
ARCHA WILCOX, M. D., *Clinical Assistant in Surgery.*

UNIVERSITY SCHOLARS GIVING INSTRUCTION AND ASSISTING IN LABORATORIES.

IN HISTOLOGY AND EMBRYOLOGY.

HENRY T. FOSHAGER, MARTIN OYEN, MATHIAS SUNDT, CHARLES S. SUTTON.

IN ANATOMY.

C. C. TYRELL, PAUL ASHLEY, FRED SMITH.

IN PATHOLOGY AND BACTERIOLOGY.

JOHN P. SCHNEIDER, HARRY J. BARTRON, ED. MOREN, R. A. VARCO, B. A., EARL H. CURRENT, THOS. R. MARTIN, B. A., R. H. LABBITT, CARL O. ESTREM, B. A., J. P. WEYRENS, B. S.

The Department of Medicine

The Department of Medicine includes the following named colleges:
The College of Medicine and Surgery.
The College of Homeopathic Medicine and Surgery.
The College of Dentistry.
The College of Pharmacy.

Each college is distinct in the government of its internal affairs, has its own faculty and an independent curriculum, save in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in the various courses, are pursued by all students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in six buildings, five of which are situated upon the University Campus, viz: Medical hall, the Medical Science building, the Laboratory of Chemistry, the Laboratory of Anatomy and the Institute of Public Health and Pathology. In addition, two more buildings, a University Hospital and a building for Operative Surgery, are provided for and will be erected.

Medical hall contains the offices of the dean and secretary of the college of medicine and surgery, and of the deans of the college of homeopathic medicine and surgery and of the college of dentistry; a large amphitheatre and lecture rooms for the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

The Medical Science building is a large three-story and basement building, 75 x 150 ft., especially designed for laboratory uses. The south wing of the building is occupied by the college of pharmacy and the department of physiology. It contains the office and private laboratory of the dean of the college of pharmacy, the pharmaceutical and botanical larboratories, the laboratory of organic chemistry, with preparation and stock rooms. A large lecture amphitheatre, especially arranged for demonstrative work in physiology, the laboratories of experimental physiology and of physiologic chemistry, the offices, library and recitation rooms of this department are also situated in this wing. Upon the basement floor are laboratory stock

rooms, work shop, and the animal rooms devoted to physiologic purposes.

The north wing and center are occupied by the department of Histology and Embryology. Each of these branches has its large, well-lighted laboratories, preparation rooms and private study rooms for research. In addition there are lecture and recitation rooms, smaller laboratories for micro-technique and neurology; animal rooms and operating rooms for experimental work; rooms for photography and photomicrography, for reconstruction work and the making of models and charts; chemical laboratory, departmental library, a vault for the storage of the very valuable collection of series of embryos and sets of histological slides; store rooms and the offices of the professors and assistants.

The Laboratory of Medical Chemistry is a one-story brick building, devoted entirely to the use of this department. It is equipped with amphitheatre, laboratories, preparation rooms, store rooms, and private offices of the professor and assistants.

The Laboratory of Anatomy is a new two-story and basement building, 35 x 60 feet. In the basement are the morgue, injecting room, cold storage vaults, and engine and apparatus for the carbon dioxide freezing plant. On the first floor there is an amphitheatre seating one hundred and seventy-five students, the privates offices of the professors and instructors, a private dissecting room and a smalll laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

The Institute of Public Health and Pathology, now almost completed, will be ready for occupancy for the year 1906-07.

The building, which is 213 feet over all and 100 feet deep in the central portion, consists of a central main portion 60 by 100 feet, with north and south wings each 56 by 75 feet.

In the south wing are housed the State Board of Health laboratories, which are connected by an underground passage with the adjacent Laboratory of Animal Research of the Minnesota State Board of Health. This wing also contains a suite of rooms for a Pasteur Institute in which the special treatment of and research in rabies will be carried on. Diagnostic laboratories are provided for the bacteriological, chemical and pathological work of the State Board of Health, workshops for the repair and making of special apparatus, unpacking, storage, shipping, washing and media rooms are also available. Research laboratories and the offices and special laboratories of the professional members of the staff are here provided together with vaults for records and offices for the clerical staff.

The central portion and north wing provide for teaching and research work in the University Departments of Pathology, Bacteriology and Public Health. The central portion of the building is 100 by 60 feet, being three stories in front and four stories in the rear, where three of the stor-

ies are devoted to museum and library purposes. Here special books and periodicals are provided and interesting pathological and bacteriological specimens and materials, apparatus, methods of construction and other illustrative features of public health are on exhibition. On the first floor is a preparation room for the museum and lecture room, beneath the museum and adjacent to the lecture and autopsy room. Six special laboratories and offices are provided for the Professor of Surgical Pathology, Assistant Professor of Pathology, Demonstrator of Pathology and Bacteriology and the Assistant Director of the State Board of Health Laboratory. The remainder of the central portion is occupied by the lecture and autopsy amphitheatre, special research laboratories, photographic laboratories and a cold storage plant.

In the north wing the main teaching laboratory occupies the full floor space of 75 by 56 feet. It is lighted on three sides and by a skylight and is divided by low partitions into twelve loges, each intended for the use of a group of students. Each loge is fully equipped with all apparatus and supplies which the students may need in the practical work of pathology, bacteriology or public health, so as to render each group independent. A coat room and a room for the distribution of supplies open off the main laboratory. Beneath this is a similar students' research laboratory containing six loges which are to be used for the teaching of such special courses as Pathology of Tumors, Neuro-Pathology, practical Public Health laboratory work, etc. Opening off this is a special laboratory for the teacher in charge, for the issuing of supplies and also a coat room. Other special laboratories, including rooms for the preparation and storage of media and the storage of stock cultures of bacteria, and living quarters for the janitor are also in this wing.

A University Hospital upon the Campus has been provided for through a bequest by the widow of the late Dr. A. F. Elliott; this money, amounting to over $125,000.00 will be used in the construction of a large, thoroughly equipped hospital designed with especial reference to teaching purposes.

The last Legislature provided for a building adjacent to the Medical quadrangle which when completed will give fine accommodation for operative surgery, pharmacology, an animal hospital and for the storage and breeding of animals.

The University Clinical Building is situated in a part of the city most favorable to the development of an out-door service and, at the same time, accessible to the students. It is of two stories and covers 40x150 feet. It affords ample floor space for amphitheatres, waiting rooms, dispensary and class rooms for each of the clinical branches. Wards and laboratories, in which section work in medical and surgical diagnosis can be conducted, have been equipped.

The Department of Medicine is in intimate relationship, through its sev-

eral faculties, with the numerous hospitals, infirmaries and dispensaries of the cities of Minneapolis and St. Paul. Through these agencies it utilizes, for the benefit of its students, the clinical material of these two large cities with a population of 500,000 people. The location of the University between two interurban car lines enhances the value and convenience of these clinical opportunities.

A medical library, containing 4,000 volumes and supplied with current periodicals, is open to all the students of the department. The collection has been chosen with special regard to the need for reference work and collateral reading. The general library of the University and the public and medical libraries of Minneapolis and St. Paul are also open to the students of this department.

The College of Medicine and Surgery

Rules and Regulations of the College

COLLEGE YEAR.

The nineteenth annual course of study in this college will begin on September 13, 1906, and will continue nine months, closing upon Saturday, June 8, 1907.

The college year is divided into semesters; the first semester ending February 3, 1907. The last week is devoted mainly to mid-year examinations, which will be conducted in many of the departments. The second semester will begin February 5, 1907, and will close June 8, 1907. Many of the courses of study occupy the half semesters which terminate on November 17th, and April 6th. Commencement exercises will occur in common with the other departments of the University, during the week ending June 14, 1907.

ENROLLMENT.

Students are urged to matriculate on or before September 13, 1906. Entrance and condition examinations will be held September 13 to 15. Opening lecture, September 17. Classes called for regular work, September 18.

Students will be assigned seats in order of and at the time of their matriculation. Such matriculation and assignment of seats will be had in the office of the registrar of the University.

Students, having matriculated, will present tuition receipts and entrance credentials to the dean and secretary of the college of medicine and surgery, who will pass upon their preliminary qualifications. If such credentials prove unsatisfactory they will be required to take the necessary entrance examinations before a committee of the college of science, literature and the arts.

Students wishing to take advanced standing will apply to the secretary. Upon admission and classification, students will report to the professors in charge of their respective studies.

REQUIREMENTS FOR ADMISSION.

Candidates for admission to the College of Medicine and Surgery for the College year 1906-'07 must present evidence of the following:

I. That the candidate has satisfactorily completed at least one year's college work in Arts or Science that is recognized by this University as equivalent to its own requirements.

II. That in addition to the above each candidate must have satisfied all of the requirements for entrance to the College of Science, Literature and the Arts of this University. See under General Regulations pp. 85-93.

Candidates for admission to College of Medicine and Surgery may be allowed, under certain circumstances, to enter with a condition in their first year's college work, but such condition must be satisfactorily removed before the beginning of the second year.

Beginning with the College year 1907-'08, all candidates for entrance to the College of Medicine and Surgery *must have completed two years' work in the College of Science, Literature and the Arts, or its equivalent.*

EXAMINATIONS—FINAL STANDINGS.

No student with an entrance condition will be allowed to register for any second-year subject, nor will any student with any first-year condition or failure be allowed to register for a third-year subject; nor will any student having a second-year condition or failure be allowed to register for any fourth-year subject.

No student will be allowed to omit any freshman work in order to make up entrance conditions, except by special permission of Department affected.

Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension.

Students will not be permitted to substitute private work in any branch for the regular college course work, excepting in the case of actual laboratory exercises done under the direct supervision of an instructor appointed by the chair and approved by the faculty. Examinations in such private laboratory work will be conducted by the chair. This rule does not apply to conditioned students.

Final examination in every required subject is held at the close of the work at the end of the semester or half semester, according to the extent of the course given. Opportunity is offered to remove conditions at the opening of the school year in September. The examinations at the end of semester or half semester are only for those who are taking the courses, while the September examinations are only for those who are attempting

to remove conditions or are applicants for advanced standing.

The final standing of any student in a given subject shall be determined as the result of his (a) practical work (laboratory or clinical) (b) recitations and (c) oral or (d) written examinations.

All of these factors shall be taken into consideration in making up the final grading in any subject.

Students' standings shall be determined at the end of the year by a conference of the heads of the departments in which the work is pursued during that year.

All standings shall be reported officially to and from the Dean's office at the end of the year.

Students shall be reported as Passed, Incomplete, Conditioned or Failed.

Conditions must be removed at the beginning of the school year in September. No student who has any conditions unremoved at the close of this examination is allowed to continue with his class without the express permission of the Dean on the recommendation of the Departments concerned.

A condition not made up before the subject is offered again becomes a failure subject to the rule governing failures.

Failures must be taken over again in class.

A student taking work over again (by reason of having "failed") must pay the fees connected with that course.

A student who is conditioned in the majority of the subjects given in any year will become a failed student and must repeat the work of that year.

Students who carry conditions into a succeeding year may find a resultant conflict of study hours. In that event they will give preference to the unfinished studies of the lower conflicting course.

ADVANCED STANDING.

All persons applying for advanced standing must present satisfactory evidence of time spent in medical studies, must pass examinations in the branches already taken by the class they seek to enter and satisfy all other admission requirements, but any student who has satisfactorily completed the requirements of any department of this College in any other school of recognized standing may be excused from repeating such examinations if the instruction which he has received is considered satisfactory by the head of the corresponding department in this College.

No condition of advanced standing will entitle the student to take the two years of any graded study coincidently.

Seniors in the college of science, literature and the arts, or in other

recognized colleges, who contemplate entering the department of medicine, are permitted to elect courses in anatomy, histology and embryology, physiology and chemistry in this department in lieu of similar science courses in the college of science, literature and the arts or in the other colleges.

No student may be advanced with his class or given advanced standing unless he has passed the majority of the required examinations in the studies of the previous year; nor shall any student be admitted to the second semester's work of the fourth year who has any unremoved conditions of any of the preceding years, but an opportunity to remove such conditions shall be given to fourth-year students at the close of the first semester.

TERMS OF TUITION.

The Annual tuition fee in the College of Medicine and Surgery is $100. This includes all charges for matriculation, lecture and laboratory courses, dissections and graduation, excepting a $3.00 Hospital fee to Juniors and Seniors and a rental fee for microscopes;* payable by all students who do not own their own instrument.

One-half of the annual fee will be payable when the student matriculates. The accountant's receipt for this portion of the fee will entitle the holder to take the entrance examinations and to classify. The second half will be payable at the opening of the second semester, February 5, 1907. Failure to register within the dates assigned for registration will subject the delinquent to an increase in the registration fee, amounting to twenty-five cents for each day of such delinquency. If the applicant fails to pass the entrance examination, his fees will be returned by the accountant. Absence or failure to continue study will not entitle the student to return of fees, excepting in cases of special hardship, when application may be made to the executive committee of the Board of Regents.

A student who takes advanced standing will not receive any credit therefor upon his annual fees.

Students who are conditioned and fail to remove their conditions within one year shall be charged an extra examination fee.

Senior conditioned students who re-enter for work in any succeeding year will be charged a matriculation fee of ten dollars.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

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*In each semester a fee of $1.00 to $5.00 will be charged for the rental of a microscope in the courses in which its use is required, provided the student is not supplied with a satisfactory instrument of his own. It is an advantage for the student to possess a microscope.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

A deposit of five dollars will be made with the accountant each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, which are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

SPECIAL STUDENTS.

Special students will pay to the accountant a fee of twenty dollars per year for each study they elect to pursue. They will be charged additional fees, varying from five to twenty dollars, for each laboratory course they may enter.

Graduate students will pay an admission fee of ten dollars which will entitle them to attend any lectures they may desire in regular courses.

CURRICULUM.

The course in the college of medicine and surgery leads to the degree of doctor of medicine. It covers a period of four years of collegiate study, each year representing nine months in actual residence.

The studies are graded, so far as practicable, throughout the four years and this grading is arranged with careful reference to the relation which the subjects naturally bear to each other.

The work of the first two years deals with the so-called scientific or laboratory branches; while that of the last two years includes the principles and practice of medicine and surgery, their associated specialities and the application of scientific or laboratory methods to clinical experience.

GRADED SYSTEM OF STUDY.

FIRST YEAR.

Histology and embryology, anatomy, physiology, chemistry.

SECOND YEAR.

Histology and embryology, anatomy, physiology, chemistry, general bacteriology and pathology, materia medica, therapeutics.

THIRD YEAR.

Surgical anatomy, special pathology and bacteriology, surgical pathology, operative surgery, practice of surgery, practice of medicine, diseases of children, obstetrics, medical jurisprudence, physical diagnosis.

FOURTH YEAR.

Practice of surgery, practice of medicine, clinical obstetrics, surgical pathology, practical physical diagnosis, nervous and mental diseases, gynecology, ophthalmology and otology, clinical microscopy, genito-urinary diseases, orthopaedia, diseases of the skin, diseases of the nose and throat, hygiene.

ELECTIVE COURSES.

The elective system, which has been, for some years, in process of adaptation to the course in medicine and surgery in the fourth year, has been extended to the work of the third year and further systematized. The following electives are offered. The courses in italics are open to both third and fourth year students, the remainder only to students of the fourth year. The hours occupied in each course are cited and thirty-six hours are counted as an elective unit. Students of the third year are required to elect one unit of elective work; those of the fourth year to elect three units. Courses elected will become subjects of continued study and examination. Other electives may be taken at the choice of the student, but will not be a matter of compulsory study.

Electro-therapy (half-unit)	18 hours
Mechano-therapy (half-unit)	18 hours
History of Medicine (half-unit)	18 hours
Ophthalmoscopy (half-unit)	18 hours
Operative Surgery (one and one-half units)	54 hours
Pathology of Nervous System (one and one-half units)	54 hours
Special Pathology of Tumors (one and one-half units)	54 hours
Methods of Microscopical Technique (one and one-half units)	54 hours
Comparative Histology and Histogenesis of Tissues (one and one-half units)	54 hours
Comparative Embryology of Man and Vertebrates (one and one-half units)	54 hours
Microscopic Anatomy and Organogenesis (one and one-half units)	54 hours
Comparative Histology and Development of Central Nervous System (one and one-half units)	54 hours
Practical Pathology (unit)	36 hours
Applied Anatomy of Nervous System (unit)	36 hours
Animal Parasites of Man (half-unit)	18 hours
Dispensary Out-door service (half-unit)	18 hours

These elective courses are open to post-graduate students who can occupy in their study brief periods of time, since several courses will be concentrated in each half-semester.

Six-Year Medical Course

In the year 1903-04, the University established a six years' course of study, arranged especially for students of medicine. The first two years of the course are given in the College of Science, Literature and the Arts and the last four years are given in the College of Medicine and Surgery. It leads to the degree of Bachelor of Science at the end of the first four years

and to the degree of Doctor of Medicine at the end of the six years' course. The work of the first two years is adapted to the needs of the student of medicine and all who expect to take the professional degree are urged to enter this course.

COURSES IN THE COLLEGE OF SCIENCE, LITERATURE AND ARTS.

FIRST YEAR.

1. *German.
2. Botany.
3. Chemistry
4. Zoology.
5. Higher Algebra and Trigonometry.

SECOND YEAR.

1. Rhetoric.
2. German or French.
3. Chemistry.
4. Comparative Anatomy of Vertebrates.
5. Physics.

*Note—Students who enter with two years of German may elect French in its stead in the first or second year.

COURSES IN COLLEGE OF MEDICINE AND SURGERY.

THIRD YEAR.

1. Human Anatomy.
2. Histology and Embryology.
3. Organic Chemistry, Toxicology and Hygiene.
4. Physiology.

FOURTH YEAR.

1. Human Anatomy.
2. Histology and Embryology.
3. Medical Chemistry.
4. Physiology.
5. Pharmacology.
6. Bacteriology and General Pathology.

FIFTH AND SIXTH YEARS.

The work of the fifth and sixth years will be essentially the same as is given in the third and fourth years in the college of medicine and surgery.

Courses of Instruction-Six-Year Medical Course

ANIMAL BIOLOGY.

Course I. General Zoology. [3] First year, both semesters. *Professors Sigerfoos and Oestlund and Assistants.*

Lectures, quizzes and laboratory work. Text-book required,—Hertwig's Manual of Zoology.

This course is a comprehensive study of the principles of structure, physiology and development in animals. In the laboratory a brief study of insects and the dissection of the frog are used as a practical introduction to the course. Then follow a study of cell structure and cell division; a systematic study of representatives of the chief phyla or branches of the animal kingdom; and a study of the elements of embryology as illustrated by the development of the starfish and chick.

Course VI. Comparative Anatomy of Vertebrates. [3] Second year, both semesters. *Mr. Brown.*

Lectures, quizzes and laboratory work. The first semester's work is based upon a study of the chordates, cartilaginous and bony fishes and all classes up to the Mammalia.

Laboratory and reference books:

Parker's Zootomy; Parker's and Haswell's Zoology, Vol. 2; Wiedersheim's Comparative Anatomy; Willey's Amphioxus and the Ancestry of the Vertebrates; Gagenbaur—Bell's Comparative Anatomy of Vertebrates.

The second semester is given to a detailed study of the Cat and comparative studies of the Rabbit, Sheep and Man. The laboratory and reference books for the second semester are Davison's Mammalian Anatomy; Jayne's Mammalian Anatomy; Reighard and Jennings' Anatomy of the Cat.

BOTANY.

Course I. General Botany. [3] First year, both semesters. *Dr. Lyon.*

This course comprises a general survey of the plant kingdom with laboratory work on the cell, on algae, lichens, fungi, mosses, ferns, gymno-sperms and flowering plants. Lectures and laboratory. Open to all.

CHEMISTRY.

Course I. Inorganic Chemistry. [3]. First year, first semester. *Professor Frankforter, Mr. West and Mr. Badger.*

This course is arranged for those who have already had an elementary course in chemistry. The course includes an introduction to physical chemistry with special reference to solutions and the electrolytic dissociation theory. This work is followed by a systematic study of the non-metals from the general standpoint of the Periodic law. Special attention is given to the relationship between the different elements and their analogous compounds.

Note:—A course is offered in the College of Science, Literature and the Arts to those who have not had the elementary course.

Course II. Inorganic chemistry. (Continuation of course I.) [3]

First year, second semester. *Professor Frankforter, Mr. West and Mr. Badger.*

This course consists of lectures, recitations and laboratory work on the metals.

Course III. Qualitative Analysis. [3] Second year, first semester.
Asst. Prof. Nicholson, Mr. Anderson and Mr. Wilhoit.

Lectures, recitations and laboratory work. The course includes the general reactions of the metals and the qualitative separation and identification.

Course IV. Qualitative Analysis. [3]. Second year, second semester.
Asst. Prof. Nicholson, Mr. Anderson and Mr. Wilhoit.

Lectures, recitations and laboratory work. Reactions, separations and identification of the acids.

Course V. Organic chemistry. [3] Third year, second semester.
Professor Frankforter and Mr. Newton.

This course includes a study of the different groups of carbon compounds with special reference to those groups which are closely associated with biological processes and Bio-chemistry, bacteriological, pathological chemistry, physiology and materia medica. The course consists of lectures with frequent recitations and laboratory work. The laboratory preparation work included the making and studying of one or more compounds in each important organic group. Some time is devoted to practical organic analysis, including the analytical side of the alcohols and the sugar group.

Course VI. Toxicology and Hygiene. [3] Third year, second semester.
Professors Frankforter and Harding and Mr. Newton.

Toxicology.—This course includes the general methods for the separation and identification of the poisons both organic and inorganic. Attention will be given to the identification of poisons associated with medicines and with vegetable and animal matter. Besides this qualitative and quantitative work, attention is given to the structure of those organic groups of compounds which have poisonous properties.

Hygiene.—Chemistry lectures and laboratory work. This course includes the chemical analysis of air, water and some of the common foods, as milk, sugar and the fruit products, Special at-

FRENCH.

Students who enter with two years of German may elect French instead in the first or second year.

Course I. French beginning. [5] First year, both semesters.
Mr. Frelin, Mme. Bertin, Mr. Melom.

Fraser and Squair's French Grammar and Reader; *modern texts.*

Course II. French, intermediate. [3] Second year, both semesters.
Professor Benton, Mme. Bertin.

Grammar and composition continued; modern texts will be read including selections from Merimee, Daudet and Scribe.

Course III. French conversation. [2] Second year, both semesters.
Professor Benton, Mme. Bertin.

[Note: May be taken with course II.]

GERMAN LANGUAGE AND LITERATURE.

Course I. German, beginning. [5], First year, both semesters.
Professor Schlenker, Assistant Professor Wilkin, Mr. Juergensen and Mr. Burkhard.

Pronunciation, grammar, selections in prose and verse. German conversation and composition (Bernhardt); short stories.

Course II. German, intermediate. [3] Second year, both semesters.
Assistant Professor Wilkin, Mr. Juergensen, Mr. Burkhard and Mr. Williams.

First semester,—Selections from modern prose, narrative and descriptive; German lyrics and ballads. Second semester, A drama of Lessing, Goethe or Schiller. Open to students who have completed course I.

Course III. Scientific prose, intermediate. [3] Second year, both semesters. *Mr. Juergensen.*

First semester,—Hodge's German Science Reader (or equivalent). Second semester,—Brandt and Day's German Scientific Reading. This course aims to give the student a reading knowledge of German for the use of the language in his scientific studies. Open to students who have completed course I.
[Note: students must take either II. or III.]

Course IV. Classic prose and poetry. [3] First year, both semesters. *Professor Moore, Assistant Professor Wilkin, Mr. Burkhard and Mr. Williams.*

First semester,—Schiller's Historische Skizzen or Heine's Harzreise; Spanhoofd's Deutsche Grammatik.
Second semester,—Goethe's Prosa and Gedichte; Deutsche Grammatik completed.
[Note: open to those who have had two years High School German].

Course V. Conversation and composition. [2] Second year, both semesters. *Assistant Professor Wilkin, Mr. Juergensen and Mr. Williams.*

Translation into German of short English selections: conversation on topics of every day life; narrative and descriptive essays, and letters in German.
[Note: this course may be taken with either II. or III.]

Course VI. The drama. [3] Second year, both semesters. *Professor Schlenker, Assistant Professor Wilkin, Mr. Juergensen and Mr. Burkhard.*

First semester,—Modern drama. Sudermann's Johannes, and Hebbel's Herodes und Mariamne. Study of the present day drama in Germany. Assigned readings and reports; occasional lectures on related subjects.
Second semester,—Classic drama. Lessing's Nathan der Weise and Goethe's Egmont. Study of dramatic structure: history of the drama in the 18th century. Open to students who have completed either course II., III. or IV.

Course VII. Advanced scientific reading. [3] Second year, both semesters. *Mr. Juergensen.*

Reading of monographs and periodicals.
[Note: students must take course VI. or VII. during second year].

Course VIII. Advanced composition and conversation. [2] Second year, both semesters. *Professor Schlenker and Assistant Professor Wilkin.*

Translation into German of longer selections from good English authors: original essays in German on assigned themes; oral debates: oral reports in German on collateral readings in German and English authors.
[Note: this course may be taken with either VI. or VII.]

MATHEMATICS.

Course III. Higher algebra. [3] First year, first semester. *Assistant Professor Bauer, Dr. Manchester, Mr. Dalaker and Mr. Shumway.*

Variation, quadratic equations, special higher equations, simultaneous equations of the second degree, maxima and minima of algebraic functions, differentiation of algebraic functions, development of functions, logarithms, theory of equations and solution of numerical higher equations.

Course IV. Trigonometry. [3] First year, second semester. *Assistant Professor Bauer, Dr. Manchester, Mr. Dalaker and Mr. Shumway.*

Text, tables and numerous applications.

PHYSICS.

Course I. Physics. [6] Second year, both semesters. *Professor Jones and Assistants.*

Mechanics, properties of matter, heat, sound, experimental lec-

tures, recitations and laboratory work. Open to those who have completed the higher algebra and trigonometry courses III. and IV. in mathematics.

RHETORIC.

Course I. Rhetoric. [3] *Professor Sanford.* Second year, both semesters. This course includes the study of formal rhetoric, the writing of compositions, and the study and analysis of masterpieces of prose. Specially adapted to the need of medical students.

PHYSICAL CULTURE.

DRS. COOKE AND LITZENBERG.

A well equipped gymnasium in charge of a professional medical director is open for the young men. The training and exercise is under the immediate oversight and authority of the medical director and is wholly with a view to the healthful physical development of the whole student body.

All young men are required to be examined by the medical director of physical culture upon registration and during the course as often as the indications of the physical condition may require.

The decision of the director will be either:

1. Advisory, indicating what course of hygiene and exercise will best sustain and improve the health of the student, or
2. Mandatory, requiring the students to pursue the course of hygiene and physical exercise necessary for the proper care of health and the discharge of their duties as students.

Gymnasium work is required of all men in the freshman class, one hour per week (in two half-hour periods if the director so decides) throughout the year. The required work includes a course of lectures on personal hygiene, during the first term.

MILITARY SCIENCE AND TACTICS.

CAPTAIN EDWARD SIGERFOOS. Ph. B., 5th U. S. INFANTRY.

For the instruction in military drill and administration the students are organized into a corps of cadets, consisting of three battalions of infantry, and a platoon of artillery.

A uniform of prescribed pattern is worn by all cadets during drill.

The uniform consists of blouse, trousers, vest and cap, modelled after the U. S. Military Academy cadet uniform, and costs in Minneapolis about $15, and is as neat and economical dress as the student can obtain.

Drill is required of all men in the freshman and sophomore classes.

In view of the fact that, beginning with September, 1907, the College of Medicine and Surgery will require two years' College work for entrance, it becomes very desirable that students intending to take up Medicine should matriculate in the six-year course upon entering the University and thus secure both degrees.

Students who wish to enter this combined course will receive equivalent credit for College work done elsewhere.

Seven-Years' Course Leading to the Degrees of A. B. and M. D.

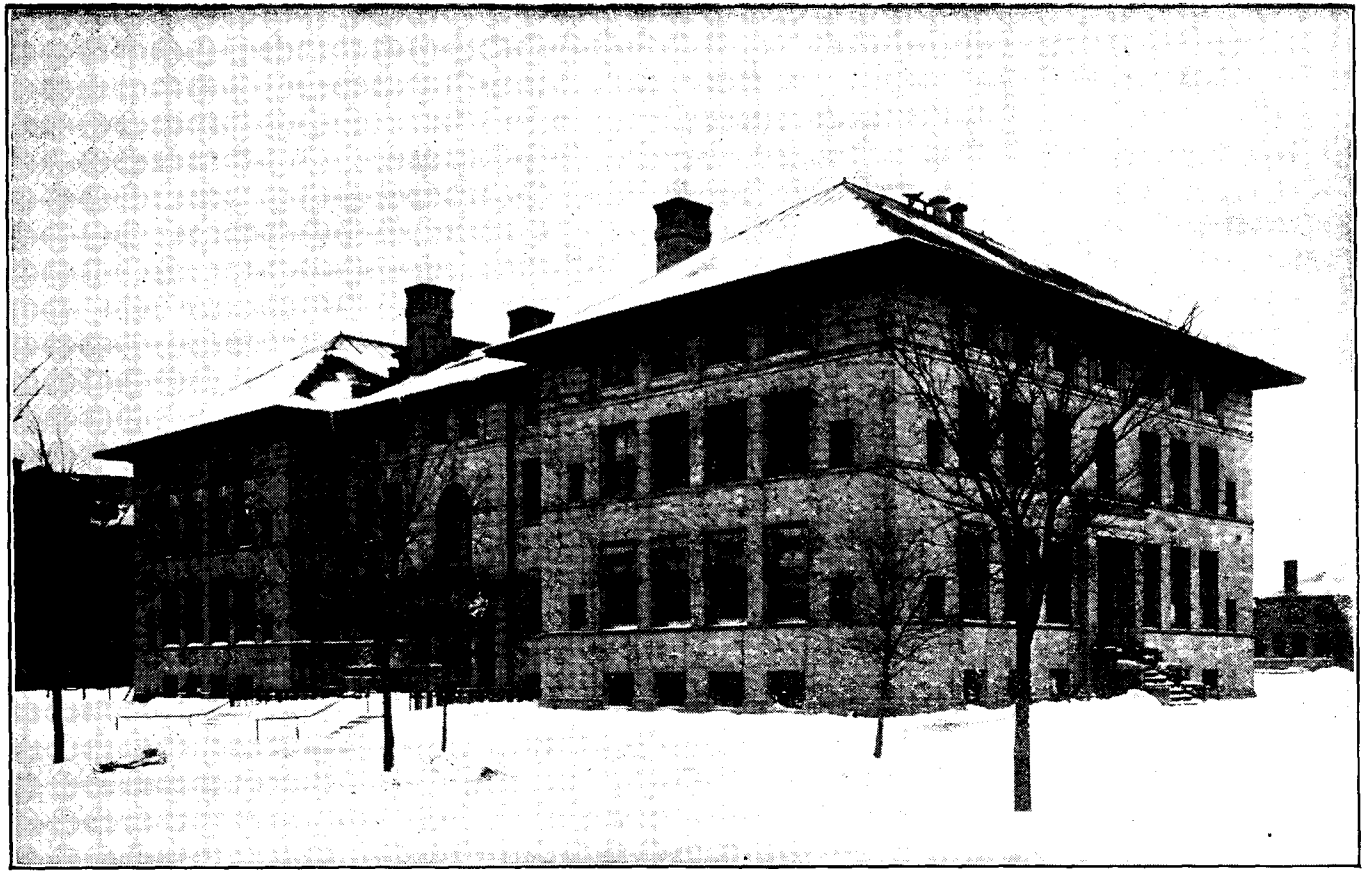
Seniors in the College of Science, Literature and the Arts and in other colleges, who contemplate entering the College of Medicine and Surgery, are permitted to elect courses in Anatomy, Histology and Embryology, Physiology and Chemistry in this college in lieu of similar science courses in the College of Science, Literature and the Arts or in other colleges. Since the medical practice act of this state requires full four years of medical study, these students must elect this work in the College of Medicine and Surgery, in order that it may be contributive toward the two degrees given in both colleges.

AFFILIATION WITH OTHER COLLEGES.

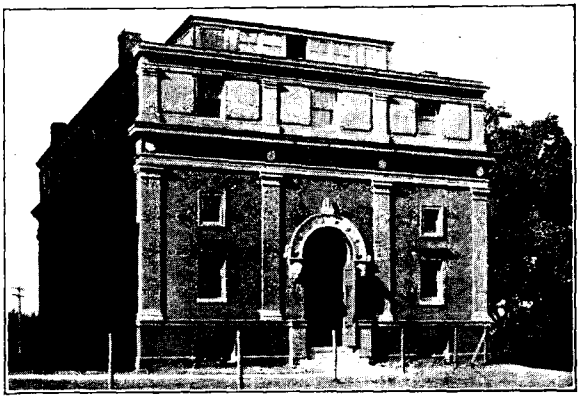
Carleton College has entered into an arrangement with the University of Minnesota whereby students from Carleton who have completed three full years' work without conditions and who have also met all the requirements for admission to the College of Medicine and Surgery may elect as the work of their Senior year the first year's work in the College of Medicine and Surgery, upon the satisfactory completion of which they will receive a bachelor's degree from Carleton College.

By this arrangement students from this college, having satisfactorily completed their four years' work in the College of Medicine and Surgery, will have received both degrees in a period of seven years.

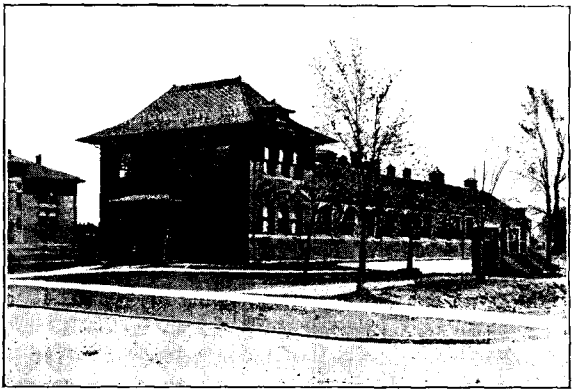
Opportunity is offered to other colleges meeting the University requirements to enter into similar relations of affiliation for the purpose of shortening the time whereby a student can secure both degrees.



Laboratory of Histology and Embryology — MEDICAL SCIENCE BUILDING — Laboratory of Physiology

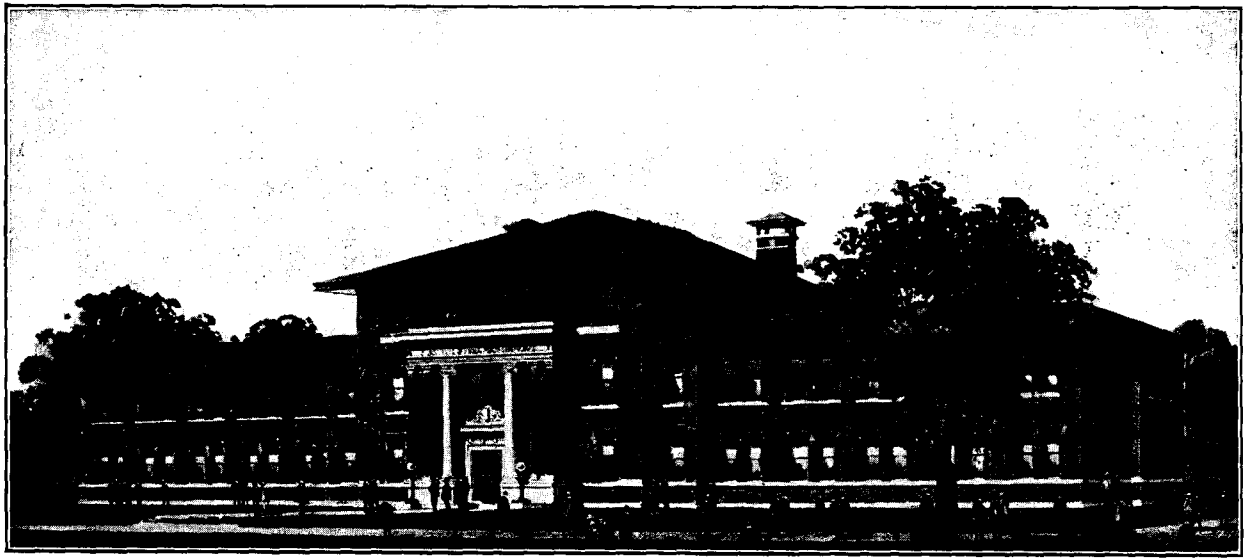


ANATOMY BUILDING



CHEMICAL LABORATORY

BOARD OF HEALTH BUILDING



INSTITUTE OF PUBLIC HEALTH AND PATHOLOGY

Courses of Instruction

DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY.

OFFICERS OF INSTRUCTION.

THOMAS GEORGE LEE, B. S., M. D., *Professor Histology and Embryology.*
WINFIELD S. NICKERSON, Sc. D., M. D., *Assistant Professor of Histology.*
MARGARET L. NICKERSON, A. M., M. D., *Instructor in Histology.*
ERNEST V. SMITH, *Assistant in Histology.*
JARL FERDINAND LEMSTROM, Ph. K., *Assistant in Micro-Technique.*
AMOS S. WELLS, A. B., D. D. S., *Assistant in Dental Histology.*
FREDERICK HAROLD POPPE, B. A., *Assistant in Dental Histology.*
Departmental Laboratory Assistants: Henry Theodore Foshager, B. S., Martin Oyen, Mathias Sundt, B. A., Charles Stewart Sutton, B. A.

This department occupies the entire north wing and center of the Medical Science Building, and includes two general laboratories, each 44 x 72 feet, which are finely lighted by windows on three sides and part of the fourth. These laboratories provide for the general courses in histology, microscopic anatomy, neurology, embryology, micro-technique. Each student is provided with a sink, gas, electric light, copper heating table, microscope locker and microscope, and a locker for the storage of apparatus and material. Several smaller laboratories are provided for special, elective and other courses; in addition there are preparation rooms, store rooms, animal rooms, rooms for experimental work in histology and embryology, for reconstruction, chemical, photographic and photomicrographic work.

A departmental library which contains a carefully selected collection of reference literature, both standard and periodical. In addition to the laboratory library, the other libraries of the University, together with the Public libraries of Minneapolis and St. Paul, afford the students access to almost all the important literature relating to the work in this department.

These laboratories are equipped with Leitz' microscopes, each fitted with nose-piece and Abbe condenser; various forms of microtomes, such as freezing, Thoma, Minot, Schanze, etc., injection apparatus, aquaria, thermostats, incubators, water baths, chemical hoods, a great variety of technical glassware, Grubler's stains, a set of His' wax models, photomicrographic and reconstruction apparatus, charts, reference cabinets containing carefully selected slides, a large collection of hardened histological and embryological material with an abundant supply of fresh tissues.

The courses are made as practical as possible, beginning with the technique of the microscope, followed by the preparation of permanent specimens. In addition, there is a valuable loan collection of several thousand specially prepared histological slides and a large number of series of mammalian and other embryos, sufficient to provide each student with several complete series of various ages and different planes for study. These collections are being constantly increased and are of sufficient value to have warranted the construction of a fire-proof vault 15x17 feet, for their preservation.

During the two years' course the student will acquire a valuable collection of slides of his own preparation illustrating the structure and development of the human body.

The course is illustrated by charts and lantern-slides of histological and embryological specimens. Demonstrations are given under the microscope of typical sections of tissues and organs, accompanied by camera lucida drawings, or photomicrographs, with explanatory text.

All students are recommended to purchase a microscope at the beginning of their medical course. This instrument is an indispensable part of the outfit of a well-trained physician. Suitable microscopes can be purchased at from $50 to $60, which may be fitted at any time with such other parts as may be desired.

Students not owning microscopes will be furnished with instruments at a rental fee.

Course I. General morphology and histology.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. The course includes the structure and manipulation of the microscope; the structure and properties of the protoplasm; the cell, its structure; cell division and reproduction leading to the consideration of the elements of structure in the vertebrata. A comparative study of the histology of the blood, of the epithelial, connective, muscular and nervous tissues and of the vascular and lymphatic systems of man and the vertebrata. Lectures, etc., 6 hours a week. Laboratory work, 18 hours a week, first half, first semester, first year.

Course II. Elements of vertebrate embryology and histogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. A comparative study of reproduction; the ovum, the spermatozoon, fertilization, cleavage, formation of blastodermic layers, the formation of the embryo, foetal envelopes, etc., with practical work on chick and mammalian frog embryos. The differentiation and histogenesis of the tissues, etc. Lectures, etc., 6 hours a week; laboratory work, 18 hours a week, first semester, first year. Open to those who have completed course I.

Course III. Microscopic anatomy of man and vertebrates.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. Advanced methods of histological technique, with practical laboratory work. The comparative study of the morphology, microscopic anatomy, origin and development of the various organs of the integumentary, alimentary, respiratory and uro-genital systems, etc. Lectures, etc., 6 hours a week; laboratory work, 18 hours a week. First semester, first year. Open to those who have completed course I in histology and embryology.

Course IV. Vertebrate neurology and neurogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. A comparative study of the morphology, microscopic anatomy, origin tention is given to food adulterations, and to food preservations, and development of the central, peripheral and sympathetic nervous systems and the organs of special sense. Lectures, etc., 6 hours a week; laboratory, 18 hours a week. First half, second semester, second year.

Course V. Human embryology and organogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
A comparative study of human mammalian embryos, including impregnation, segementation, and implantation of the ovum; the formation, structure and relationships of the placenta and foetal envelopes; the details of organogenesis, etc., studied in a practical manner upon a very large collection of serial sections of human and mammalian embryos, cut in various planes and representing all phases of development. Lectures, etc., 6 hours a week, laboratory, 18 hours a week. First half, second semester, second year.

Course VI. Dental histology and embryology.
Professor Lee, Drs. M. L. Nickerson and A. S. Wells.
A course modified from I., III. *and* V. especially arranged for and open only to Dental students. Lectures, recitations and laboratory work; the structure and histogenesis of the tissues and organs; the structure and development of the teeth and jaws, the mouth cavity and glands. Lectures, etc., 6 hours, laboratory 12 hours per week. Second half, first semester, first year.

ELECTIVE AND GRADUATE COURSES.

The following elective courses are open to a limited number of properly qualified third and fourth-year students, and to graduates. These courses will consist of laboratory work, lectures, demonstrations and prescribed courses of reading, and will be made as practical as possible, being planned with special reference to their application to internal medicine, surgery, obstetrics and the specialities.

For dates see schedule and for details of courses consult Professor Lee.

Course VI. Methods of microscopical technique. *Professor Lee.*
The preparation and use of the various solutions employed in fixing, hardening and staining. Methods of embedding, sectioning, reconstruction, etc.

Course VII. Comparative histology and histogenesis of the tissues of man and vertebrates. ***Professor Lee, Assistant Professor Nickerson, Dr. M. L. Nickerson.***
(a) The cell, spermatogenesis and ovogenesis.
(b) The epithelial, connective and muscular tissues.
(c) The nervous tissues.
(d) Blood and lymph.

Course VIII. Microscopic anatomy and organogenesis of man and vertebrates. ***Professor Lee, Assistant Professor Nickerson, Dr. M. L. Nickerson.***
(a) The digestive system.
(b) The respiratory system.
(c) The cutaneous system.
(d) The uro-genital system.

Course IX. Comparative histology and development of central nervous system and special sense organs. *Professor Lee*

Course X. The animal parasites of man. *Assistant Professor Nickerson.*
The general outlines of the morphology and classification of the different groups which contain members parasitic upon man, with special consideration of each species of medical importance, including its distribution, life history, methods of infection, means for diagnosis, and the chief symptoms produced by it. The course is illustrated by the study of many specimens, charts, lantern slides, etc.
Open to third and fourth year students. Second half, second semester.

Course XI. Comparative embryology of man and vertebrates. *Professor Lee.*
A study of special problems in vertebrate development.

Course XII. Research work in histology and embryology ***Professor Lee.***
Every facility in the way of apparatus, material, literature and private rooms for study will be offered those who desire to take up any original investigation in vertebrate histology and embryology, human or comparative.

The following text and reference books should be consulted:

Histology. Wilson's The Cell; Bohm-Davidoff-Huber's Histology; Stohr's Histology; Bailey's Histology; Piersol's Histology; Ferguson's Histology; Szymonowicz-MacCullum's Histology; Sobotta-Huber's Atlas; Klein's Histology; Mann's Histology; Lee's Vade Mecum; Kolliker's Gewebelehre; Oppel's Microskopishchen Anatomie; Duval's Histologie; Ranvier's Histologie.

Embryology. Minot's Human Embryology; Minot's Laboratory text books; Hertwig-Mark's Embryology; McMurrich's Embryology; Heisler's Embryology; Marshall's Embryology; Kolliker's Embryologie; Schultze's Embryologie; Kollman's Embryologie; Schenk's Embryologie; Reese's Embryology.

Neurology. Barker's Nervous System; Edinger's Vorlesungen; Lectures Nervous System; Gordinier's Nervous System; Van Gehuchten's System Nerveux; Kolliker's Gewebelehre; Obersteiner; Sabin's Atlas.

DEPARTMENT OF ANATOMY.

OFFICERS OF INSTRUCTION.

CHARLES A. ERDMAN, M. D., *Professor of Anatomy.*
HARRY K. READ, M. D., *Demonstrator of Anatomy.*
EARLE H. HARE, M. D., *Prosector of Anatomy.*
C. C. TYRELL, B. A., *Assistant in Anatomy.*
E. E. HEMINWAY, Ph. D., *Assistant in Anatomy.*

ANATOMY.

The department of anatomy occupies a separate building, adapted to its work and equipped with the best modern appliances. It includes two large students' dissecting rooms, the general laboratories of anatomy, a bone laboratory for bone research work, the offices of the professor and demonstrator of anatomy, preparation rooms and morgue. An ample supply of dissecting material is provided.

In the first year the subjects of osteology and syndesmology are pursued by

means of lectures, laboratory demonstrations and recitations from the specimen.

The bones of a human skeleton are loaned to the student for purposes of study and recitation.

Myology, angiology and splanchnology are studied in connection with the dissection and laboratory demonstrations of the thoracic, abdominal and pelvic viscera upon the lower animal. This is followed by the dissection of one-half of the human body.

In the second year the alimentary canal, respiratory tract, genito-urinary system, organs of special sense and the cerebro-spinal nervous system are pursued by means of lectures, recitations and laboratory demonstrations. The dissection of the human body is completed and followed by a series of lectures and demonstrations on descriptive and surgical anatomy.

The student dissects in the first semester of the first year and in the first half of the second semester of the second year, recites upon the subject and observes demonstrations made by a corps of assistants under the direction of the demonstrator of anatomy.

Dissection is supplemented by drawings from dissections, made upon outlines of the human skeleton, which are furnished to the student.

In the third year the student takes up the study of the human body from a topographical and surgical standpoint and is given a thorough review of the surgical regions, emphasizing the practical points in the relations, structure and distribution of the nervous system.

Course I. Osteology.
Lectures and recitations upon the human skeleton and supplementary work on the osteology of domestic mammals: 12 hours each week, for 5 weeks of first semester. Practical study of the skeleton, followed by recitations from the specimen, taken by the class, first semester. Required of all first year students.

Course II. Syndesmology.
Lectures, recitations and laboratory demonstrations, 12 hours each week, for 2 weeks first semester, first year. Open to those who have taken course I.

Course III. Myology and Angiology.
Lectures and recitations, covering the entire muscular and arterial systems of the human body, with a supplementary study of comparative myology. Laboratory work consists in the dissection and identification of the muscles of the human body and the study of their nerve and blood supply, as well as their action.

Course IV. Splanchnology. *Professor Erdmann, Dr. Read and Dr. Hare.*
Lectures and laboratory work in dissecting and demonstrating the thoracic, abdominal and pelvic viscera. First semester of the first year and first half of second semester of the second year.
Recitations upon the subjects of the first year's work, conducted in sections.

Course V. The nervous system. *Professor Erdmann.*
Cerebro-spinal axis and its membranes; the cranial and spinal nerves; the sympathetic nervous system, and the special-sense organs. Lectures, recitations and dissections of the brain, 5 hours each week, for 4 weeks, first half, second semester, second year.

Course VI. Dissections. *Drs. H. K. Read, E. R. Hare and Professor Erdmann.*
This work extends over a period of 9 weeks, in the first semester of the first year, and 9 weeks in the first half of the second semester of the second year, occupying with the lecture course the half days of this period each week. The method of work follows that laid down in Holden's Manual of Dissections.
The second year lecture and dissecting courses are open to those having completed the first year's work in anatomy and histology.
Daily recitations, upon the subjects of the second year's course, conducted in the laboratory.

Course VII. Surgical anatomy. *Professor Erdmann*
The instruction consists of dissections, demonstrating the relations of structures composing the surgical regions of the body; demonstrations, upon the living subject, showing the anatomical and surgical landmarks and their applications; also the location, by surface tracings, of the viscera contained in the various cavities and of the important arteries, veins and nerves; 3 hours a week, second half, second semester. Required of third year students.

Course VIII. Applied anatomy of the nervous system.
Elective.

Opportunity is afforded for advanced work in practical anatomy at any time during the college year.

The following text-books should be consulted:

Anatomy. Cunningham, Morris', Gray, Spalteholtz Atlas, Barker's Laboratory Manual, Holden's Practical Anatomy, Erdmann's Manual of Dissection, Treve's Applied Anatomy, Barker's Anatomy of the Nervous System.

Collateral Readings. Quain's Anatomy, Gerrish's Anatomy. Flower's Osteology of Mammals, Gegenbauer's Elements of Comparative Anatomy; Chauveau's Comparative Anatomy, Wiedersheim's Elements of Comparative Anatomy, McClellan's Regional Anatomy, Deaver's Surgical Anatomy; Edinger's Anatomy of the Nervous System, Hildebrand's Chirurgisch Topographise Anatomie.

DEPARTMENT OF PHYSIOLOGY.

OFFICERS OF INSTRUCTION.

RICHARD OLDING BEARD, M. D., *Professor of Physiology.*

M. RUSSEL WILCOX, M. D., *Demonstrator of Physiology.*

GEORGE D. HAGGARD, M. D., *Instructor in Physiology.*

COURSES OF INSTRUCTION.

The department of physiology occupies rooms in the laboratory of medical sciences, including the laboratory of experimental physiology, the laboratory of physiologic chemistry, a demonstration and recitation room, the laboratory library and the office of the professor in this branch. A large amphitheatre, adapted to the demonstration of major experiments, immediately adjoins the physiologic laboratories and is used, also, for lecture purposes by this and other chairs.

In the basement of the laboratory of medical sciences, the chair maintains large and well-equipped animal rooms, which are furnished with a large aquarium, frog tanks, animal enclosures and breeding cages. From this animal room are furnished supplies of material and animals for the work in experimental physiology, physiologic chemistry, histology, embryology, pathology and bacteriology. The hygienic conditions of the room are studied carefully, with a view to maintaining the physiologic and structural integrity of its animal occupants as perfectly as possible.

The physiologic laboratories are equipped with a full supply of apparatus, instruments, etc., for experimental purposes, and for the work in physiologic chemistry. Their outfit includes vivisection instruments, artificial respiratory machines, batteries, Du Boise-Reymond coils, galvanometers, rheostats, Despretz signals, moist muscle chambers, kymographions, spring myograph, stethometer, stethoscopes, phonendoscopes, Dudgeon's and Marey's sphygmographs, cardiographs, Runne's chronograph, Roy's tonometer, Gaskell's clamp, oncometers, hæmometers, hæmoglobinometers, hæmatocrits, plethysmograph, ergograph, etc., etc. They are furnished with motor power for the operation of recording apparatus and for the manufacture of apparatus in the laboratory workshop.

The laboratory manufactures its own apparatus in almost every line of work.

The course in physiology is graded in the first and second years. In the first year, the student hears lectures, recites and attends demonstrations and practical exercises in general physiology. These embrace the discussion, and, so far as possible, the observation of the physiologic, ingredients of the animal body; the study of the physiology of cell-life, of the fundamental properties of the cell, of the nutritive media, blood, lymph and chyle; of the elementary functions of nervous system; of the muscular tissues, the connective tissues and the epithelial tissues; of the vascular mechanism; of the alimentary canal; of the organs of secretion, respiration, excretion, and metabolism.

In the second year, the work is as practical as possible and includes the study of advanced physiology, dealing in particular, with the subjects of nutrition, the physiology of development, and the functions of the central and peripheral nervous system. Twelve hours each week, during the first half of the first semester, are occupied in laboratory work in physiologic chemistry. This course affords the student a practical knowledge of the tissues and fluids of the body from a chemical standpoint. It embraces studies in the several classes of proteids, in fats, carbohydrates, bone, muscle, blood, milk, the digestive fluids, glycogen, etc.

A similar number of hours during the second half of the first semester are devoted to experimental physiology. For this work the class is divided into sections and the instruction is individualized so far as possible. The student is familiarized with physiologic apparatus and its uses, with forms of electrical stimulation and with methods of experimentation, while his knowledge of

physiologic principles is strengthened by the observation of functional facts. Demonstrative work is combined with the individual experiments performed by the pupil.

A laboratory reference library is accessible to the students for collateral reading.

Course I. General physiology. *Professor Beard.*

Lectures, recitations and demonstrations, dealing with the physiologic chemistry of the human body; the physiologic properties of the cell; the nutritive media; the nervous mechanisms in general; the muscular tissues, the connective tissues and the epithelial tissues, as the structural bases of the animal body. Twelve hours a week, first half second semester, first year.

Course II. Systemic physiology. *Professor Beard.*

Lectures, recitations, demonstrations and practical exercises. This course includes the physiology of the vascular system; the digestive system; the respiratory system; the secretory and excretory systems; and metabolism. Twelve hours a week, second half second semester, first year. Open to those who have completed course I.

Recitations upon the subject of the first year are conducted in sections of the class. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Course III. Advanced physiology. *Professor Beard.*

Lectures, recitations and demonstrations. The course includes the discussion of the subjects of nutrition; of reproduction; of the physiologic changes incident to successive periods of life, and of the functions of the nervous system, six hours a week, first semester, second year. Open to those who have completed the courses in physiology of the first year.

Recitations upon the subjects of this course are conducted in sections of the class. *Professor Beard and Drs. Wilcox and Haggard.*

Course IV. Physiologic chemistry and microscopy. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle and bone; of gastric juice, saliva, pancreatic juice and bile in their respective digestions; of glycogen, and of blood, lymph, chyle and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumeration of the blood cells, in the estimation of hæmoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood, in the determination of blood tests, etc. Twelve hours a week, first half of first semester, second year. Open to those who have completed courses I and II.

Course V. Experimental physiology. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Laboratory work and demonstrations. A study of physiologic apparatus, electrical stimuli and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of the sphygmograph, the stethoscope, phonendoscope, etc. Six hours a week, second half of first semester, second year. Open to those who have completed course IV.

Text-Books:

First and second years—

Howell's American Text-Book of Physiology.
Foster's Physiology, sixth edition.
Simon's Physiologic Chemistry.
Waller's Human Physiology.

Collateral Reading—Landois and Stirling's Handbook of Physiology; Chapman's Physiology; Stewart's Practical Physiology; Blyth's Foods; Raymond's Physiology; Kirk's Physiology; Hutchinson's Dietetics.

DEPARTMENT OF CHEMISTRY.

GEORGE B. FRANKFORTER, A. M., Ph. D., *Dean of the School of Chemistry, Professor of Chemistry.*

CHAS. F. SIDENER, B. S., *Professor of Chemistry.*

HERBERT C. CAREL, B. S., *Professor of Chemistry.*

EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry.*

EVERHART P. HARDING, M. S., Ph. D., *Assistant Professor of Chemistry.*

IRA HARRIS DERBY, B. S., *Demonstrator in Chemistry.*

LILLIAN COHEN, M. S., *Instructor in Chemistry.*

ALBERT D. WILHOIT, B. A., *Instructor in Chemistry.*

RODNEY WEST, B. A., *Instructor in Chemistry.*

HAROLD M. NEWTON, *Instructor in Chemistry.*

Chemistry is taught to the medical and all other students of the University in the School of Chemistry under the directorship of Dean Frankforter. The School of Chemistry is housed in two buildings.

The main building formerly known as Science Hall has been completetly remodeled to meet the needs of the department of chemistry. The building is 198 by 78 feet and consists of several large laboratories well equipped for a wide range of chemical work. The general laboratory is located on the first floor and is large enough to accomodate 350 students. The laboratory tables are arranged with cupboards, drawers and locks and supplied with gas and water. Connected with this laboratory by means of sliding windows, is a preparation room which is directly joined to the general store room. The remaining part of this floor is given to cloak rooms, furnace and motor rooms, and a large lecture room with a gallery designed to comfortably seat 350 students. The qualitative laboratory, located on the second floor, is arranged with tables similar to those of the general laboratory and will accomodate 250 students. The library and three technical laboratories are likewise on this floor. The third floor contains the quantitative laboratory large enough to accommodate 120 students. Directly connected with this laboratory are the balance, preparation, evaporation and drying rooms. There are also on this floor, six special laboratories, an organic laboratory, a physical laboratory, a lecture room and a museum. There is a suite of rooms on the fourth floor entirely given to photography.

Library. The chemical library contains complete sets of many of the more important journals. It contains besides these special sets, a well represented list of analytical and technical works, as well as many rare old works of great historical value. Most of the important journals are taken, thus enabling the student to keep abreast of the times. All books are easily accessible, with only the necessary restrictions to guard against injury and loss.

The second building which is one of the units of the medical quadrangle, contains two large laboratories with a combined floor space of 3,800 sq. ft., a smaller laboratory equipped to accomodate students in quantitative analysis, a lecture room, a preparation room, balance room, store rooms and the private laboratories of the instructors.

COURSES IN CHEMISTRY.

Course I. General Chemistry. PROFESSOR FRANKFORTER.

Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals and their more important compounds, with an introduction to organic chemistry.

Course II. Advanced Inorganic Chemistry.

PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.

This course is arranged for those who have already had an elementary course in chemistry. The course includes an introduction to physical chemistry with special reference to the laws of solutions and electrolytic dissociation theory. This work is followed by a systematic study of the non-metals from the general standpoint of the periodic law. Special attention is given to the relationship between the different elements and their analogous compounds.

Course III. Inorganic Chemistry. (Continuation of Course II.)
PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.
This course consists of lectures, recitations and laboratory work on the metals.

Course IV. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON, AND MR. WILHOIT.
Lectures, recitations and laboratory work. The course includes the general reactions of the metals and the qualitative separation and identification.

Course V. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON, AND MR. WILHOIT.
Lectures, recitations and laboratory work. Reactions, separations and identifications of the acids.

Course VI. Organic Chemistry.
PROFESSOR FRANKFORTER AND MR. NEWTON.
This course includes a study of the different groups of carbon compounds with special reference to those groups which are closely associated with biological processes and bio-chemistry, bacteriological, pathological chemistry, physiology and materia medica. The course consists of lectures with frequent recitations and laboratory work. The laboratory preparation work included the making and studying of one or more compounds in each important organic group. Some time is devoted to practical organic analysis, including the analytical side of the alcohols and the sugar group.

Course VII. Toxicology and Hygiene.
PROFESSOR FRANKFORTER, PROFESSOR HARDING AND MR. NEWTON.
Toxicology.—This course includes the general methods for the separation and identification of the poisons both organic and inorganic. Attention will be given to the identification of poisons associated with medicines and with vegetable and animal matter. Besides this qualitative and quantitative work, attention is given to the structure of those organic groups of compounds which have poisonous properties.

Hygiene.—Chemistry lectures and laboratory work. This course includes the chemical analysis of air, water, and some of the common foods, milk sugar and fruit products. Special attention is given to food adulterations and to food preservations.

For work in other special or technical lines of chemistry, numerous courses are offered (see Bulletin of the School of Chemistry). Facilities for research work are also afforded in a large number of lines.

The analysis of the urine is dealt with under physiological chemistry in the department of Physiology, in the pathology of the urinary system in the Department of Pathology and in the clinical laboratories in connection with the microscopy of the urine.

DEPARTMENT OF MATERIA MEDICA AND THERAPEUTICS.

OFFICERS OF INSTRUCTION.

HENRY MARTYN BRACKEN, M. D., L. R. C. S. (Edin.), *Professor of Materia Medica and Therapeutics.*

WILLIAM H. CONDIT, B. S., M. D., *Instructor in Materia Medica.*

The work in materia medica and therapeutics is graded to cover a period of three years. It consists of lectures, recitations and demonstrations, conducted in the laboratory of materia medica. This laboratory is in Medical Hall. Pharmaceutical preparations are placed before the student and he is taught the method of their prepration in their most eligible forms.

Course I. Pharmacology. *Professor Bracken.*
This course includes the study of the general characteristics of drugs and of their physiologic actions. Lectures, recitations and laboratory work. Five hours a week, second semester, second year.

Course II. Therapeutics. *Professor Bracken.*

In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Other remedial measures than those depending upon drugs, are fully considered. Lectures and recitations, four hours a week, first semester, third year.

Course III. Therapeutics. *Professor Bracken.*

In this course the treatment of individual diseases is studied and the application of therapeutic agents to them is discussed. Lectures. Two hours a week, first semester, fourth year.

Text-Books:

Collateral Reading.—The Pharmacopeia of the U. S.; The National Dispensatory; Sayre's Organic Materia Medica and Pharmacognosy; Culbreth's Materia Medica and Pharmacology.

DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY.

OFFICERS OF INSTRUCTION.

F. F. WESBROOK, M. A., M. D., C. M., *Professor of Pathology and Bacteriology.*
teriology.

S. MARX WHITE, B. S., M. D., *Assistant Professor of Pathology and Bac*

HIBBERT WINSLOW HILL, M. D., *Assistant Professor of Bacteriology.*

L. B. WILSON, M. D., *Assistant Professor of Clinical Pathology.*

R. H. MULLIN, B. A., M. B., *Senior Demonstrator of Pathology and Bacteriology.*

J. L. ROTHROCK, A. M., M. D., *Clinical Instructor in Pathology.*

A. S. HAMILTON, B. S., M. D., *Instructor in the Pathology of the Nervous System.*

Hospital Laboratory Assistants:—E. L. Tuohy, B. A., M. D.; C. C. Pratt; Geo. N. Freeman, M. D.; Henry Goehrs, M. D.; Oliver M. Porter, M. D.; Nathan C. Bulkley; Lee A. Scace.

Departmental Laboratory Assistants:—John P. Schneider; Harry J. Bartron; Ed. Moren; R. A. Varco, B. A.; Earl H. Current; Thos. R. Martin, B. A., R. H. Labbitt; Carl O. Estrem, B. A.; J. P. Weyrens, B. S.

The Institute of Public Health and Pathology, to which attention has already been directed, provides adequate room and facilities for teaching and research in pathology, bacteriology and public health.

The main laboratory 56x75 feet lighted on three sides and by a skylight, is used for the general or required courses. It is divided into twelve loges, each fully and independently equipped in every detail for the use of six students, who are responsible for all equipment therein contained. Supplies are distributed from a supply room opening off the main laboratory. Books and specimens required in teaching are easily procurable from the museum which is connected by a special or private passageway with the main laboratory. A combined lecture and autopsy room opens both from the main laboratory and from the hall so that autopsies, lantern demonstrations or lectures may be given during the period devoted to the laboratory exercises without interference with the practical work.

A smaller laboratory, one-half the size of the main laboratory, is provided for special work in graduate and optional courses in the Diagnosis of Tumors, Pathology of the Nervous System, Practical Public Health, etc. The same loge arrangement obtains as in the main laboratory.

The hospitals of Minneapolis, St. Paul, Duluth, Rochester and St. Peter, Minn., in which members of the staff are working, afford a large supply of material and frequent opportunities for post-mortem examinations. From many institutions and physicians throughout the state, valuable and interesting gross and microscopic materials are received from time to time and are made available in the museum and for macroscopic and microscopic class use.

The State Board of Health laboratories for research and routine investigation are located in the Institute as well as a Pasteur Institute for the study and treatment of rabies. This affords an abundance of illustrative material for Public health, pathology and bacteriology.

A full equipment of microscopes permits of the rental of an instrument to each student, if he is unprovided with one suitable for his purpose.

Course I. General bacteriology.

Professor Wesbrook, Assistant Professor Hill and Dr. Mullin.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Bacterial activities concerned in sewage purification, etc., will receive attention. Twenty hours per week during the last eight weeks of the second semester, second year.

Course II. General pathology.

Professor Wesbrook, Dr. Mullin, Assistant Professor White, and Assistant Professor Hill.

Lectures, demonstrations and laboratory work on the general processes involved in disease, to include the study of inflammation, the degenerations and tumors. Twenty hours per week during the last eight weeks of the second semester, second year.

Course III. Pathology of special diseases (includes bacteriology).

Disease processes will be grouped, so far as practicable, according to their etiology. Instruction will be afforded by means of lectures, demonstrations of museum specimens and preparations, and laboratory work on materials secured from clinical cases and at autopsy.

The course will consist of instruction in

1. Pathology of infectious diseases.

(a) Special bacteriology of the infectious diseases with the cultivation on the various media of all the important pathogenic bacteria, sewn and kept under observation by each student. Fluids and tissues from clinical cases and autopsies (human and animal) will be supplied for microscopic and cultural examination and an intimate relationship with clinical pathological work maintained.

(b) Special pathology of the infectious diseases. Concurrently with the bacteriology and parasitology of each of the diseases, the pathology of each infection will be studied.

The important gross and microscopic lessons in all the organs will be illustrated from clinical and autopsy material, fresh and preserved, and supplemented by experimental work. Each student will be required to prepare and examine under the microscope selected fresh and stained specimens of morbid tissues, fluids, etc.

Professor Wesbrook, Assistant Professor White, Dr. Mullin.

2. Pathological diseases of toxic and obscure origin. Under this are included the special degenerations, inflammations and other pathological conditions not already included under infectious diseases.

Assistant Professor White, Dr. Mullin.

Sixteen hours per week throughout the first semester of the third year.

Course IV. *Assistant Professor White, Dr. Rothrock and Dr. Mullin.*

Autopsies and post-mortem technique. Students will have an opportunity of personally taking part in this work, under the direction of the pathologists in charge, in the hospitals of Minneapolis and St. Paul. A knowledge of the technique of post-mortem work and of morbid anatomy will be thus afforded. Throughout the third and fourth years.

Course V. *Special pathology of the nervous system.* *Dr. A. S. Hamilton.*

An elective course, limited to twenty-five students, in the fourth year.

So far as possible, the clinical history, autopsy notes, gross specimens and sections stained by various special methods will be presented of individual cases representing the principal organic diseases of the nervous system. Twelve hours per week, first four weeks, second semester, fourth year.

Course VI. *Assistant Professor White.*

Laboratory course on the microscopic study and diagnosis of tumors. (Elective for a limited number of students in fourth year.)

This course includes the comprehensive study of tumors, with the view of giving the student a knowledge of the methods employed in the laboratory diagnosis of this class of pathological conditions and familiarizing him with the characters of the commoner as well as the rarer types, special attention, however, being given to the latter. It is intended to supplement the course on the surgical pathology of tumors by Professor Stewart. Twelve hours per week, four weeks, second semester, fourth year.

Course VII. *Research work in one of the following lines:*

(a) General pathology.
(b) Special pathology and bacteriology and technique.

Second semester of third and throughout the fourth year, hours assigned.

Course VIII. *Surgical pathology.* *Professor Stewart.*

(See principles of surgery.) This course will consist of lectures and laboratory demonstrations and will cover the general subject of the pathological and bacteriological basis of surgery. The lectures will be illustrated by charts and diagrams, by fresh and preserved specimens and, so far as practicable, demonstrations will be given of the various processes of the bacteria concerned. Especial attention will be given to inflammation and its complications, to the infectious diseases of surgical importance and to tumors. Two hours a week, first semester, third year, and two hours per week, second semester, fourth year.

Text-Books:

Pathology—
American Text-Book of Pathology.
Ziegler's General and Special Pathology.
Schmaus-Ewing: Pathology and Pathological Anatomy.
Coplin's Manual of Pathology.
Cattell's Post-Mortem Pathology.
Durck-Hektoen: Special Pathologic Histology.
Jakob: Nervous System.
Coat's Manual of Pathology.
Mallory and Wright's Pathological Technique.

Collateral Reading—Hamilton's Text-Book of Pathology; Delafield and Prudden's Handbook of Pathological Anatomy and Histology; Woodhead's Practical Pathology; von Kahlden's Pathological Histology; Thoma's Text-Book of General Pathology; Lubarsch Ostertag, Ergebnisse der Pathologie u Anatomie; Orth, Pathologische Anatomie; Birch-Hirschfield, Pathologische Anatomie; Clifford Allbutt's System of Medicine; Leukhart's die Thierische Parisiten des Menschen; Bouchard, Traite de Pathologie Generale; Eichorst, Pathologie u Therapie; Gaylord and Aschoff, Pathological Histology; Nothnagel, Encyclopedia of Practical Medicine; Wood, Chemical and Microscopical Diagnosis.

Surgical Pathology—
Bland Sutton, Tumors, Innocent and Malignant.

Collateral Reading—Park's Surgery, Vol. 1; Warren's Surgical Pathology; Senn on Tumors; Bowlby's Surgical Pathology; Nancrede's Lectures upon the Principles of Surgery; Watson's Cheyne's Tuberculosis of Bones and Joints.

Bacteriology—
Muir and Ritchie's Manual of Bacteriology.
Park, Bacteriology in Medicine and Surgery.
Levy-Klemperer-Eshner Clinical Bacteriology.
Lehmann-Neumann-Weaver, Atlas and Textbook of Bacteriology.
Abbott, The Hygiene of Transmissible Diseases.

Collateral Reading—Kolle and Wassermann, Handbook der Pathologischen Mikroorganismen; Sternberg's Manual of Bacteriology; Woodhead's Bacteria and Their Products; Duflocq, Lecons sur les Bacteries Pathogenes; Flugge, de Mikroorganismen; Migula, System de Bakterien; Duclaux, Traite de Microbiologie; Hueppe (Jordan), Principles of Bacteriology; Novy; Laboratory Work in Bacteriology.

DEPARTMENT OF MEDICINE.

OFFICERS OF INSTRUCTION.

CHAS. LYMAN GREENE, M. D., *Professor of the Theory and Practice of Medicine.*

JOHN W. BELL, M. D., *Emeritus, Professor of Physical Diagnosis and Clinical Medicine.*

EVERTON J. ABBOTT, A. B., M. D., *Clinical Professor of Medicine and Chief of Medical Clinic, Minneapolis.*

CHARLES H. HUNTER, A. M., M. D., *Clinical Professor of Medicine and Chief of the Medical Clinic, Mineapolis.*

J. T. CHRISTISON, M. D., *Clinical Professor of Diseases of Children.*

GEO. D. HEAD, B. S., M. D., *Professor of Clinical Microscopy and Clinical Medicine.*

L. A. NIPPERT, M. D., *Clinical Professor of Medicine.*

C. NOOTNAGEL, M. D., *Clinical Professor of Medicine and Physical Diagnosis.*

THOMAS S. ROBERTS, M. D., *Professor of Diseases of Children.*

GEO. E. SENKLER, M. D., *Clinical Professor of Medicine.*

HENRY L. STAPLES, A. M., M. D., *Clinical Professor of Medicine.*

J. G. CROSS, M. D., *Instructor in Clinical Medicine.*

PEDER A. HOFF, M. D., *Clinical Instructor in Medicine.*

WALTER R. RAMSEY, M. D., *Clinical Instructor Diseases of Children.*

SOREN P. REES, B. S., M. D., *Clinical Instructor in Medicine.*

H. L. ULRICH, M. D., *Instructor in Clinical Microscopy.*

ASSISTANTS IN MEDICINE.

L. O. DART, M. D., *Clinical Assistant in Medicine.*

JAS. S. GILFILLAN, M. D., *Clinical Assistant in Medicine.*

E. K. GREEN, A. B., M. D., *Clinical Assistant in Medicine.*

ALEX. R. HALL, M. D., *Clinical Assistant in Medicine.*

JOHN E. HYNES, M. D., *Clinical Assistant in Medicine.*

W. D. SHELDON, M. D., *Clinical Assistant in Medicine.*

THOMAS W. STUMM, M. D., *Clinical Assistant in Medicine.*

GENERAL MEDICINE.

JUNIOR YEAR.

Course I. Case-taking and general symptomatology.
Three times a week, first half of first semester.
(a) Lectures and recitations. *Professor Greene.*
(b) Practical clinical exercises at University Clinical Building and St. Paul Free Dispensary.

Course II. Physical Diagnosis.
(a) Lectures and recitations second half first semester, three times weekly. *Professor Greene.*
(b) Clinical exercises throughout the junior year at the hospitals and dispensaries of Minneapolis and St. Paul.
Professors C. Nootnagel and G. A. Senkler.

This course includes:
(a) The thorax, its topography and the methods of examination applied to both the normal and abnormal chest.
(b) The cardiac region, its topography and methods of examination.
(c) The lungs and pleura in health and disease.
(d) The abdominal organs, including both general and special methods of examination, i. e., examination of stomach contents, practical urinary examination, etc.

In this course especial attention is given to the study of the normal as well as the abnormal chest and abdomen, and, wherever possible, opportunity is given the student to personally examine cases and watch their progress and termination.

Course IIII. Three hours a week, second semester. *Professor Greene.*
(a) Systematic lectures, case analyses and quizzes on the diseases of the heart and blood vessels.
(b) Diseases of the lung and pleura.
(c) Diseases of the kidney.

Course III.
(b) Practical clinical exercises in the form of clinical lectures and work in small sections in the wards of the various hospitals and St. Paul Free Dispensary, twice weekly, and in the University Dispensary daily throughout the whole semester.

Course IV. Acute infections diseases.
Work in small sections in the city hospitals of Minneapolis and St. Paul, twice weekly (in St. Paul after January 1st).

SENIOR YEAR.

Course V. Systematic lectures, case analyses and recitations. Twice weekly.
Covering the acute infectious diseases. *Professor Greene.*
In this connection special attention is given to the so-called tropical diseases, at the present day important because of our territorial extension.

Course VI. Clinical exercises at the City Hospitals of the Twin Cities.
Correlated with the instruction given in course v. Minneapolis City Hospital throughout the year. St. Paul City Hospital after January 1st, each year.

Course VII.
(a) Diseases of the blood and ductless glands. Systematic lectures, case analyses and recitations, second half of second semester, twice weekly. *Professor Greene.*
(b) Special instruction in sections at the hospitals and dispensaries, correlated with the course as given above.

Course VIII.
(a) Diseases of the stomach, liver and intestines. Systematic lectures and recitations twice weekly. *Professor Greene.*
(b) Special clinical work in sections correlated with course given above.

and amphitheaters of the several hospitals and dispensaries of Minneapolis and the most part to small sections of the Junior and Senior classes in the wards

The Clinical Courses I b, II b, III b, IV, VI, VII b, and VIII b, are given for St. Paul, as follows:

(a) City Hospital, Minneapolis, two hours a week, both years. Professors J. W. Bell, H. L. Staples and C. Nootnagel, Dr. L. A. Nippert and Dr. S. P. Rees. One hour a week, senior year. Dr. Geo. D. Head and Dr. Marx White, and Dr. W. D. Sheldon.

(b) St. Barnabas' Hospital, Minneapolis, two hours a week, both years. Professor C. H. Hunter.

(c) City and County Hospital, St. Paul, and St. Joseph's Hospital, St. Paul, four hours a week, for part both years. Professor E. J. Abbott.

(d) City and County Hospital, St. Paul, two hours a week, both years. Professor C. L. Greene and Dr. Senkler.

(e) Free Dispensary, St. Paul, two hours a week, both years. Professor C. L. Greene and Drs. Senkler, Ramsey and Hoff.

(f) University Clinical Building, Minneapolis, four hours a week, both years. Dr. L. A. Nippert, Dr. Geo. D. Head.

Course IX. General Clinical Course.

In addition to the courses above named, clinical lectures are given twice weekly to both junior and senior classes. At each are shown cases of unusual interest and importance. The section work throughout the two years is exceptionally valuable by reason of the small size of the sections, every effort being made to bring the student closely in touch with the teacher and patient.

Course X. Case analysis.

Throughout both the junior and senior year special attention is given to the analysis of actual cases illustrating those portions of the courses that have been dealt with in the lecture room or in the clinical lectures, students being this way compelled to apply practically such knowledge as they have gained and not only make a diagnosis but go thoroughly into the analysis and bearing of general symptomatology. The older method of simple quizzing in connection with lecture work has been so far as possible abandoned. Exercises throughout the year.

Professor Greene and Clinical Instructor Hoff.

Text and Reference Books—*Practice of Medicine:* Osler's Practice; Tyson's Practice; Thompson's Practical Medicine; Ander's Practice. *Physical Diagnosis and Clinical Methods:* Greene's Medical Diagnosis; Butler's Diagnosis; Sahli's Diagnostic Methods; Cabot's Diagnosis; Musser's Diagnosis; Hare's Diagnosis; Bramwell's Practical Medicine; Cabot's Medical Cases; Hutchinson and Rainey's Clinical Methods. *Collateral Reading:* Cabot on the Blood; Du Costa on the Blood; Hemmeter's Diseases of the Stomach; Bons' Diseases of the Stomach; Allbutt's System of Medicine; American Text Book of Medicine; Gibson's Practice; Gibson on Diseases of the Heart and Aorta; Babcock on Diseases of the Heart; Ebstein and Schwalbe, Handbuch der Praktischen Medizen.

DISEASES OF CHILDREN.

Course I. Lectures, arranged to cover, so far as possible, the general subject of pediatrics. A course, consisting of two lectures a week, in the second semester of the third year; beginning with a consideration of the special characteristics of the normal infant and child, as distinguished from the adult, and passing on to a detailed description of the features and management of the diseases peculiar to infancy and childhood and of the more or less specialized forms in which certain diseases common to all ages exist during the early years of life. These lectures will be suitably illustrated by charts, colored plates, specimens, and the occasional use of the stereopticon. Third year. *Professor T. S. Roberts.*

Course II. Clinical instruction will be given at the St. Paul Free Dispensary and the St. Paul City Hospital four hours weekly throughout the third and fourth years.

Professors J. T. Christison and Dr. Ramsey.

Course III. Clinical instruction will be given in Minneapolis at the contagious wards of the City Hospital, the Children's Home, the

University Free Dispensary and other specially designated places at such times as opportunity presents. Third and fourth years
Professor T. S. Roberts.

Text-Books:
Holt's Diseases of Children.
Rotch's Pediatrics.
American Text-Book of Diseases of Children.
Collateral Reading—Osler's Practice of Medicine; Keating's Cyclopedia of Diseases of Children; Corlett's Acute Infectious Exanthemata; Chapin's Theory and Practice of Infant Feeding; Stengel's Nothnagel's Encyclopedia.

DEPARTMENT OF SURGERY.

OFFICERS OF INSTRUCTION.

CHARLES A. WHEATON, M. D., *Emeritus Professor of Surgery.*
JAMES E. MOORE, M. D., *Professor of Surgery.*
FREDERICK A. DUNSMOOR, M. D., *Professor of Operative and Clinical Surgery.*
ARTHUR J. GILLETTE, M. D., *Professor of Orthopaedic Surgery.*
J. WARREN LITTLE, M. D., *Clinical Professor of Surgery.*
ARCHIBALD MCLAREN, A. B., M. D., *Clinical Professor of Surgery.*
H. J. O'BRIEN, M. D., *Clinical Professor of Surgery.*
JUSTUS OHAGE, M. D., *Clinical Professor of Surgery.*
JOHN ROGERS, M. D., *Clinical Professor of Surgery.*
J. CLARK STEWART, B. S., M. D., *Professor of Principles of Surgery.*
JOHN B. BRIMHALL, M. D., *Clinical Instructor in Orthopedic Surgery.*
A. R. COLVIN, M. D., *Clinical Instructor in Surgery.*
WARREN A. DENNIS, M. D., *Clinical Instructor in Surgery.*
JUDD GOODRICH, M. D. *Clinical Instructor in Surgery.*
ARTHUR A. LAW, M. D., *Instructor in Operative Surgery.*
ARTHUR T. MANN, B. S., M. D., *Clinical Instructor in Surgery.*
VAN H. WILCOX, M. D., *Instructor in Operative Surgery.*
R. E. FARR, M. D., *Assistant in Surgery.*
EMIL S. GEIST, M. D., *Clinical Assistant in Orthopaedia.*
ARCHA WILCOX, M. D., *Clinical Assistant in Surgery.*

COURSES OF INSTRUCTION.

The course in surgery is graded in the third and fourth years. Examinations are held at the close of each of these years. Lectures and recitations are given by the teaching staff in surgery and clinics at the dispensaries and hospitals of Minneapolis and St. Paul by a large corps of instructors.

Course I. The principles of surgery. *Professor Stewart.*
Inflammation; traumatic fevers, suppurations; acute inflammations of joints; ulceration, gangrene; thrombosis and embolism; septicaemia; pyaemia; erysipelas; tetanus; surgical tuberculosis; actinomycosis, anthrax and glanders. Lectures and recitations, two hours a week, first semester, third year.

Course II. Operative surgery. *Professor Dunsmoor.*
Lectures upon the principles of operative procedure; the preparation of patient, operator and operating rooms; the principles of asepsis, antisepsis and sterilization; anæsthesia and anæsthetics; hæmostasis, ligatures and sutures; dressings, bandages and the treatment of wounds. Two hours a week, first half, second semester, third year.

Course III. The practice of surgery. *Professor Moore.*
Fractures and dislocations; injuries of joints; injuries and surgical diseases of the skin; of the lymphatics, blood vessels and nerves; of the tendons, fasciae and bursae; of the face, mouth tongue, jaws (excepting the study of tumors). Lectures and recitations. Three hours a week, second semester, third year.

Course IV. The practice of surgery. *Professor Moore.*
Surgery of the head, neck, chest, back, breast, abdomen, including hernia, anus, rectum and urinary tract. Lectures and recitations. Three hours a week, first semester, fourth year.

Course V. Operative surgery. *Professor Dunsmoor and Dr. Law.*
An elective laboratory work, consisting of operations, performed by sections of the class, under the supervision of the instructors, upon the cadaver and upon animals. Six hours a week, first half of first semester, fourth year.

Course VI. Orthopedic surgery; including diseases of bones, joints, synoviæ and bursæ, congenital and acquired deformities; dystrophies, with the principles of treatment. Lectures and recitations. Three hours a week, second half, second semester, fourth year. *Professor Gillette.*

Course VII. Tumors. *Professor Stewart.*
A special course upon tumors, taking up the general pathology and the general principles of the treatment of tumors. Each variety of tumor is then discussed, together with its histology, life-history, diagnosis and treatment. The course is illustrated by charts and museum specimens and lantern slide demonstrations. Lectures and recitations, two hours a week, second semester, fourth year.

Course VIII. Bandaging and dressings. *Professor Dunsmoor and Dr. Law.*
A practical course of instruction, by means of demonstrations and drill upon animals and cadaver by the student in person, under the supervision of the chair of operative surgery. Eight hours, first half, first semester, fourth year.

Course IX. Clinical surgery.
Courses of clinics at which operations, in the whole domain of surgery, are witnessed by the students of the third and fourth years. These clinics are held in the dispensaries and hospitals of the cities of Minneapolis and St. Paul, upon Thursdays and Saturdays throughout the year. The classes alternate at the two cities in their attendance upon these clinics. They are conducted personally, throughout the year, by the clinical chiefs and their associates, as follows:

At the City and County Hospital, St. Joseph's Hospital or St. Luke's Hospital in St. Paul, weekly, by Professor John T. Rogers.

At the City and County Hospital, St. Joseph's Hospital, St. Luke's Hospital, or Free Dispensary, at St. Paul, with sections of class weekly, by Professor John T. Rogers, Dr. G. M. Coon, Professor A. J. Gillette, Dr. W. A. Dennis, Dr. Judd Goodrich and Dr. A. Colvin.

At the City and County Hospital, or at St. Joseph's Hospital, or at St. Luke's Hospital, St. Paul, weekly, by Professor Justus Ohage.

At the Northwestern Hospital, Minneapolis, weekly, by Professor J. E. Moore.

At the Asbury Hospital, Swedish Hospital or the City Hospital, Minneapolis, weekly, by Professor F. A. Dunsmoor, Dr. J. Warren Little.

At the City Hospital, Minneapolis, weekly, by Professor J. Clark Stewart, Dr. A. T. Mann.

At the University Free Dispensary, by Drs. Law, Mann and Condit.

Text-Books:
Rose and Carless.
International Text-Book of Surgery.
Warren's Surgical Pathology and Therapeutics.
Surgical Diagnosis, Berg.
Bryant's Operative Surgery.
Binnie's Operative Surgery.
Scudder on Fractures.
Collateral Reading—Von Bergmann's System of Surgery.
Moore's Orthopædic Surgery.
Bradford's and Lovett's Orthopædic Surgery.
Witman's Orthopædic Surgery.

DISPENSARY AND HOSPITAL CLINICS.

DEPARTMENT OF NERVOUS AND MENTAL DISEASES.

OFFICERS OF INSTRUCTION.

C. EUGENE RIGGS, A. M., M. D., *Professor of Nervous and Mental Diseases.*
W. A. JONES, M. D., *Clinical Professor of Nervous and Mental Diseases.*
A. W. DUNNING, M. D., *Clinical Instructor in Nervous and Mental Diseases.*
H. W. JONES, M. D., *Clinical Instructor in Nervous and Mental Diseases.*
CHARLES R. BALL, M. D., *Assistant in Nervous and Mental Diseases.*
A. E. LOBERG, M. D., *Clinical Assistant in Nervous and Mental Diseases.*

COURSES OF INSTRUCTION.

The required courses of lectures and recitations in this department will be given in the fourth year. Instruction will be by recitations and the "case method." Elective courses in clinical neurology, psychiatry, medical electricity and neuropathology will be offered in the fourth year.

Course I. Neurology. *Professors Riggs and Jones* (Alternating).
Lectures, recitations and demonstrations. Two hours a week, twelve weeks, first semester, fourth year.

Course II. Psychiatry. *Professors Riggs and Jones* (Alternating).
Lectures, recitations and demonstrations. Two hours a week, five weeks, first and second semesters, fourth year.

Course III. Electro-therapeutics (elective). *Dr. A. W. Dunning.*
Fourth year.

Course IV. Clinical neurology and psychiatry. *Professors Riggs and Jones.*
Practical instruction will be given upon Thursdays and Saturdays, fourth year. Clinics will be conducted in St. Paul, by Professor Riggs, at the City and County Hospital, St. Luke's Hospital, St. Joseph's Hospital and the Free Dispensary; and at Minneapolis by Professor Jones, at the City Hospital, Asbury Hospital, St. Mary's Hospital and the University Free Dispensary.

Text-Books:
Oppenheim's Diseases of the Nervous System.
Dana's Nervous Diseases.
Church-Peterson, Nervous and Mental Diseases.
Collins' Treatment of Nervous Diseases.
Brower and Bannister's Mental Diseases.
Berkeley's Mental Diseases.
Robertson, Pathology of Mental Diseases.
Collateral Reading—Clouston's Lectures on Mental Diseases; Edinger's Anatomy of the Central Nervous System; Gordinier's Anatomy of the Central Nervous System; Mills' Nervous Diseases; Gower's Diseases of the Nervous System; A. M. Starr's Organic Nervous Diseases.

DEPARTMENT OF SKIN, GENITO-URINARY, AND VENEREAL DISEASES.

OFFICERS OF INSTRUCTION.

MAX P. VANDER HORCK, M. D., *Professor of Diseases of the Skin and of the Genito-Urinary System.*
BURNSIDE FOSTER, A. B., M. D., *Clinical Professor of Diseases of the Skin.*
F. R. WRIGHT, M. D., *Clinical Instructor in Dermatology and Genito-Urinary Diseases.*
GEO. M. COON, M. D., *Clinical Instructor in Genito-Urinary Diseases.*
JOHN M. ARMSTRONG, M. D., *Clinical Assistant in Genito-Urinary Diseases.*
S. E. SWEITZER, M. D., *Clinical Assistant in Dermatology and Genito-Urinary Diseases.*

COURSES OF INSTRUCTION.

This subject is taught by lectures, recitations and clinical demonstrations.

Course I. *The anatomy and physiology of the skin;* diseases of the skin and its appendages; venereal and genito-urinary diseases. Two hours a week, second semester, fourth year.
Professor Vander Horck.

Course II. *Clinical lectures,* in connection with the dispensaries and hospitals of Minneapolis and St. Paul. Weekly in the third and fourth year.
Professors Vander Horck and Burnside Foster and Dr. F. R. Wright.

Text-Books:
Keyes' or White and Martin's Diseases of Urinary Organs.
Lydston's Genito-Urinary, Venereal and Sexual Diseases.
Hyde's Diseases of the Skin.
Walker's Dermatology.
Jackson's Diseases of the Skin.
Hyde and Montgomery's Venereal Diseases.
Collateral Reading—Crocker's Diseases of Skin; Morris' Diseases of the Skin; Hayden's Diseases of the Skin; Stelwagon's Diseases of the Skin; Taylor's Genito-Urinary and Venereal Diseases of the Skin.

DEPARTMENT OF DISEASES OF THE THROAT AND NOSE.

OFFICERS OF INSTRUCTION.

JACOB E. SCHADLE, M. D., *Professor of Rhinology and Laryngology.*
W. R. MURRAY, A. B., M. D., *Clinical Professor of Rhinology and Laryngology.*
R. A. CAMPBELL, M. D., *Instructor in Rhinology and Laryngology.*

COURSES OF INSTRUCTION.

Course I. *Anatomy and physiology of the nose and thoat;* pathology, diagnosis and treatment. *Professor Schadle.*
Lectures and recitations. Two hours a week, eight weeks, fourth year.

Course II. *Clincal instruction,* given at the University Free Dispensary, Minneapolis, in the diagnosis and treatment of diseases of the nose and throat; in the methods of examination; in the use of instruments, and in the application of remedies, etc. Five hours a week, both semesters, fourth year. *Drs. Murray and Campbell.*

Course III. Operative clinics will be held at Asbury or City Hospital, Minneapolis, every Saturday, third and fourth year. *Professor Murray.*

Course IV. Clinical instruction, given at the St. Paul Free Dispensary, in the diagnosis of diseases of the nose and throat; in the methods of examination; in the practical use of instruments and application of remedies; and in the applied anatomy of the nose and throat, illustrated by dry and wet preparations. Two hours a week, fourth year. *Professor Schadle.*

Text-Books:

Schadle's Outlines of Diseases of Nose and Throat.
Coakley's Diseases of the Nose and Throat.
Grayson's Diseases of the Nose and Throat.
Collateral Reading—Bosworth's Diseases of the Nose and Throat; Posey and Wright's Diseases of the Ear, Nose and Throat; and Kyle's Diseases of the Nose and Throat.

DEPARTMENT OF GYNECOLOGY.

OFFICERS OF INSTRUCTION.

ALEX. J. STONE, LL. D., M. D., *Professor of Diseases of Women.*
AMOS W. ABBOTT, M. D., *Clinical Professor of Diseases of Women.*
J. L. ROTHROCK, A. M., M. D., *Clinical Professor of Diseases of Women.*
ARTHUR E. BENJAMIN, M. D., *Clinical Instructor in Gynecology.*
H. P. RITCHIE, Ph. B., M. D., *Clinical Instructor in Gynecology.*
H. L. WILLIAMS, A. B., M. D., *Clinical Instructor in Gynecology.*

COURSES OF INSTRUCTION.

The course in the diseases of women consists of lectures, recitations, clinical instruction and the witness of operations upon the human subject, as they may offer.

Course I. Lectures and recitations. *Professor Stone.*

Two hours a week, first semester, fourth year. One hour a week, second semester, fourth year.

Course II. Clinical courses at the City and other hospitals in Minneapolis and St. Paul. Observations and examinations of patients, methods of examination, diagnosis and treatment.

Weekly Clinics in Minneapolis Hospitals, by Prof. A. W. Abbott and Dr. A. E. Benjamin.

Weekly clinics held in St. Joseph's Hospital, St. Paul, by Prof. Stone.

Weekly clinics held at the City and county Hospital, St. Paul, during January, February, and March, by Dr. J. L. Rothrock.

The above announcements represent the surgical work given in gynecology throughout the entire year. Every operation in this branch of surgery is presented in these clinics. Owing to the limited field within which this work must be done, the attempt is always made to divide the class into small sections. Daily clinics for small sections are held at the University and St. Paul Free Dispensaries by Drs. A. W. Abbott, A. E. Benjamin, J. L. Rothrock, and H. P. Ritchie. This course is especially valuable since it brings the student into direct acquaintance with the patient. Individual instruction is given in history-taking, diagnosis, methods of examination, treatment and minor gynecology.

Text-Books:

Dudley's Diseases of Women.
Reed's Text-Book of Gynecology.
Kelly's Operative Gynecology.
Collateral Reading—Penrose, Gleist and Ashton.

DEPARTMENT OF OPHTHALMOLOGY AND OTOLOGY.

OFFICERS OF INSTRUCTION.

FRANK C. TODD, M. D., *Professor of Ophthalmology and Otology.*

E. VILLIERS APPLEBY, M. D., *Clinical Instructor in Ophthalmology.*

JOHN S. MACNIE, M. D., *Clinical Assistant in Ophthalmology and Otology.*

COURSES OF INSTRUCTION.

Course I. Diseases of the eye and its appendages; refraction and its errors. Lectures and recitations. Illustrated with specimens and stereopticon. Three hours a week, first half, first semester, fourth year. *Professor Todd.*

Course II. Diseases of the ear.

Lectures and recitations. One hour a week, first half, first semester, fourth year. *Professor Todd.*

Course III. *Professor Todd.*

Clinical lectures will be given and operations performed at Asbury or Northwestern Hospital, Minneapolis, every Thursday, third and fourth year. Clinics will be given at the Minneapolis City Hospital during December, January, February and March. Third and fourth years.

Course IV. Clinical instruction will be given at the University, and St. Paul Free Dispensaries in the diagnosis of diseases of the eye and ear; in the methods of examination; in the use of instruments, including the ophthalmoscope, and in the treatment of eye and ear diseases, etc. Fourth year.

Diseases of ear, St. Paul, *Professor Schadle.*
Diseases of eye, St. Paul, *Dr. Appleby.*
Diseases of eye and ear, Minneapolis. *Dr. Macnie.*

Course V. Ophthalmoscopy; a practical course of instruction, elective in the senior year. *Dr. J. C. Macnie.*

Text-Books:

Wood and Woodruff, Commoner Diseases of the Eye.
Fox's Diseases of the Eye.
Bacon's Diseases of the Ear.
Collateral Reading—DeSchweinitz's Diseases of the Eye; American Text-Book; Norris and Oliver's Ophthalmology; Politzer's Diseases of Ear; Vaasey's Diseases of the Eye; Posey Wright, Diseases of the Eye, Ear, Nose and Throat; May's Diseases of the Eye.

DEPARTMENT OF OBSTETRICS.

OFFICERS OF INSTRUCTION.

PARKS RITCHIE, M. D., *Professor of Obstetrics.*

A. B. CATES, A. M., M. D., *Professor of Obstetrics.*

FREDERICK LEAVITT, M. D., *Clinical Instructor in Obstetrics.*

J. S. LITZENBERG, B. S., M. D., *Clinical Instructor in Obstetrics.*

JENNETTE MCLAREN, M. D., *Assistant in Obstetrics.*

F. L. ADAIR, M. D., *Assistant in Obstetrics.*

COURSES OF INSTRUCTION.

The subject of obstetrics is taught by lectures, recitations and demonstrations upon the manikin; by illustrative drawings and by attendance upon cases

of labor. The didactic work is done in the third year: the clinical study is had in the fourth year. A large part of the obstetric service of the City Hospital in St. Paul and of the Minneapolis City Hospital is at the disposal of the chair of obstetrics. Clinics are also held at other hospitals in St. Paul and Minneapolis.

Course I. The anatomy and physiology of the pelvic organs: the development of the embryo and appendages; pregnancy; symptoms and diseases; operative obstetrics; the complications of labor and its sequelæ. Lectures and recitations two hours a week in October and January, and three hours a week, second semester, third year.
Professor Cates.

Course II. The theory and practice of obstetrics. *Professor Ritchie.*
The mechanism and conduct of normal labor, with its complications; abortions. Lectures and recitations. Two hours a week. November and December, third year.

Course III. Hospital ward work. *Drs. Leavitt and Litzenberg.*
Twice a week, from January 1st to May 1st, Dr. Frederick Leavitt will conduct sections of students through the maternity wards of the St. Paul City and County Hospital. A similar service will be conducted in the wards of the Minneapolis City Hospital, from October 10th to May 1, by Dr. Jennings C. Litzenberg. This course will be in the nature of an ante-partum clinic, in which will be studied the signs of pregnancy, pelvimetry, palpitation, obstetric diagnosis, etc. This work is in the nature of a conference, each student viewing the subject from the standpoint of a practitioner. In addition Dr. Litzenberg gives a course of demonstrative obstetrics on the manikin to third and fourth year students.

Course IV. Clinical obstetrics.
The study of and the participation in the conduct of two or more hospital deliveries in the fourth year, under the direction of Professors Ritchie and Cates and personally conducted by Drs. Frederick Leavitt, J. C. Litzenberg, Jennette McLaren and F. L. Adair. A limited number of out-patients is assigned to members of the senior class who are authorized to attend these cases, under the supervision of the instructors, before, during and after labor.

Text-Books:
Edgar, Williams, Jewett, Lusk, Hirst, and the American Text-Book of Obstetrics.

THE HISTORY OF MEDICINE.

An elective course of lectures is given in the history of medicine and of the medical profession from the earliest times, including accounts of the epoch-making discoveries in medicine, brief sketches of the lives of eminent physicians and an account of the great plagues of history. Two hours a week, second half, second semester, fourth year.
Professor Burnside Foster.

MEDICAL JURISPRUDENCE.

A course of lectures and recitations, in the legal relations of medicine. Two hours a week, second half, second semester, fourth year.
Professor Sweeney.

Text-Books:
Taylor's Medical Jurisprudence.
Collateral Reading—Hamilton's American System of Legal Medicine; Withaus' Principles of Forensic Medicine and Toxicology; Wharton and Stille's Medical Jurisprudence; Reese's Medical Jurisprudence and Toxicology.

HYGIENE.

A course of lectures in hygiene is conducted by a corps of the faculty. The general subject is thus divided into several branches; namely, chemistry of air, water and soil (included in the course in chemistry); the hygiene of foods, beverages, clothing, bathing and exercise; public sanitation (including sewage and garbage

disposal, disinfection, regulations of quarantine, the disposal of the dead, the development of vital statistics, the care of slaughter houses, etc.); the various factors concerned in the spread of transmissible diseases and the logical methods of prevention; some practical phases of sanitary engineering. The examinations in this branch are conducted by the lecturers jointly. The course includes about forty lectures and recitations, which are given during the second semester of the fourth year.

Professors Bass, Beard, Bracken and Wesbrook.

Text-Books:

Abbott—The Hygiene of Transmissible Diseases.
Harrington—Practical Hygiene.
Sedgwick—Principles of Sanitary Science and Public Health.
Coplin's and Bevan's Practical Hygiene.
Park's Hygiene.
Bergey's Principles of Hygiene.
Collateral Reading—Richardson's Preventive Medicine; Buck's Hygiene and Public Health; Winter Blyth's Foods and Their Composition; State Board of Health Reports; Reports of American Public Health Association; Handbook on the Prevention of Tuberculosis, etc., etc.

CLINICAL MICROSCOPY.

A required course given in the second semester of the senior year. The course includes:

(a) The urine; a macroscopical study of its colors, and sediments, and the microscopical study of blood, pus, epithelial casts, spermatozoa, etc., in the urine of disease.

(b) The blood; the counting of red and white cells in the blood, the estimation of hæmoglobin, the making of blood smears, and the fixing, staining, mounting, and studying of all forms of normal and pathological red and white blood cells. In this course students are given specimens of blood from cases of pernicious anaemia, myelogenous leukæmia, and lymphatic leukæmia, for study.

(c) Stomach contents; the macroscopical, chemical, and microscopical study of gastric contents in various diseases of the stomach, with special reference to differential diagnosis, by lectures and demonstrations.

(d) Exudates and transudates in various diseases of the pleura and peritoneum. Nine hours a week during half of the second semester.

Professor George Douglas Head.

Books of Reference:

Simon's Clinical Diagnosis.
Cabot's Clinical Examination of the Blood.
Ewing's Clinical Pathology of the Blood.
Reider's Atlas of Urinary Sediments.
Sahli's Lehrbuch der Klinischen Untersuchungs Methoden.
Ogden's Clinical Examination of the Urine.
Boston's Clinical Diagnosis.
Wood's Chemical and Microscopical Diagnosis.

The senior class is divided into sections of four each and assigned to the laboratory of clinical microscopy four days of the week throughout the college year. In this work the students are required to make urine, sputum, and stomach contents examinations of the cases coming to the free dispensary. This instruction is under the charge of Dr. Henry L. Ulrich.

DEGREES.

The degree of doctor of medicine is conferred by the Board of Regents upon the students who are recommended, by vote of the faculty, for graduation. Candidates for the degree must possess the following essential by the examination for entrance to this college.

(4) Four full college years spent in the study of medicine; the fourth year, at least, in this University, and the remainder in this or other recognized colleges of medicine.

(2) Good moral character.

qualifications:

(1) Twenty-one years of age and upwards.

(5) Satisfactory examinations passed in all branches in accordance with the foregoing rules.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the Senior class of the College of Medicine and Surgery who shall present the best thesis showing original work upon a surgical subject.

LIBRARY OF MEDICAL DEPARTMENT.

Thomas G. Lee, B. S., M. D., Librarian.

The Library consists of (a) The General clinical and reference Collection of some 4,000 books and bound periodicals, and thirty-four current periodicals; (b) The College Collections of the College of Homeopathic Medicine and Surgery, the College of Dentistry and the College of Pharmacy; (c) The Departmental Libraries, being special collections of books and current periodicals belonging to the Laboratories of Anatomy, Chemistry, Histology and Embryology, Pathology and Bacteriology and Physiology. In addition, the Libraries of the Hennepin County Medical Society, some 3,800 volumes and 50 Journals, and that of the Ramsey County Medical Society, some 4,500 volumes and 150 Journals, are accessible to the Medical student for reference work and collateral reading.

Other Libraries of value to the Medical student are the General University and other departmental libraries 110,000 volumes; the Minneapolis Public Library 125,000 volumes; the St. Paul Public Library 55,000 volumes.

DISPENSARIES.

In its clinical instruction the medical department makes use of two well organized free dispensaries, each having a large out service clinic. The University Clinical Building is located across the river from the medical department proper, at 1810 Washington Avenue South. A large commodious, two-story building has been erected by the Regents of the University for the accommodation of the free dispensary. This building is situated in a thickly populated part of Minneapolis, and received last year over 2,500 new patients, aggregating more than 10,000 visits. The staff is composed

of members of the faculty and their assistants, and is organized under a Chief of Staff. The service is divided into medical, surgical, gynecological, eye and ear, nose and throat, skin and venereal, mental and nervous departments. Senior students are required to attend daily the clinics at the free dispensary. They are drilled in the taking of histories, the making of physical examinations, etc. Sections of senior students are assigned each day to the drug room of the dispensary and to the laboratory of clinical microscopy, located in the basement of the building. Competent instructors are in charge of the sections of students so assigned. The free dispensary also provides a residence service for senior students, which service is elective and open to a limited number of the senior students. Students electing this service are required to reside at the dispensary and attend the emergency, sick, and accident calls. An obstetrical out service department is also conducted in connection with the dispensary and obstetrical cases are assigned to sections of senior students. These clinics are conducted under the direction of some member of the obstetrical staff.

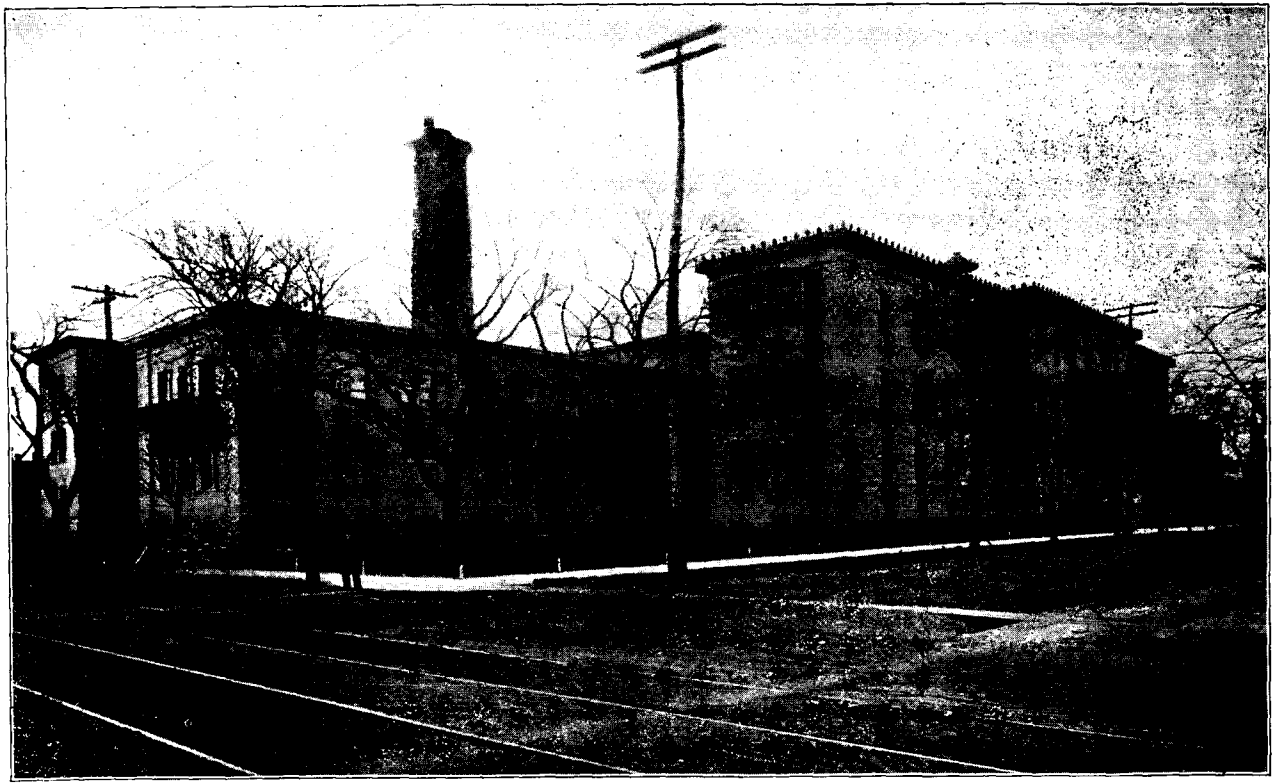
The St. Paul free dispensary is centrally located in a twenty-room building, and its clinical service is wholly under the control of the staff of the University instructors. During the past year nearly 1,200 individuals received attention, who by repeated visits aggregated over 9,000 patients. Twice weekly clinics are given in this dispensary to sections of students.

HOSPITALS.

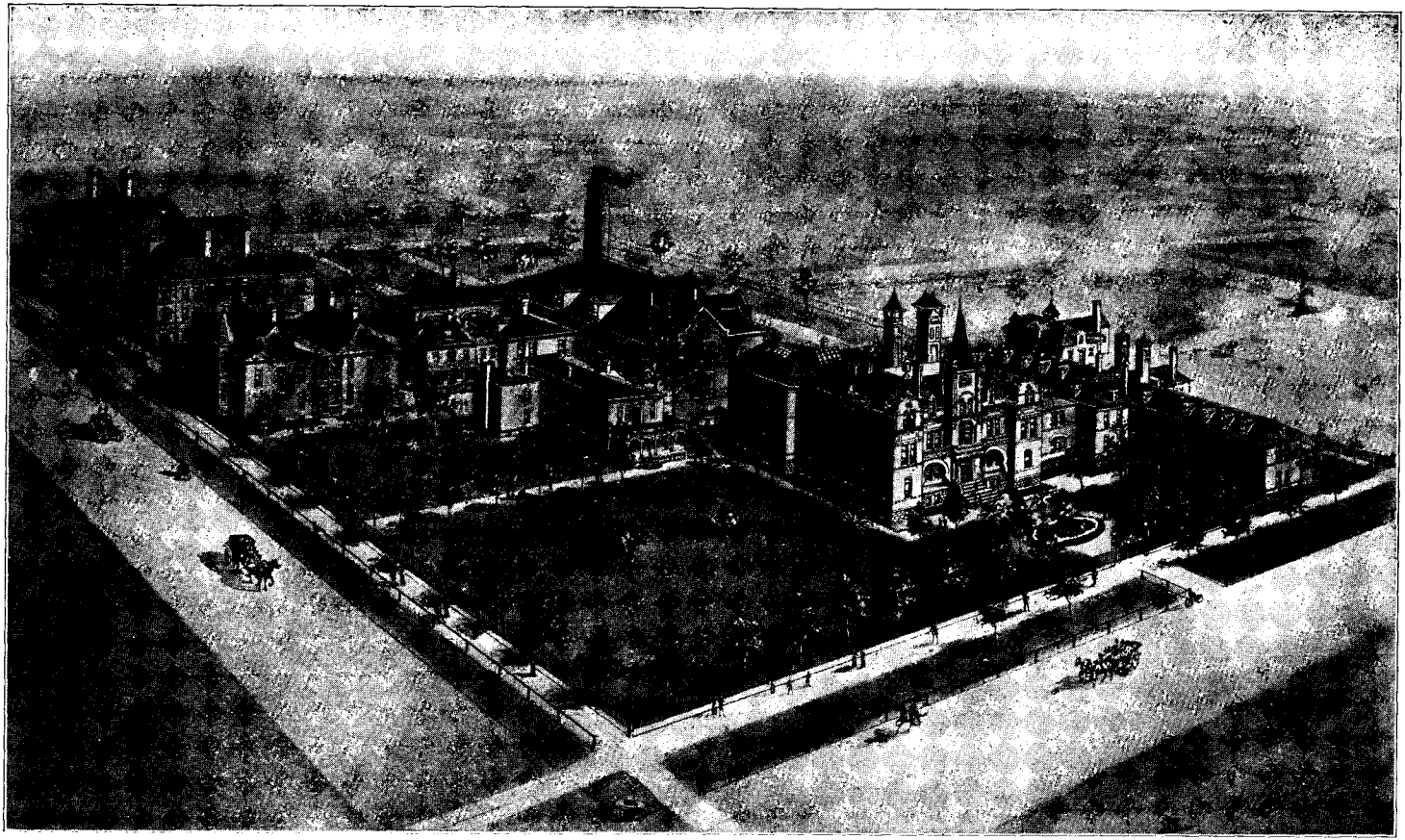
The hospitals of the city of Minneapolis and St. Paul have very generously opened their doors to the students of this department. Saturday and Thursday mornings and afternoons, throughout the year, are devoted to the use of these clinical opportunities by the junior and senior classes. These classes alternate in periods of six weeks between the two cities upon the days mentioned.

The hospital facilities of the University are thus exceptionally good, since they are not limited to one large amphitheatre, where but a few students can closely observe diagnostic and surgical methods, but are divided among a number of hospitals where the various professors care for their private and clinical cases. This makes it possible to divide the classes into sections, so that each student has equal opportunities of observation and is in close touch with his teacher.

The City Hospital of Minneapolis places its entire clinical material at the command of the clinical teachers of the University. This is a large modern hospital, with splendid equipment, and has a capacity of one hundred and forty beds. During the year 1904, this hospital received 1,298 patients. A large new administration building is now being completed by the city at a cost of about $55,000 which will greatly increase the efficiency of the hospital. A modern, newly erected, contagious word furnishes excellent opportunity for bedside clinical instruction in contagious diseases



MINNEAPOLIS CITY HOSPITAL.



St. Paul City and County Hospital.

under the direction of the Professor of Diseases of Children. In the City Hospital, both bedside and amphitheater, medical and surgical clinics are conducted twice weekly by members of the faculty. Clinics in diseases of the skin, nervous diseases, obstetrics, etc., are likewise given in the hospital throughout the school year. Special medical bedside clinics are conducted in the wards of the hospital to small sections of senior students, during the year, by members of the faculty.

St. Barnabas Hospital, an institution with the capacity of eighty-four beds, furnishes medical and surgical material for clinics to Junior and Senior classes of the University. This hospital received last year 1,375 patients. Several members of the faculty are upon its staff. University clinics are given in the amphitheater twice weekly throughout the college year.

Asbury Methodist Hospital affords clinical material for the State University. In 1904 the hospital received 600 patients. The hospital at the present occupies its old building at the corner of Ninth avenue and Sixth street south, but is constructing a large new building with the capacity of 160 beds. Semi-weekly clinics are given by members of the faculty in this hospital.

Northwestern Hospital with its capacity of 50 beds offers splendid surgical material for University clinics. Semi-weekly clinics in surgery are given in its amphitheatre by members of the faculty who are on its staff. An addition will be built to this hospital this year which will double its capacity, making it one of the finest hospitals in the state. In this addition will be three operating rooms, one of them an amphitheatre.

The Swedish Hospital has a newly constructed modern building with a capacity of fifty beds. Members of the faculty utilize the material of this hospital for teaching purposes.

St. Paul City Hospital, with a capacity of over 300 beds is the largest and most complete of its kind in the Northwest. From January 1st to May 1st, its entire clinical facilities are at the disposal of the University. It enters over two thousand patients annually, a large proportion of whom are of the emergency order, or are suffering from acute disease. The opportunities for bedside instruction are very great, and the hospital theatre is maintained for teaching purposes. Recently a modern fireproof building has been erected for contagious diseases, where the students have etc., etc. A separate building is provided for midwifery, and senior students see labor cases under the personal supervision of the professor or instructor unexcelled opportunities to see and study diphtheria, scarlatina, erysipelas, in obstetrics.

The orthopedic department containing a large number of crippled and deformed children is under the personal control of the professor of orthopedic surgery.

St. Joseph's Hospital with 125 beds and one of the finest amphitheatres

with every modern device, contributes largely to the clinical instruction. Members of the faculty are on the staff and give clinics every week.

St. Luke's Hospital, with 90 beds, is largely devoted to surgical clinics, as several of our faculty are upon its staff. University clinics are held in this hospital twice a week. Two operating rooms with conveniences for students, give unusual facilities and the service is of the highest order.

The new University Hospital, soon to be erected upon the Campus, at a cost of $125,000, will provide unexcelled opportunities for clinical instruction taken in connection with the clinics at the other hospitals mentioned above.

CLINICAL OPPORTUNITIES.

Clinical records are kept of the Senior class and the following example, which is by no means exceptional, gives a fair indication of the character and amount of work done by the students.

Six hundred and sixty-eight (668) clinical cases have been reported by a single member of the senior class as coming under his observation and study during a period of eight months. This number by no means represents the total of clinics, but simply those seen by him alone, nor does it include any of the Junior year clinics. Approximately, it is the work done by every member of the class though the clinical instruction is constantly varying because of the small sections and individual teaching which forms the basis of modern methods. Indeed, comparatively few clinical lectures are given to the class as a whole; students come in close relation with patients and study them much the same as though the cases were their own.

The following is a summary of one student's clinics as reported:

	CASES.
Internal medicine	128
Diseases of Children	39
General Surgery	144
Orthopedic Surgery	35
Mental and Nervous Diseases	72
Genito-urinary and Skin	104
Nose and Throat	40
Diseases of Women	38
Eye and Ear	59
Obstetrics	9
Total	668

MINNEAPOLIS CLINICS

Thursday

Hour	Subject	Clinican	Hospital
9:00-11:00	Medicine	Prof. Bell or Prof. Nootnagel and Dr. Rees	City.
11:00-12:00	Medicine	Prof. Head	
9:00-10:30	Eye and Ear	Prof. Todd	City.
11:00-12:00	Medicine	Dr. Rees	N. W. City, Asby.
9:00-10:30	Surgery	Prof. Little	City.
10:30-12:00	Gynecology	Dr. Benjamin	Asbury, City.
1:00-2:00	Medicine	Prof. Hunter	St. Barnabas.
1:00-2:00	Surgery	Dr. Mann	St. Barnabas.
1:00-2:00	Medicine	Prof. Head	City, Clin. Building.
2:00-3:00	Neurology	Prof. Jones	Clin. Building.
3:00-4:00	Dermatol	Prof. Vander Horck or Dr. Wright	City. Clin. Building.
4:00-6:00	Autopsies	Prof. White	City.

Saturday

9:00-11:00	Surgery	Prof. Moore	Northwestern
11:00-12:00	Gynecology	Prof. Abbott or Dr. Williams	N. W., City
9:00-11:00	Surgery	Prof. Dunsmore	Swedish, City
11:00-12:00	Pediatrics	Prof. Roberts	Clin. Building
9:00-10:30	Nose and Throat	Prof. Murray	Asbury, City
10:30-12:00	Medicine	Prof. Nippert	City
1:00-2:30	Orthoped	Dr. Geist	Clinic Building
1:00-2:30	Pediatrics	Dr. Dart	Clinic Building
1:00-2:30	Gynecology	Dr Williams	Clinic Building
1:00-2:30	Pharmacol	Mr. Eglund	Clinic Building
1:00-2:30	Clin. Mich	Dr. Ulrich	Clinic Building
1:00-2:30	Medicine	Prof. Staples or Dr. Cross	City
1:00-2:30	Surgery	Prof. Stewart	City, N. W.
2:30-3:30	Obstetrics	Dr. Litzenberg	Clinic Building
2:30-3:30	Surgerr	Dr. Farr	St. Mary.
2:30-3:30	Medicine	Dr. Cross	City
2:30-3:30	Medicine	Dr. Sheldon	City
4:00-6:00	Autopsies	Prof. White	City

Contagious Diseases. During October, November and December, the senior class, one section at a time, will be given a clinic at the City Hospital by Prof. Roberts or Dr. Dart on Mondays, Wednesdays and Fridays from 11 to 12.

Practical Physical Diagnosis (for juniors) on Tuesdays, Wednesdays and Fridays, from 12:30-1:30, by Profs. Nippert and Nootnagel and Dr. Rees at the Clinical Building.

Parturition clinics throughout the year by Prof. Cates and Dr. Litzenberg (for seniors) at City Hospital and other places.

Bedside clinics in medicine, Monday, 4:30-5:30, at City Hospital by Prof. White. (One section).

Bedside clinic in medicine, Wednesday, 4:30-5:30, at City Hospital by Dr. Sheldon. (One section).

ST. PAUL CLINICS

Thursday

Hour	Subject	Clinican	Hospital
9:00-10:00	Orthopedia	Prof. Gillette	City, St. J., St. L.
10:15-12:00	Surgery	Prof. McLaren	St. L., St. J.
10:15-12:00	Surgery	Prof. O'Brien	St. Joseph
10:15-12:00	Gynecology	Prof. Rothrock	City (2nd sem)
1:30-2:30	Medicine	Prof. Greene	Disp. (2nd sem)
1:30-2:30	Medicine	Dr. Hoff	Disp.
1:30-2:30	Medicine	Dr. Stumm	Disp. (1st sem)
1:30-2:30	Surgery	Dr. Dennis	Disp. (1st sem)
1:30-2:30	Surgery	Dr. Goodrich	Disp. (2nd sem)
1:30-2:30	Neurology	Dr. Dunning	Disp.
1:30-2:30	Neurology	Dr. Ball	Disp. (Apr. 1)
1:30-2:30	Ophthalmol	Dr. Appleby	Disp.
1:30-2:30	Pediatrics	Dr. Ramsey	Disp. (2nd sem)
1:30-2:30	Pediatrics	Dr. Hall	Disp. (1st sem)
1:30-2:30	Ear, Nose, Throat	Prof. Schadle	Disp.
2:30-3:30	Medicine	Dr. Hoff	Disp. (1st sem)
2:30-3:30	Gen-Urin	Dr. Coon	City (2nd sem)
3:00-4:00	Medicine	Prof Abbott	City (2nd sem)
4:00-5:00	Medicine	Prof. Abbott	City (2nd sem)
4:00-5:00	Medicine	Prof. Senkler	City (2nd sem)
4:00-5:00	Pediatrics	Prof. Christison	City (2nd sem)
4:00-5:00	Pediatrics	Dr. Ramsey	City (1st sem)
4:00 5:00	Obstetrics	Dr. Leavitt	City (2nd sem)
4:00-5:00	Surgery	Dr. Colvin	City (2nd sem)
4:00-5:00	Gen-Urin	Dr. Armstrong	City (1st sem)
4:00-5:00	Ophthalmol	Dr. Fulion	City (2nd sem)

Saturday

9:00-10:00	Neurology	Prof. Riggs	Dispensary, City
10:15-12:00	Surgery	Prof. Rogers	City, St. L., St. J.
10:15-12:00	Surgery	Prof. Ohage	City, St. L., St. J.
10:15-12:00	Gynecology	Prof. Rothrock	City (2nd sem)
1:30-2:30	Medicine	Prof. Greene	Disp. (2nd sem)
1:30-2:30	Medicine	Dr. Huff	Disp.
1:30-2:30	Medicine	Dr. Stumm	Disp. (1st sem)
1:30-2:30	Surgery	Dr. Dennis	Disp. (1st sem)
1:30-2:30	Surgery	Dr. Goodrich	Disp. (2nd sem)
1:30-2:30	Neurology	Dr. Dunning	Disp.
1:30-2:30	Pediatrics	Dr. Ramsey	Disp (2nd sem)
1:30-2:30	Pediatrics	Dr. Hall	Disp. (1st sem)
1:30-2:30	Ear, Nose, Throat	Prof. Schadle	Disp.
1:30-2:30	Skin and Sypl.	Prof. Foster	Disp.
2:30-3:30	Pediatrics	Prof. Christison	Disp. (1st sem)
3:00-4:00	Medicine	Prof. Abbott	City (2nd sem)
4:00-5:00	Medicine	Prof. Abbott	City (2nd sem)
4:00-5:00	Medicine	Prof. Senkler	City (2nd sem)
4:00-5:00	Pediatrics	Prof. Christison	City (2nd sem)
4:00-5:00	Pediatrics	Dr. Ramsey	City (1st sem)
4:00-5:00	Obstetrics	Dr. Leavitt	City (2nd sem)
4:00-5:00	Surgery	Dr. Colvin	City (2nd sem)
4:00-5:00	Gen-Urin	Dr. Armstrong	City (1st sem)
4:00-5 00	Opthalmol	Dr. Fulton	City (2nd sem)

Note.—When no time is mentioned, the clinics continue throughout both semesters.

Gynecology. Prof. Stone at St. Joseph's Hospital.

Gynecology. Prof. Rothrock and Dr. H. P. Ritchie, daily clinic at Dispensary. (One student).

Parturition Clinics throughout the year at the City Hospital, Maternities, Dispensary Out-service, with Drs. Leavitt and Jenette McLaren. (One to five students).

DISPENSARY CLINICS

At the Clinical Building, from 1:00 to 3:00 p. m.

FIRST AND SECOND SEMESTERS, 1906-1907

	Monday	Tuesday	Wednesd'y	Thursday	Friday	Saturday	
Medicine	Prof. Head and Dr. Aurand	Prof. Nootnagel and Dr. Rees	Prof. Nippert and Dr. Rees	Prof. Head and Dr. Aurand	Dr. Sheldon and Dr. Adair	Dr. Sheldon and Dr. Adair	2 Sections
Surgery	Dr. Mann	Dr. Law	Dr. Mann	Dr. Condit	Dr. Law	Dr. Conditt	1 Section
Nose & Throat	Dr. Campbell	Prof. Murray	Dr. Mead	Dr. Campbell	Prof. Murray	Dr. Mead	1 Section
Pediatrics	Dr. C. B. Wright	Dr. Dart	Dr. C. B. Wright	Dr. Dart	Dr. C. B. Wright	Dr. Dart	1 Section
Eye and Ear	Dr. Macnie	Dr Macnie	Dr. Macnie	Dr. Wells	Dr. Macnie	Dr. Wells	1 Section
Skin and Venerial	Dr. F. R. Wright	Dr. Schweitzer	Dr. F. R. Wrighht	Dr. Schweitzer	Dr. F. R. Wright	Dr, Schweitzer	1 Section
Neurology	Dr. Hamilton	Dr. H.W. Jones	Dr. Hamilton	D H. W. Jones and Dr. Loberg	Dr. Hamilton	Dr. Loberg	1 Section
Gynaecology	Dr. Benjamin	Dr. Williams	Dr. Benjamin	Dr. Williams	Dr. Benjamin	Dr. Williams	2 Students
Pharmacology	Mr. Englund	Mr. Englund	Mr. Englund	Mr. Englund	Mr. Englund	Mr. Englund	2 Students
Clinical Microscopy	Dr. Ulrich	Dr. Ulrich	Dr. Ulrich	Dr. Ulrich	Dr. Ulrich	Dr. Ulrich	2 Students
Orthopedics	Dr Geist		Dr. Geist			Dr. Giest	1 Seclion

ALUMNI ASSOCIATION.

The Alumni Association of the College of Medicine and Surgery of the University of Minnesota holds its annual banquet and reunion during Commencement week. All graduates of this department are eligible who are in good standing. Graduates may become members by payment of annual dues of $1. The officers of this association for the year ending June '06 are as follows:

President, Dr. Warren A. Dennis, St. Paul, Minn.

First Vice President, Dr. A. B. Stewart, Owatonna, Minn.

Second Vice President, Dr. Anna L. Osborn, Mankato, Minn.

Secretary-Treasurer, Dr. H. W. Jones, Minneapolis, Minn.

An advisory committee consisting of twelve graduates and the president and the secretary of the Alumni Association, endeavors to keep in touch with the faculty of the College and is ever on the look-out for an opportunity to improve this department of the University, by recommending certain changes or modifications in the method of teaching.

The Advisory Committee for 1905-06 is as follows:

Dr. John C. Boehm, St. Cloud, Minn.
Dr. Frank C. Todd, Minneapolis, Minn.
Dr. L. B. Wilson, Rochester, Minn.
Dr. Frank Wright, Minneapolis, Minn.
Dr. Frank S. Warren, Faribault, Minn.
Dr. John T. Rogers, St. Paul, Minn.
Dr. John T. Christison, St. Paul, Minn.
Dr. E. H. Beckman, Minneapolis, Minn.
Dr. W. R. Ramsey, St. Paul, Minn.
Dr. Paul Cook, St. Paul, Minn.
Dr. A. E. Hedback, Barron, Wis.
Dr. W. A. Dennis, President.
Dr. H. W. Jones, Secretary-Treasurer.

All the Medical Alumni are cordially urged to subscribe to the Alumni Weekly; $1.00 per year, if paid in advance. The editor, Mr. E. B. Johnson, is giving his whole time to this work, and the Weekly will keep you posted in regard to all that happens at the University, and fresh news regarding all the Alumni.

DR. H. W. JONES, Secretary-Treasurer,
Minneapolis, Minn.

Regulations Governing admission to the College of Science, Literature and the Arts

EXAMINATION IN ENGLISH.

Every applicant for admission to this college must take an examination in Writing, Spelling, and English Composition. An examination will be given in two parts, the second of which is optional.

Part I. Elementary. Those who fail to pass this examination satisfactorily are required to take a special three-hour Preparatory Course in Rhetoric through their first year, or longer if necessary. This work will not receive credit toward a degree. Students pursuing it shall not take more than the maximum of seventeen hours of work a week, including this course. These students must take Freshman Rhetoric, but not until the preparatory work has been completed; but at any time during the first half of the first semester the Department of Rhetoric may transfer promising students from the Preparatory Rhetoric class to the regular Freshman Rhetoric.

Part II. Advanced. This is designed as a test of ability to express thought in a clear and orderly manner and of a fair knowledge of Elementary Rhetoric. This test is not obligatory: it may or may not be taken, as the student prefers. Those who do not take it, and those who fail to pass it with a grade of "Good" or "Excellent," shall be registered for Freshman Rhetoric as a required subject. Those who pass this test with a grade of "Good" or Excellent" are not required to take Freshman Rhetoric.

The entrance examination (both Parts I and II) will be given twice a year at the University in the Chapel in the Library Building, once on the next to the last Saturday in May at 9 a. m., and once on the Wednesday of examination week in September, at the same hour.

This examination will be sent also to the Principals of State High Schools and other accredited schools in the state, to be offered in each case at the option of such Principal, to members of the senior class who expect to enter the University. If, for the convenience of his students, the Principal elect to offer the examination, it must be given on the date assigned and under the rules which govern State High School Board examinations. All papers must be sent, immediately after examination, to the registrar of the University and will be marked by the proper University authority.

Students who enter the Freshman class after the regular September

examination, without having passed either test in English, may be given a special test, if the Department of Rhetoric thinks fit, or shall be registered for Freshman Rhetoric, with the provision that, if found deficient during the first six weeks, they shall be dropped into the Preparatory Rhetoric class. Such students must be prepared to suffer any other change in registration necessitated by the program and the rules of the college.

PREPARATION REQUIRED.

Graduates of the following courses, providing they present credits for four years of English and one year each of Elementary Algebra and Plane Geometry, are admitted to the freshman class without condition other than that imposed by the above examination in English:

(a) Any four-year course of a Minnesota State High School.

(b) A four-year course of other accredited schools in the state.

(c) A four-year course of schools in any other state accredited to the State University of that state.

(d) The advanced English or Latin Course of the Minnesota Normal Schools.

In all cases the character of the work and the time given to the respective subjects should be according to the following schedule:

I. REQUIRED OF ALL.

English, four years, including

(a) Classics.
(b) Principles of Composition.
(c) Practice in Written Expression.

Mathematics.

(a) Elementary Algebra, one year.
(b) Plane Geometry, one year.

II. ELECTIVE.

Mathematics, one year.

Higher Algebra, one-half year.
Solid Geometry, one-half year.

Latin, two or four years.

*Grammar, one year.
*Caesar, four books, one year.
Cicero, six orations, one year.
Virgil, six books, one year.

Greek, two years.

Grammar, one year.
Anabasis, four books, one year.

*Note—All students entering the College of Medicine and Surgery must present evidence of having completed the work in Latin indicated above.

German, two years.

Grammar, one year.
Literature, one year.

French, two years.

Grammar, one year.
Literature, one year.

Spanish, two years.

Grammar, one year.
Literature, one year.

Swedish, Danish-Norwegian, Icelandic, two years.

Grammar, one year.
Literature, one year.

History, three years.

Ancient, to Charlemagne, one year.
Modern, from Charlemagne, one year.
England, one-half year.
Senior American, one-half year.

American Government, one-half year.

Political Economy, one-half year.

Physics, one year.

Chemistry, one year.

Botany, one-half or one year.

Zoology, one-half or one year.

Astronomy, one-half year.

Geology, one half-year.

Physiography, one half-year.

Commercial History and *Commercial Law,* one year.

Freehand Drawing, one year.

Mechanical Drawing, one year.

Commercial Geography.

Senior Arithmetic and *Senior English Grammar,* as parts of a High School Normal course.

SYLLABI

English (four years).

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four years' course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

(a) English Classics.
(b) The Principles of Rhetoric.
(c) Practice in Written Expression.

(a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespere's "Macbeth," Milton's "Paradise Lost," books one and two; Burke's "Conciliation with America"; Carlyle's essay on "Burns." In the study of these works the student should come to know the leading facts connected with the author and his time; he should become familiar with the subject-matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.

A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected: at least two of Shakespere's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.

(b) The work in the Principles of Composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.

(c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression. The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

Elementary Algebra (one year).

Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations (with one, two, and several unknown quantities) followed by problems, theory of exponents, involution (including the binominal theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

Higher Algebra, First Part (one-half year).

While this subject does not include any topics not named under Elementary Algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of Higher Algebra.

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

Plane Geometry (one year).

Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

Solid Geometry (one-half year).

Any of the standard texts on this subject will furnish the necessary preparation. The excesses requiring solutions and demonstrations should not be omitted.

Latin Grammar (one year).

This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

Caesar (one year).

First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text; more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The pupil should be able to rewrite in oratio recta all the passages of oratio obliqua that occur in the text. The student is expected to be familiar with the life of Caesar and an account of his wars.

Cicero (one year).

Six orations, four against Catiline and any two of the following: "Poet Archias," "Ligarius," "Marcellus," "Manilian Law" (to count as two orations), the Fourteenth Philippic. The student should be familiar with the life of Cicero and the history of his times.

Virgil (one year).

Six books of Aeneid, or five of Aeneid and one of the Metamorphoses of Ovid, or the Ecologues. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

Greek Grammar (one year).

Xenophon's Anabasis (one year)—Four books.

German (two years).

First year the pupil should acquire:

(1) A correct pronounciation, training of the ear, eye and organs of speech.
(2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.
(3) From two to three hundred German idioms.
(4) The essentials of German Grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year—

(1) Read 150 to 200 pages of prose and poetry.
(2) Practice in reading smoothly and with expression.
(3) Carefully translate selected passages of the text into idiomatic English. To translate easy sentences which the student already understands is a waste of time.
(4) Translate sentences from English into German, using words and idioms of the text read.
(5) Study topically German grammar; chief rules of othography, etymology and syntax: illustrate these by words, phrases and sentences selected or composed by the student.

French (two years).

The principles of French grammar, including acquaintance with the verb, regular and irregular: an ability to translate easy English sentences into French and simple French prose into English.

Spanish (two years).

First year—Grammar and Reader.

Second year—Grammar reviewed; reading of some modern writer; composition and conversation.

Ancient History (one year).

(a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.

(b) In the Greek and Roman age emphasis should be put upon the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.

(c) The subject should be carried down to the establishment of Charlemagne's Empire. This will bring together all the chief lines of influence which were afterwards to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an earlier date, and will leave the subject at a period of comparative order and simplicity.

Modern History (one year).

From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the Protestant Reformation, the French Revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

Instead of these two subjects, Ancient and Modern History, the University will, until 1907, continue to accept the following:

History of Greece and Rome (one-half year).

Medieval (one-half year).

Modern History (one-half year).

English History (one-half year).

The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

Senior American History (one-half year).

No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case considerable use should be made of collections or documents and sources.

American Government (one-half year).

This should be a study of our government, national, state and local, as it is organized and actually operated to-day. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, Northwestetaoin shrdlu cmfwyp nup tion of the United States, Constitution of Minnesota, and a local city or village charter.

In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing and appointing men to office; of fram-

ing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law and constitutional law, between equity, civil and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meeting, town meeting, sessions of the county Commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be lead to read about and observe public affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

Political Economy (one-half year).

Some good elementary text book should be mastered. It is desirable that students be encouraged to study local and general economic phenomena and conditions. The time should be wholly devoted to the elements of the science of political economy. The beginner should not be confused with problems of applied economics such as tariff, trusts, bimetallism, etc.

Physics (one year).

It is suggested that the year's work be confined to four of the seven subjects mentioned below.

(1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects but not to be divided).

Chemistry (one or one-half year).

The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

The half year's work should cover the non-metals only, with laboratory experiments similar to the first half of the full year's work.

After the opening of the year 1906-07, the one-half year credit will not be accepted for admission.

Botany (one or one-half year).

Schools which give one-half year of Botany should devote particular attention to plant relations, making the course largely ecologic in bearing. When a whole year is given to the subject, additional work upon plant structures should be offered, and together with fundamental conceptions of ecology a general idea of morphology and taxonomy should be the aim of the course.

Zoology (one or one-half year).

The course of Zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment. The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the differences in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be the prominent feature, and as much as possible of this should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature, train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as well as as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable work cannot be laid out along the line indicated above.

It will be noticed that such a course of necessity includes so-called laboratory work. The amount and extent of the laboratory work will depend upon conditions, but even under the best conditions it is hardly advisable to go into detailed dissections and embryology. Continued, repeated and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

Astronomy (one-half year).

An elementary course in General Astronomy as presented in any good modern text-book.

Geology (one-half year).

These subdivisions should receive special attention: physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals, modifying the earth; and a brief survey of historical geology.

Physiography (one-half year).

The following topics should be emphasized: Meteorology, to an orderly arrangement of the leading facts relating to the atmosphere, and its phenomena, including some acquaintance with the work of the U. S. Bureau; Land Sculpture, as it treats of the origin, development and decadence of land forms and the influence of these processes on the physical environment of man.

Commercial Geography (one-half or one year).

The work usually provided in high schools will answer this requirement.

An applicant not holding a diploma from one of the courses (a), (b), (c), or (d), indicated above, may be admitted by gaining by examination fifteen year-credits, including four years of English and one year each of Elementary Algebra and Plane Geometry, from the list of subjects given above.

State High School Board certificates will be accepted for the subjects which they represent.

The following High Schools are accredited:

Ada
Adrian
Aitkin
Akeley
Albert Lea
Alden
Alexandria
Amboy
Annandale
Anoka
Appleton
Argyle
Arlington
Atwater
Austin
Barnesville
Belle Plaine
Bemidji
Benson
Bird Island
Blooming Prairie
Blue Earth City
Brainerd
Breckenridge
Browns Valley
Buffalo
Caledonia
Canby
Cannon Falls
Cass Lake
Chatfield
Cloquet
Cokato
Crookston
Dawson
Delano
Detroit
Dodge Center
Duluth
East Grand Forks
Elbow Lake
Elgin
Elk River
Elmore
Ely
Eveleth
Excelsior
Fairmont
Faribault
Farmington
Fergus Falls
Fertile
Fosston
Fulda
Gaylord
Glencoe
Glenwood
Graceville
Grand Meadow
Grand Rapids
Granite Falls
Hallock
Harmony
Hastings
Hawley
Hector
Henderson
Herman
Heron Lake
Hibbing
Hopkins
Howard Lake
Hutchinson
Jackson
Janesville
Jordan
Kasota
Kasson
Kenyon
Lake Benton
Lake City
Lake Crystal
Lakefield
Lamberton
Lanesboro
Le Roy
Le Sueur
Litchfield
Little Falls
Long Prairie
Luverne
Mabel
Madelia
Madison
Mankato
Mantorville
Mapleton
Marshall
Milaca
Minneapolis
  Central
  East Side
  North Side
  South Side
Minneota
Montevideo
Montgomery
Monticello
Moorhead
Mora
Morris
Morton
New Paynesville
New Prague
New Richland
New Ulm
Northfield
North St. Paul
Olivia
Ortonville
Osakis
Owatonna
Park Rapids
Pelican Rapids
Perham
Pine City
Pine Island
Pipestone
Plainview
Preston
Princeton
Red Lake Falls
Red Wing
Redwood Falls
Renville
Rochester
Royalton
Rush City
Rushford
St. Charles
St. Cloud
St. James
St. Louis Park
St. Paul
  Central
  Cleveland
  Humboldt
  Mechanic Arts
St. Peter
Sandstone
Sauk Center
Shakopee
Sherburne
Slayton
Sleepy Eye
Springfield
Spring Valley
Staples
Stewartville
Stillwater.
Thief River Falls
Tracy
Two Harbors
Virginia
Wabasha
Wadena
Warren
Waseca
Waterville
Wells
West Concord
Wheaton
White Bear
Willmar
Windom
Winnebago
Winona
Winthrop
Worthington
Zumbrota

The following private schools are also accredited to the University:

St. Mary's Hall, Faribault
St. Paul Academy
Shattuck Military Academy, Faribault
Stanley Hall, Minneapolis
Windom Institute, Montevideo
Concordia College, Moorhead
Pillsbury Academy, Owatonna
St. Joseph's Academy, St. Paul
St. Paul's College, St. Paul Park
Holy Angel's Academy, Minneapolis

ADMISSION TO ADVANCED STANDING.

1. From other colleges.

This college accepts records from all reputable colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in this college. In bringing records from other institutions, the certificate must be upon the official blank of the institution granting the certificate, and should show:

(a) The subject studied; if a language, the books read, etc.

(b) The time spent upon each subject.

(c) Ground covered in laboratory work in case of laboratory subjects.

(d) The result. It is sufficient to state that the subject was completed creditably.

Records from institutions whose entrance requirements are not as high as those of this college will not be accepted for equivalent rank. The credits to be allowed in such cases will be determined by the Enrollment Commitee.

2. From Minnesota Normal Schools.

Graduates of the "advanced graduate course" of a Minnesota State Normal School are admitted with advanced standing equivalent to one year's credit, and receive the degree of Bachelor of Arts upon completing in this college the following courses: freshman mathematics, two years of science from the subjects prescribed for the freshman and sophomore years, two years of language (not including English) from those years, sophomore rhetoric, and sufficient additional work to complete three full years of the college course. Such students will not be permitted to elect courses V and VII in Education, and before registering for the freshman mathematics they will be required to make good any deficiencies in their preparatory mathematics, under the regulations that apply to all other candidates for the bachelor's degree.

Individual graduates of the "advanced Latin course" (five-year) or of the "advanced English course" (five-year) of a Minnesota State Normal School, who, on the basis of maturity and ability, present certificates of special fitness from the president of the Normal School, will be admitted with advanced standing under the same regulation and proviso.

ADMISSION AS UNCLASSED STUDENTS.

Whenever in the judgment of the Enrollment Committee an applicant presents satisfactory reasons for not taking the regular course, such applicant may be admitted as an unclassed student. He must take the same examinations or present the same credentials as are required of those

who enter the freshman class. Exceptions can be made only upon vote of the Faculty.

Unclassed students must take the same number of hours as regular students, and, unless advanced standing is obtained through credits from other institutions, four-fifths of the work during the first year must be taken from subjects offered to freshmen. A new application must be made each semester to the Enrollment Committee.

DAILY ROUTINE.

The morning session begins at 8:30 o'clock; a general assembly of the faculty and students is held each day at 10:25 o'clock, at which there are brief and simple religious exercises. Work extends through six days of the week.

EXAMINATIONS.

At the close of each semester, examinations are held in the studies of that semester.

Students are reported as "excellent," "good," "passed," "incomplete," "conditioned," or "failed."

An "incomplete" must be removed within one month from the opening of the following semester or it becomes a condition.

A "condition" not made up before the subject is offered again becomes a "failure," subject to rules governing failures.

"Failures" must be pursued again in class.

A student who at any time is deficient in more than half a year's work, loses his class rank and is regarded as a member of the next lower class.

Students whose absences in any term exceed four weeks in the aggregate, are not permitted to take the term examinations without special permission of the faculty.

FAILURE TO KEEP UP WITH THE CLASS.

Any student receiving conditions or failures in 60 per cent of the work the first semester shall be dropped from the rolls, and shall not be allowed to re-enter the University until the opening of the following year.

Any student failing to pass in one-half of the work of any year shall not be allowed to register until reinstated by action of the faculty upon recommendation of the committee on students' work.

FEES.

All students in the college, who are residents of the state, are charged an incidental fee of ten dollars a semester. Non-residents are charged double the fee required of residents of the state, or twenty dollars a semester. No reduction is made for late entrance or for leaving before the end of the semester. Save in the case of the first registration, the incidental fee is increased 25 cents for each day's delay in registration, beginning with the day set for recitations to begin. In addition to this fee, students who take work in laboratories are charged a sum sufficient to cover the cost of material and breakage. The following is a statement of fees charged per semester for freshman year; chemistry, $5; botany, $3; zoology, $3.

Courses of Study

FOUR-YEAR COURSE IN SCIENCE, LITERATURE AND ARTS

LEADING TO THE DEGREE OF BACHELOR OF ARTS.

The degree of Bachelor of Arts will be conferred upon any student who completes, from the courses offered in this college, one hundred and twenty-six credits, in addition to the required exercises in Drill, Gymnasium and Physical Culture. A credit is one hour per week through one semester.

Of the courses selected five or more shall be long courses, and at least one long course shall be chosen from each of the following groups:

(a) English, French, German, Greek, Latin, Rhetoric.
(b) Animal Biology, Astronomy, Botany, Chemistry, Geology and Mineralogy, Physics.
(c) Economics, History, Philosophy, Politics, Sociology.

No student shall receive credit for more than two beginning language courses save by special permission.

A long course means an amount of work equivalent to not less than twelve credits in one department.

A double period in laboratory subjects counts as one credit-hour.

The notation [n] indicates the number of exercises per week, and [n2] indicates the number of double periods per week.

FRESHMAN YEAR.

Mathematics [3]—Required of all during freshman year.

(a) Second Part Higher Algebra and Trigonometry, for those who have entrance credits in First Part Higher Algebra and Solid Geometry.
(b) Solid Geometry and First Part Higher Algebra for those who lack entrance credits in these subjects.
(c) Freshmen who have an entrance credit in First Part Higher Algebra, but not in Solid Geometry, will take Second Part Higher Algebra the first semester and Solid Geometry the second semester.
(d) Freshmen who have an entrance credit in Solid Geometry, but not in the First Part Higher Algebra, will take First Part Higher Algebra the first semester and Trigonometry the second semester.

Note: First Part Higher Algebra and Solid Geometry cannot receive credits both for entrance and for freshman requirements.

Rhetoric [3] *Course* I.—Required of all who do not pass with a grade of "good" or "excellent" Part II. of the examination in Entrance English.

Students who have had special preparation in Debate may, by consent of the Head of the Department, substitute Argumentation for Rhetoric.

Preparatory Rhetoric [3]—Required of all who do not pass Part I. of the examination in Entrance English. This does not give a University credit.

Military Drill [3]—Required of men.

Gymnasium [1, in two periods]—Required of men.

Physical Culture [3]—Required of women.

In addition students shall choose from the following list a sufficient number of subjects to make in the aggregate not less than fourteen nor more than seventeen credits. The subjects chosen must be continued through the year

Animal Biology [32], Course I. General Zoology.

Animal Biology [32] Course II. Representatives of the phyla of the animal kingdom. May be pursued in connection with course I or independently by those with proper preparation.

Botany [32], Course I, Short.

Botany [32], Course II, first year of long course.

Chemistry [32], Course I, General.

Elocution [3], Course VII. To count for two credits.

English [3], Course I, and Course II.

French [5], Course I, Grammar and translation, composition and conversation.

French [3], Course III, Beginnings of French literature and translations from modern authors.

French [5], Courses III and IV.

German [5], Course I, Grammar, translation, pronunciation, conversation and composition.

German [3], Course IV, Advanced, third year's work.

German [5], Courses IV and V.

Greek [5], Course I, Grammar, Anabasis and composition.
Course II may be pursued at the same time to advantage.

Greek [1], Course II, Composition.

Greek [3], Course III, Oratory and history.

History [3], Course I, 31 B. C. to 1500 A. D.—Open to students with less than two years of preparatory history.

History [3], Course II, English Constitutional. Open to students who have completed the equivalent of course I.

Latin [3], Courses I (Livy), II (Cicero), III (Plautus and Terence), IV Selections.

Scandinavian [5], Course I, Grammar and composition; practice, including writing, speaking and translating Swedish.

Scandinavian [5], Course II, Grammar and composition; practice, including writing, speaking and translating Danish—Norwegian.

Scandinavian [3], Course III, History of Scandinavian literature and study of authors.

Spanish [5], Course I, Grammar and composition, conversation and translation.

SOPHOMORE YEAR.

Rhetoric [3]—Required of all who took Preparatory Rhetoric in the freshman year. It counts for freshman and not sophomore credits.

Military Drill [2]—Required of men.

In addition to Military Drill sophomores shall elect not less than fifteen nor more than eighteen credit-hours of work from the subjects open to them. See departmental statements.

JUNIOR AND SENIOR YEARS.

The work of these two years is entirely elective, it being provided that no student shall elect less than fifteen nor more than eighteen hours of work in any semester, save by permission of the Committee on Students' Work.

1. Students who carry Military Drill [3] beyond the required two years will be allowed two semester credits for each year; but no credit will be allowed for such Drill for less than one year.

2. Seniors contemplating entering the Medical Department are permitted to elect the courses in Anatomy, Chemistry, Histology and Physiology (it being understood that no repetition of work is allowed) in the Medical Department. The work completed in any or all of these departments will be applied toward the work required for a degree in this college.

3. Members of the senior class of this college are permitted to elect throughout the senior year, work in the College of Law, including the Elements

of Contracts, Domestic Relations, Torts and Criminal Law. The satisfactory completion of the above named courses will give the student twelve senior credits, and will entitle him to admission to the middle class of the College of Law. No student will be permitted to take more than one lecture each day in the College of Law, without special permission of the faculty of this college. The work must be taken with the night class in the College of Law.

The University Summer School

This school begins shortly after Commencement and lasts about six to eight weeks. Courses are given in both Elementary and University work. These courses may be utilized to enable students to make up entrance deficiencies and to remove a portion of their academic work.

Full information concerning these courses may be obtained from the Registrar.

Students

FOURTH YEAR—50.

Abbott, William Pitt ..... Faribault.
Ashley, Edward Mayo, ... Pembina, N. D.
Ashley, Paul Leonard, Frazee. ..... Frazee.
Aspelund, Joseph Seiler, ... St. Paul.
A. B., Luther College.
Bartron, Harry J., ... Lake City.
Bergh, Luthard, N., ... Minneapolis.
B. A., Augsburg Seminary.
Bray, Elwyn R., ... Biwabik.
B. A., University of Minnesota.
Brede, William George, ... Minneapolis.
Bulkey, Nathan Cowperthwaite, ... Danbury, Conn.
Button, Arthur J., ... Bowdle, S. Dakota.
Callerstrom, Gottfried William, ... Gowrie, Ia.
B. A., University of Minnesota.
Canfield, Harry Eugene, ... St. Charles.
Carlsen, Edwin Lawrence, ... Albert Lea.
Cheleen, Sigfrid, ... Minneapolis.
A. B., Augustana Coll.
Cosgrove, Joseph Henry, ... Montevideo.
Ely, Orriman Stewart, ... Superior, Wis.
Green, George Heighbert, ... St. Peter.
A. B., University of Minnesota.
Hagen, Olaf Jensen, ... Abercrombie, N. D.
A. M., No. Illinois Coll.
Hammes, Ernest Martin, ... Hampton.
Haney, Claude Leonard, ... Minneapolis.
B. A., University of Minnesota.
Iverson, Anthon Bernant, ... Beldenville, Wis.
A. B., St. Olaf Coll.
Knight, Ray Roberts, ... Minneapolis.
B. A., University of Minnesota.
Ludemann, Alfred Henry, ... Minneapolis.
Lund, Axel Borg, ... Dawson.
Ph. B., Hamline University.
McLaughlin, Jerome Emillian, ... Blue Earth.
McMahon, Charles Gilbert, ... Adrian.
Metcalf, James N., ... Minneapolis.
Miller, Harry William, ... Wahpeton, N. D.
Moir, William Wilmerding, ... Minneapolis.
Moren, Edward, ... Minneapolis.
*Nelson, Arne (deceased.)
Nielsen, Niels, ... Denmark, Europe.
Ph. C., University of Minnesota.
Pederson, Reuben Martin, ... Hanley Falls.
A. B., Augsburg Seminary.
Peterson, Victor Nathan, ... Cokato.
A. B., Gustavus Adolphus Coll.
Pratt, Chelsea Carrol. ..... Minneapolis.
Rice, Clarence Prentice, ... Appleton.
Rudell, Gustaf Leonder, ... Winthrop.
A. B., University of Minnesota.
Schneider, John Petrus, ... Plainview.
Seaberg, Simon Peter, ... South Haven.
A. B., Carleton Coll.
Smith, Fred LeRoy, ... Minneapolis.
A. B., University of Minnesota.
Smith, Margaret Isabel, ... Minneapolis.

Teisberg, Carl Benjamin, ... Ashby.
A. B., Luther Coll.
Tyler, Frank Alexsius, ... Brainerd.
Tyrrell, Clinton Cassim, ... Minneapolis.
Ph. B., Hamline University.
Verne, Victor Ernest, ... Minneapolis.
Vistaunet, Peder, ... Fargo, N. D.
Walter, Guy F., ...
Witham, Carl Albion, ... Rock Elm, Wis.
Wylie, Arthur Rufus, ... Faribault.
A. B., Harvard University, *Ph. D.*, Wooster.
Schutt, John Pettinger, ... Minneapolis.
A. B., McMaster University, Toronto, Can.

THIRD YEAR—44.

Barclay, Alexander, Jr., ... St. Paul.
Boyum, Peter Arndt, ... Rushford.
Brown, John C., ... Leland, Calif.
A. B., Stanford University.
Chesley, Albert Justus, ... Minneapolis.
Colp, Donald G., ... Minneapolis.
A. B., *A. M.*, Fargo College, North Dakota, *B. D.*, Yale.
Current, Earl, ... New Ulm.
Cutts, George, ... Minneapolis.
Egan, John Michael, ... Osseo.
Eklund, Elmer Julius, ... Young America.
Emanuel, Henry J., ... Milnor, N. D.
Estrem, Carl Olaf, ... New London.
A. B., Luther Coll.
Fortier, Edward Lewis, ... Little Falls.
Foster, Bainbridge William, ... Hector.
A. B., University of Minnesota.
Herman, Moses B., ... St. Paul.
Jennings, George, ... Cavalier, N. D.
B. A., University of North Dak.
Jones, Elmer Mendelssohn, ... Minneapolis.
Judson, William E., ... Forman, N. D.
Ph. B., Hamline University.
Karn, Bert Ruthvin, ... Ortonville.
Kelsey, Carlton Gale, ... Minneapolis.
A. B., University of Minnesota.
Kvittum, Joseph M., ... Minneapolis.
Labbitt, Roy Henry, ... Detroit.
Larsen, Oscar O., ... River Falls, Wis.
A. B., Luther College.
Lemstrum, Jarl Ferdinand, ... Minneapolis.
Phil. Kand., University of Helsingfors.
Loomis, Earl Alfred, ... Owatonna.
A. B., University of Minnesota.
McGroarty, John James, ... Rosemount.
B. A., St. Thomas College.
McMillan, Mary Adelia, ... St. Peter.
Maland, Clarence, ... Rushford.
A. B., University of Minnesota.
Martin, Thomas Roy, ... Mantorville.
B. A., University of Minnesoa.
Pederson, Harold, ... Grand Forks, N. D.
A. B., St. Olaf.
Poppe, Frederick Harold, ... Minneapolis.
B. A., University of Minnesota.
Quist, Henry William, ... Chisago City.
Rodgers, Charles LeRoy, ... Farmington.
Rosenthal, Ignatius Paul, ... St. Paul.
Sanborn, Courtland Rockwell, ... Faribault.
Scace, Lee Arbor, ... Pringhar, Iowa.
Smith, Clark S., ... Brainerd.
Smith, Ernest Vernon, ... Crawfordsville, Ind.
Strathern, Moses Lane, ... Rich Valley,
B. A., University of Minnesota.

Strang, David Monticue, ... Alexandria.
B. S., Carleton College.
Swanson, Cephas, ... Minneapolis.
A. B., Gustavus Adolphus.
Varco, A. Raymond, ... Austin.
B. A., University of Minnesota.
Weyrens, Joseph Peter, ... Watkins.
Ph. G., No. Indiana School of Pharmacy, *B. S.*, University of Minnesota.
Wiik, Johan Christian, ... Minneapolis.
Youngs, Alfred Hinks, ... Minneapolis.

SECOND YEAR—40.

Abbott, John Steele, ... St. Paul.
A. B., University of Minnesota.
Alexander, Ida Mary, ... Carver.
B. A., University of Minnesota.
Andrews, Roy Newberry, ... Mankato.
Bloom, Charles Joseph, ... Clear Lake, Wis.
B. A., Carleton College.
Bock, Rolland, ... St. Paul.
Phar. C. University of Minnesota.
Bostrom, August Edward, ... Minneapolis.
Boyd, Leon Morelle, ... Alexandria.
Buckley, John, ... Farmington.
Burns, Herbert Arthur, ... Hutchinson.
Dahleen, Henry, ... Granite Falls.
Engstrom, Fred Alonzo, ... Cannon Falls.
Esser, John, ... Austin.
Eusterman, George Bysshe, ... Lewiston.
Freedman, Isaac Valera, ... Minneapolis.
Grangaard, Henry Oswald, ... Kindred, N. D.
A. B., Luther College.
Hagenbeck, Max Alfred, ... St. Paul.
Hemingway, Ernest Eugene, ... Minneapolis.
B. A. Ripon, *M. A.*, University of Minnesota, *Ph. D.*, University of Minnesota.
Hensel, Charles Norton, ... St. Paul.
Hitchings, William Sidney, ... Sutherland, Iowa.
Johnson, Carl Martin, ... Minneapolis.
B. A., Augsburg.
Johnston, Edward James, ... St. Cloud.
Knutson, Albert, ... Bath, S. D.
Lawrence, Edward John, ... Marshall.
Lindberg, Arvid C., ... Harris.
Maertz, Will Francis, ... New Prague.
Magnuson, Gustaf Alfred, ... Harris.
A. B., University of New Mexico.
Manley, James Rollin, ... Duluth.
Nelson, Melvin Sylvanius, ... Dawson.
Olson, Frederick Adolf, ... Wells.
A. B., University of Minnesota.
Opp, Paul Alfred, ... Hegbert.
Robertson, Archibald Wright, ... Litchfield.
Ryan, Dennis Edward, ... Shakopee.
A. B., St. Thomas.
Smith, Charles Eastwick, Jr., ... St. Paul.
B. A., Yale.
Stadfield, Clayton Grube, ... St. Paul.
Stebbins, Eugene Benson, ... Barron, Wis.
Strachauer, Arthur Clarence, ... Minneapolis.
Walker, George Hamilton, ... Pawnee City, Neb.
B. S., University of Nebraska.
Watson, Tolbert, ... Cashel, N. D.
B. A., Macalester.
Weum, Thurston William, ... Minneapolis.
Worman, Oscar Edward, ... Marshall.
Ph. B., Hamline University.

FIRST YEAR—58.

Anderson, Oscar Hennings, ... Star Prairie, Wis.
Baker, Ernest Lavern, ... Fairmount, N. D.
Barney, Leon Ambrose, ... River Falls, Wis.
Blythe, Redford V. C., ... Minneapolis.
Booren, Clifton Augustus, ... Stillwater.
Brimmer, Archie Ell, ... St. Paul.
Brooks, Charles Noyes, ... Minneapolis.
Caldwell, James Phaon, ... St. Paul.
Campbell, Albert Alexander, ... St. Paul.
Coleman, Fred, ... Minneapolis.
Ph. B. Hamline University.
Critchfield, Lyman Ray, ... Hunter, N. D.
Delmore, John Leo, ... Marshfield, Wis.
Drake, Charles Ralph, ... Rushford.
Earl, George Arthur, ... Minneapolis.
Fiksdal, Mads Johanson, ... Webster, S. D.
Foshager, Henry Theodore, ... Pennock.
B. S., St. Olaf College.
Furber, James Hinds, ... Minneapolis.
Gardner, Ray, ... Mantorville.
Glyer, Richard Theodore, ... Superior, Wis.
Griebenow, Frederick, ... Alexandria
Hayes, Michael Francis, ... Lanesboro.
Heley, Raymond Thomas, ... Minneapolis.
Johnson, Carl Martin, ... Minneapolis.
Kellogg, Paul Martin, ... Red Wing.
Kjelland, Andrew Arthur, ... Rushford.
Kurz, John Wesley, ... Annandale.
Larson, Martin ..... Atwater, Minn.
Leach, Harry P., ... Minneapolis.
Libby, Elva Estelle, ... Spokane, Wash.
B. A., Washington State College.
McIntyre, Philip Henry, ... Eden Valley.
Maloney, James Francis, ... Abbeyfeal, Ireland.
Maxeiner, Stanley Robert, ... Minneapolis.
Mendelson, Oscar, ... Minneapolis.
B. A., University of Minnesota.
Meyerding, Henry William, ... St. Paul.
Milner, Augustus Fischer, ... Chicago, Ill.
Mortenson, Nels George, ... St. Paul.
Murphy, Ignatius Joseph, ... Lakefield.
Olson, William Paul, ... Merriam Park.
Ostergren, Edward William, ... St. Paul.
Oyen, Martin, ... Watson.
Paulsen, Edward Ludwig, ... Hanska.
Perry, Clarence George, ... St. Paul.
Peterson, Henry Frithiof, ... Chisago City.
B. A., Gustavus Adolphus College, St. Peter.
Piper, Monte Charles, ... Mankato.
Robitshek, Irving Herman, ... Minneapolis.
Ph. C., University of Minnesota.
Rowe, William Henry, ... St. James.
Schmidt, Henry Albert, ... *Westbrook.*
Smith, Alfred Nelson, ... Wheatland, N. D.
Souba, Fred J., ... Hopkins.
Stewart, Elsie Gertrude, ... Minneapolis.
Sundt, Mathias, ... Minneapolis.
Sutton, Charles Stewart, ... Prior Lake.
Swanstrom, Henry Nelson, ... Lake Park.
Thompson, Herbert Henry, ... St. Paul.
Trowbridge, Ellsworth Hayden, ... St. Paul.
Walker, James Douglas, ... Moorhead.
B. A., University of North Dakota.
Zander, Charles Henry, ... Rochester.
Ph. C., University of Minnesota.
Zoerb, Edward Franklin, ... Algoma, Wis.

Recommendation for Admission to the College of ine and Surgery of the University of Minneso

1906-1907

FROM ..... (Name of School)

This is to certify that ..... (Name of Applicant)

who { *graduated from / left } this school on the ..... day of ..... 190....

has satisfactorily completed all the requirements for admission as given herewith, and is hereby recommended for admission to the College of Medicine and Surgery.

*Cross out the words which do not apply to the candidate.

In cases where the study was not pursued in this school, state facts in column for remarks.

The required subjects are given first, but the extent to which the other studies have been pursued must be indicated.

STUDIES	STANDING	TIME IN WEEKS AND HOURS PER WEEK OR IN "UNITS"	TEXT BOOKS	REMARKS
ENGLISH—1st year [1]				
2nd year [1]				
3rd year [1]				
4th year [1]				
[illegible]				
[illegible]metry [1]				
Latin Grammar [1]				
Cæsar [1]				

Seven One Year Credits to be Chosen from the List Given Below

LATIN	Cicero [1]				
	Vergil [1]				
GREEK	Grammar [1]				
	Anabasis [1]				
GERMAN	Grammar [1]				
	Literature [1]				
FRENCH	Grammar [1]				
	Literature [1]				
SPANISH	Grammar [1]				
	Literature [1]				
HISTORY	English [½]				
	Senior American [½]				
	Ancient, to 800 A. D [1]				
	Modern, from 800 A. D. [1]				
Civics [½]					
Political Economy [½]					
Physics [1]					
Chemistry [½ or 1]					
Astronomy [½]					
Botany [½ or 1]					
Zoology [½ or 1]					
Commercial Geography [½]					
Physiography [½]					
Geology [½]					
Solid Geometry [½]					
Higher Algebra [½]					

Studies Pursued in College Course

MATHEMATICS				
Higher Algebra, 1st Part				
Solid Geometry				
Higher Algebra, 2nd Part				
Plane Trigonometry				
LANGUAGE				
English				
Rhetoric				
Latin				
LANGUAGE				
German				
French				
Greek				
Scandinavian				
[illegible]nish				
[illegible]				
SCIENCE				
Botany				
Chemistry				
Zoology				

[*Signature of Principal or Dean*] .....

Date .....

Volume IX. No. 10. July 25, 1906.

The University of Minnesota Bulletin

The Graduate School

Announcement, 1906-1907

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The University Catalogues are published by authority of the Board of Regents, as a regular series of bulletins. The number issued each year varies from ten to twelve. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

The University

The University of Minnesota comprises the following named colleges, schools, and departments:

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the goverment and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

*By the later act the President has been given a vote.

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof: and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act

relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The said Board of Regents shall succeed to and have control of the books, records, buildings, and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for. Provided, that all contracts made at that time, binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress, above mentioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the Uni-

versity during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the nature and results of all important experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof; and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee
The University press committee
The committee on athletics
The committee on University relations to other institutions of higher learning
The committee on health and sanitation
The committee on commencement and other University functions
The committee on catalogue, programs and courses of study
The committee on student entertainments and social affairs

and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

Representatives to the Council

The College of Science, Literature and Arts

DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering

DEAN F. S. JONES
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines

DEAN WM. R. APPLEBY

The School of Chemistry

DEAN GEO. B. FRANKFORTER

The College of Education

DEAN GEO. F. JAMES

The Graduate School

DEAN H. T. EDDY

The College of the School of Agriculture

DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law

DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery

DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

General Alumni Association

MAYOR DAVID P. JONES

University Council Committees

The University Auditing Committee
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

S.	M.	T.	W.	T.	F.	S.
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

S.	M.	T.	W.	T.	F.	S.
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

S.	M.	T.	W.	T.	F.	S.
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

S.	M.	T.	W.	T.	F.	S.
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

University Calendar, 1906-1907

THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FIRST SEMESTER

SEPTEMBER	10 M	Entrance examinations and registration	
	11 T	Entrance examinations and registration	
	12 W	Entrance examinations and registration	
	13 Th	Entrance examinations and registration	
	14 F	Entrance examinations and registration	
	15 S	Examinations end and registration completed....	1 w
	17 M	Classes called for regular work (First College classes organized, 1869)	
	22 S	.....	2 w
	29 S	.....	3 w
OCTOBER	6 S	.....	4 w
	13 S	.....	5 w
	20 S	.....	6 w
	27 S	.....	7 w
NOVEMBER	3 S	.....	8 w
	10 S	.....	9 w
	17 S	.....	10 w
	24 S	.....	11 w
	29 T	Thanksgiving Day Recess three days	
DECEMBER	1 S	.....	12 w
	8 S	.....	13 w
	15 S	.....	14 w
	22 S	Holiday recess begins (no classes).....	15 w
	25 T	Christmas Day	
JANUARY	1 T	New Year's Day	
	8 T	Work resumed in all departments	
	12 S	.....	16 w
	19 S	.....	17 w
	28 M	Semester Examinations VII and VIII hour classes.....	18 w
	26 S	Semester Examinations I hour classes	
	29 T	Semester Examinations II hour classes	
	30 W	Semester Examinations III hour classes	
	31 Th	Semester Examinations IV hour classes	
FEBRUARY	1 F	Semester Examinations V hour classes	
	2 S	Semester Examinations VI hour classes	

SECOND SEMESTER

FEBRUARY	4 M	Second semester begins—Classes called for regular work	
	9 S	.....	1 w
	12 T	Lincoln's birthday—Holiday	
	16 S	.....	2 w
	18 M	University Charter, 1868. General Sibley died 1891.	
	22 F	Washington's birthday—Holiday	
	23 S	.....	3 w
MARCH	2 S	.....	4 w
	9 S	.....	5 w
	16 S	.....	6 w
	23 S	.....	7 w
	30 S	.....	8 w
APRIL	6 S	.....	9 w
	13 S	.....	10 w
	20 S	.....	12 w
	27 S	.....	13 w
MAY	4 S	.....	11 w
	11 S	.....	14 w
	18 S	.....	15 w
	25 S	.....	16 w
	27 M	Senior examinations begin	
JUNE	1 S	.....	17 w
	3 M	Semester examinations. I hour classes	
	4 T	Semester examinations. II hour classes	
	5 W	Semester examinations. III hour classes	
	6 Th	Semester examinations. IV hour classes	
	7 F	Semester examinations. V hour classes	
	8 S	Semester examinations. VI hour classes	18 w

COMMENCEMENT WEEK 1907

SUNDAY	June 9	Baccalaureate Service
MONDAY	June 10	Senior Class Exercises
TUESDAY	June 11	Sigma Xi Address. Senior Promenade
WEDNESDAY	June 12	Alumni Day
THURSDAY	June 13	Commencement Day—The Thirty-fifth Annual Commencement
FRIDAY	June 14	Summer Vacation Begins

PROGRAM OF EXAMINATIONS, SEPTEMBER, 1906

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS
THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS
THE SCHOOL OF MINES
THE COLLEGE OF LAW
THE SCHOOL OF CHEMISTRY.

The numbers placed after the subjects, when given, indicate the rooms in which the examinations will be held.

—DAY—	—HOUR—	—SUBJECTS FOR ADMISSION TO THE— FRESHMAN CLASS
Monday, September 10,	8:00—10:30	[1] Elementary Algebra.
	10:45— 1:15	[1] Higher Algebra
	2:30— 5:00	[1] Plane Geometry
Tuesday, September 11,	8:00—10:30	[1] Solid Geometry
	10:45— 1:15	[2] All History Subjects.....17
	2:30— 5:00	[2] Civics 16
Wednesday, September 12,	2:00— 5:00	[3] Geology 18
		[3] Physiography 18
		[2] Commercial Geography 16
Thursday, September 13,	8:00—10:30	[6] Drawing 24
		[6] Shop Work .....
		[2] Political Economy.....16
	10:45— 1:15	[1] German
	2:30— 5:00	[1] French
		[1] Latin Grammar
Friday, September 14,	8:00—10:30	[1] Greek
		[1] Cæsar
	10:45— 1:15	[1] Cicero
		[1] Virgil
	2:30— 5:00	[4] Chemistry
		[5] Physics
		[3] Botany ..... B
		[3] Zoology 29
		[1] Astronomy 35

[1] Place to be announced; [2] Library Building; [3] Pillsbury Hall; [4] Chemical Laboratory; [5] Physics Building; [6] The Shops.

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over $800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about $450,000 and the equipment of the buildings at about $300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at $400,000, and the sub-stations located at Crookston and Grand Rapids, at $30,000 more. The buildings and equipment of the department of agriculture are valued at over $400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated $350,000 for the erection of a "Main Building," of which $200,000 is available in 1906, and $150,000 will be available in 1907: this amount will be supplemented by $60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of $410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

The Legislature of 1903 appropriated the sum of $100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100 feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least $125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medical Department of the University.

The Hon. Thomas H. Shevlin has donated to the University $60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this

building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to $1,400,000. The annual interest on these bonds is at present about $53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of $15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of $25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts	$53,000.00	
U. S. Government, Hatch Bill appropriation	15,000.00	
U. S. Government, Morrill Bill appropriation	25,000.00	
Total from the Government		$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of $846,000,000, which will give about	$194,000.00	
A flat appropriation called a deficiency appro. of	60,000.00	
An appropriation for support of School of Mines	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		$263,500.00

Amount received from Student's fees	$126,000.00	
Dental Infirmary receipts	12,000.00	
Station & School, sales and fees	14,000.00	
Miscellaneous Receipts, University	2,000.00	
Total from University		$154,000.00
Total estimated current expense receipts for 1906		$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*

2 *College Libraries,* including those in Law, Medicine, Engineering, Agriculture.

3. *Departmental Libraries,* including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, Histology and Embryology, History, Mathematics, Military Science, Pathology and Bacteriology, Pedagogy, Physics, Physiology, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D, who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy:* All the material collected by the State Zoölogist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English:* A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design..

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum*: This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics*: This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3640 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean,* 35, men; *Forum,* 30, men; *Minerva,* 30, women; *Law Literary,* unlimited, law students; *Castalian,* 35, men; *Theta Epsilon,* 30, women; *Thalian,* 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of the board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, $4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of $5,000, amounting to $250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of $100, $50 and $25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of $25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of $75 for the members of

the team winning the inter-sophomore debate, and another prize of $25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of $100, established by her father, the late Frank H. Peavey. This prize consists of $75 for the members of the team winning the freshman-sophomore debate, and another prize of $25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of fifty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of $200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers $75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of $3,000, which will yield an annual income of about $175. A prize of $100 will be given

to the winner of the first place, $50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

General Information

THE ONE-MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

MILITARY DRILL.

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in Military Science and Tactics at all institutions that are its beneficiaries. The Armory is located on the University campus and has all the facilities usually provided in a modern Armory. The United States Government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

EXPENSES OF STUDENTS.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from $217.00 to $397.00. The same students earning sums varying from $237.00 to $272.00. The young women reported expenses varying from $150.00 to $355.00. These figures do not include fees, and, as the cost of living has increased decidedly, probably 25 per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortablly nor to have as many privileges as these students had.

Board can be had at prices ranging from $2.10 to as high as the student

can afford to pay. In private families board ranges from $3.00 to $5.00.

Furnished rooms vary in price from $8 to $20 per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the young men's or young women's Christian association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their own way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

THE FACULTY

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Assistant Professor of Physics.

JOHN ZELENY, Ph. D., Minneapolis.
Associate Professor of Physics.

The Graduate School

This school has been established by the Board of Regents to include in a single organization the graduate work of all colleges and schools of the University, which offer courses of instruction leading to the higher degrees. The administration of the school is entrusted to the Dean, who is charged with its supervision and regulation, under the general direction of the President.

The faculty of the school consists of all those professors in the University who give courses of instruction accepted for such higher degrees as are offered by the school. Each college of the University has its graduate committee.

The Dean is chairman of the faculty and of the graduate committees of the various colleges, *ex officio*.

The aim of the school is to offer instruction and opportunity for study combined with facilities for investigation and research to graduate students who desire to pursue some one or more branches of knowledge beyond the ordinary undergraduate courses.

FEES.

All students taking full work in this school are required to pay a fee of ten dollars a semester, or a proportionate fee for less work. Members of the staff of instruction in the University may register for graduate work without payment of tuition fees. Laboratory fees are charged in addition to those just mentioned.

ADMISSION.

Any graduate from a four years' course of study in any reputable college or university will be admitted to the graduate school without examination, but will not be thereby admitted to candidacy for either of the higher degrees until his case has been duly considered and approved, as is explained later, in connection with the several degrees.

Each applicant for admission to the school should present himself in person to the registrar with his credentials, (preferably his diploma of graduation), in order to register and pay his fees.

In case of doubt respecting the sufficiency of credentials, consult the dean.

Registration at the beginning of each semester is obligatory upon graduate students and undergraduates alike.

Each student will receive at registration for entrance to the school, as well as at the beginning of each semester thereafter, a blank on which to inscribe the courses he desires to pursue. When the professors in charge of those courses shall have put their signatures upon the blank, certifying that the student is prepared to begin such of these courses as they have charge of, the registrar will issue cards authorizing the student to attend the courses thus certified to.

At the end of each semester regular reports shall be made to the registrar by the professors in charge of the various courses of the graduate students as to the amount and grade of work completed by each student during the semester, as is done in case of undergraduates.

DEGREES.

The degree of Master of Arts is, in general, conferred for advanced non-technical study; the degree of Master of Science for advanced technical study, such as agriculture, industrial chemistry, engineering, etc.; and Master of Laws for advanced legal studies.

The Master's Degree. Three degrees of this grade are conferred, viz: Master of Arts (M. A.), Master of Science (M. S.), and Master of Laws (LL. M.).

Candidacy for the Master's Degree. Any bachelor, a graduate of this university or of any other university or college with an equivalent baccalaureate course, will be enrolled by the Dean as a candidate for the corresponding master's degree on the basis of an approved course of study conforming to requirements detailed below, provided the heads of the departments in which the studies selected lie, signify their approval of the student's preparation to enter upon the work selected.

In case of inadequate preparation for the work selected, such preliminary study as the case may require will be stated by the professor in charge and will be insisted on before the applicant is admitted to candidacy.

REGULATIONS.

The master's degree will be conferred on any candidate duly enrolled for that degree, who not sooner than one year after graduation if in residence at the university, and not sooner than two years after graduation if not in residence, shall pass satisfactory final examinations on the course which was approved when he was admitted to candidacy, and shall in addition present an acceptable thesis in accordance with the following provisions:

The professor with whom the candidate pursues his major subject shall be chairman of a committee of three, having in charge the work of the candidate from the time of his enrollment as such, the other members of

the committee being those professors under whom the candidate's minors fall. This committee shall arrange for and have charge of the final examinations of the candidate; it shall approve the subject of the thesis, and pass upon the thesis itself. The candidate must secure their approval of his subject at least three months before graduation and must complete the thesis and all examinations at least two weeks before graduation. It shall be the duty of this committee to canvass the examinations of the candidate's whole course together with the thesis, and in case they regard him entitled to a degree, to report the fact to the Dean, at least one week before commencement. The chairman of the committee shall also make a final report upon the candidate to the registrar one week before commencement.

Any candidate for master's degree at commencement must, as a preliminary, make application to the Dean in writing, by the first of the preceding May, and state the courses in which he has passed and is to pass examination, the title of his thesis, and the names of the committee in charge of his work.

The amount of work required for the master's degree shall be equivalent to that done by the senior class, viz.: An average of sixteen hours per week for two semesters. Proficiency shall be determined by examination upon the subject matter of the courses taken and of the thesis.

For convenience in selecting among the various departments and subjects of study they are arranged in groups, as follows:

1. Education, History, Philosophy, Psychology.
2. Economics, Law, Political Science, Sociology.
3. Greek, Latin, Sanscrit and Semitic languages and literatures.
4. Comparative Philology, English, Germanic, Romance and Scandinavian languages and literatures.
5. Anatomy, Animal Biology, Bacteriology, Embryology, Histology, Botany, Paleontology, Physiology.
6. Agriculture, Chemistry, Geology, Mineralogy.
7. Astronomy, Engineering, Mathematics, Mechanics, Physics.

Candidates desiring a master's degree in some special line of study, for the purpose of teaching or research, or as a basis for studies leading to the doctor's degree, must select three subjects of study, a major to occupy at least eight of the sixteen hours required, a first minor to occupy at least four hours which shall be germane to the major subject by being selected from the same group or a closely related group, and a second minor to occupy at least two hours, which last shall be in some reasonable connection with the other subjects selected. In special cases the candidate may be allowed to fill the required time with a major and one minor only. The thesis in this case must embody the results of study and investigation along the line of the major subject. In attaining this specialized master's degree, the thesis is regarded of much importance, and to it

the candidate should devote much time and effort. To render this possible, the professor in charge of the major subject may count work assigned in its preparation as part of the time required in that subject.

Candidates desiring a master's degree with a view to general culture will select subjects from three distinct groups, of which the work in no one group shall be less than four hours a week, for the year. The work in one of these groups shall be designated as the candidate's major and to it the subject of his thesis shall stand in close relation. The courses pursued in the major shall be in advance of any regularly pursued by undergraduates.

The other two subjects selected shall be designated as minors.

A minor in any subject will require as a prerequisite that the student selecting it shall have pursued that subject at least one year before entering upon the course or courses of which the minor consists.

A candidate for the degree of Master of Laws must not only be Bachelor of Laws from a reputable law college having a course equivalent in length to that at the University of Minnesota, but he must in addition have been admitted to the bar in Minnesota. Any person who possesses the requisite legal learning may on registration pursue any or all of the studies offered for this degree, but he thereby acquires no standing as candidate for this degree.

The major selected for this degree will in all cases be Law, and the minors Political Science and Constitutional History.

The Doctor's Degree. Three degrees of this grade are conferred, viz.: Doctor of Philosophy (Ph. D.), Doctor of Science (Sc. D.), and Doctor of Civil Law (D. C. L.), for still more advanced study than that leading to the corresponding bachelor's and master's degrees, and such special attainments therein as show power of original investigation and independent research, together with a fair degree of literary skill as evinced by the preparation of a thesis which shall be a contribution to knowledge.

Candidacy for the Degree of Doctor. Any student in the Graduate School who applies to be enrolled as candidate for a doctor's degree must, in order to be enrolled as such, possess a reading knowledge of French and German, certified to by the professors respectively in charge of those languages, and in case of an applicant applying to be enrolled as candidate for the degree of Doctor of Civil Law, proficiency in Latin and Roman History are also required. Knowledge of Latin will also be required in certain other cases such as for a major in Medieval History, or Philosophy, as the professor in charge may prescribe.

The applicant must also have made before enrollment such noteworthy advancement in his graduate work as to secure the approval of his candidacy by his instructors. And in particular, he must obtain the written consent of the professor under whom his major subject falls to take

charge of his instruction in that subject. His minors must also be acceptable to this professor, who must recommend him to the dean as a suitable candidate for the degree sought.

In order for the application to be successful, this professor should also state that through the work thus far accomplished by the applicant, he has become convinced of his capacity and of his probable ability to carry an investigation in his special field to a successful conclusion and embody it in a valuable thesis.

The Dean shall, after full consideration and consultation with the professors concerned, pass upon his application and have power to enroll the applicant as candidate or refuse to do so.

It will frequently not be practicable to enroll an applicant as candidate for the doctor's degree before the completion of one year's study in the Graduate School. Graduates desiring to become candidates for this degree will find it advisable, under ordinary circumstances, to spend the first year of graduate study in attaining to the specialized master's degree, as part of the work leading to the doctor's degree.

That procedure is likely to furnish such a decisive test of capacity for advanced study, as well as experience in preparation of a thesis, as to definitely settle the question of candidacy for the doctor's degree.

Candidates for the degree of Doctor of Civil Law are required to secure the degree of Master of Laws as a preliminary.

REGULATIONS.

Candidates for the degree of doctor must devote at least three years of graduate study to the subjects approved for candidacy. One of these three years, viz., that in which the final examinations are held, must be spent in residence at the University of Minnesota. In lieu of the other years the candidate may offer an equivalent term of graduate study at some other university, but study pursued and work done *in absentia* without proper facilities of libraries and laboratories will not be accepted.

The same general regulations govern the candidate for this degree as hold in case of the specialized master's degree, both as regards the amount of study per year, the selection and relative amount of major and minors and as regards the chairman of the committee in charge of the work of the candidate, as well as regards the thesis required, which for this degree must give evidence of original and independent research and must be a contribution to knowledge.

In particular, considerable portions of the work on the major and on the thesis may be carried on under general direction of the professor in charge, in which case the candidate will be held responsible for large attainments in the directions indicated, in the form of written reports, reviews and criticism.

The candidate must pass satisfactory examinations upon his major and minor subjects. The committee shall indicate beforehand the requirements for final examination on the minors as to extent and proficiency. The final examinations upon the minors may occur at any time not more than a year prior to the final examination on the major.

The final examination upon the major must show an exhaustive knowledge of the special subject selected, and a large acquaintance with the general field in which the subject lies, but the candidate shall not be admitted to the final examination upon his major until his thesis has been considered by the committee in charge and found satisfactory.

The order of procedure to be followed is this: The candidate for a doctor's degree shall submit the title and outline of his proposed thesis to the professor in charge of his major for final approval at least as early as the first of October preceding the commencement at which the degree is to be conferred. In case the proposed subject and the outline are acceptable, the candidate shall make a statement in writing to the Dean, as early as the first of the following February, of his intention to present himself for a doctor's degree at the next commencement, giving at the same time the names of the committee in charge of his work, the subjects of his major and minors, and the title of his thesis.

The thesis itself shall be completed and delivered to the professor in charge at least one month before commencement. In case the thesis is adjudged satisfactory, the candidate will be admitted by the committee to final examinations upon his major, upon the subject matter of his thesis and upon such of his minors as are still incomplete.

This examination shall be arranged for by the professor in charge of the major, on a date at least two weeks before commencement. It shall be held by a committee of examination of which the professor in charge of the major shall be chairman, consisting of the professors in charge of the minors and, in addition, of such other members of the teaching force as the Dean may appoint as members of this examining committee. In order to do this, the dean shall be duly informed of the date of the examination by the chairman.

The examining committee shall decide from all the facts within its knowledge, whether the candidate is, in its estimation, entitled to receive the doctor's degree sought, and the chairman shall, without delay, report its findings, in writing, to the Dean and to the registrar.

Immediately after the final examination, the thesis shall be placed by the chairman in the president's office for general examination.

In case the report of the committee is favorable, the candidate shall be presented to the faculty of the graduate school, at a meeting called for the purpose, by the professor in charge of his major subject, who shall then make a written statement of the academic life of the candidate, of

the character and scope of his examinations, and the scope and value of his thesis.

Any member of the faculty shall then be at liberty to propound any questions he will to the instructors of the candidate, respecting his work, or to the candidate himself, respecting the subject matter of his thesis. Upon evidence before it, the faculty shall then decide by vote whether the candidate shall be recommended for the degree.

COURSES OF INSTRUCTION

The Roman numerals by which the courses are here designated are those under which they appear in the bulletins of the separate colleges.

The courses which are offered to both undergraduates and graduates may not be selected by graduates as major subjects, but as minors only. The courses offered primarily for graduates include the subjects offered to them as majors.

ANIMAL BIOLOGY.

The details of the work of a graduate student in this department will naturally depend upon and be determined by the previous training of the student and the end in view.

FOR UNDERGRADUATES AND GRADUATES.

II. Zoology. *Professor Sigerfoos.*
First and second hours on Tuesday, Thursday, Saturday. I and II prerequisite, course I.

III. Histology. *Professor Nachtrieb and Instructor Downey.*
Third and fourth hours on Monday, Tuesday, Wednesday, Thursday, Friday. I. and II prerequisite, course I.

IV. Embryology of Vertebrates. *Professor Nachtrieb.*
Fifth and sixth hours on Monday, Tuesday, Wednesday, Thursday, Friday. I and II prerequisites, courses I. and III.

V. Embryology of invertebrates. *Professor Sigerfoos.*
Hours and days arranged with the professor. I and II prerequisites, courses I and III.

VI. Comparative Anatomy of Vertebrates. *Instructor Brown.*
Fifth and sixth hours on Tuesday, Thursday, Saturday. I. and II prerequisite, course I.

VII. Taxonomy. *Instructor Brown.*
Entomology, third and fourth hours on Monday, Wednesday, Friday. I. and II. *Assistant Professor Oestlund.*
Ichthyology. Hours and days arranged with Professor Nachtrieb. I.
Ornithology. Sixth hour on Tuesday, Thursday, Saturday. II. Prerequisite, course I.

VIII. Physiology. *Professor Sigerfoos.*
Fourth hour on Monday, Wednesday, Friday. I. alternates with course IX and will not be offered in 1907-8.

IX. Nature Study. *Professor Sigerfoos.*
Fourth hour on Monday, Wednesday, Friday. II. alternates with course VIII. It will be offered in 1907-8.

XI. Neurology. *Professor Nachtrieb and Instructor Downey.*
Third and fourth hours on Monday, Tuesday, Wednesday, Thursday, Friday. I. and II. or only I.

XII. Mental Evolution in Animals. *Professor Nachtrieb.*
Fourth hour on Saturday. I. This is a course of lectures that may be taken in connection with course III. or IV.

XIII. Economic Zoology. *Professor Nachtrieb.*
Fourth hour on Saturday. This course of lectures is, like course XII, open to all and may be taken in connection with course III. or IV. It is alternated with course XIV and will be given in the even-numbered years; accordingly not in 1907.

XIV. Parasitology. *Professor Nachtrieb.*
Fourth hour on Saturday. This is a course of lectures on disease producing animals that is open to all and may be taken in connection with course III. or IV. It is alternated with course XIII and is given in the odd-numbered years.

FOR GRADUATES.

XV. Philosophical Zoology. *Professor Nachtrieb.*
Occasional lectures to advanced students. Problems or special advanced work. Research along such line or lines as previous training, available material and end in view may suggest.
Graduate students are expected to take an active part in both the Journal Club and the Reading Club.
semester may be taken as a unit. Open to those who have completed course III. Open also as a major or minor to candidates for the degree of master of science.

ASTRONOMY.

FOR UNDERGRADUATES AND GRADUATES.

I. General astronomy. I, II. *Professor Learenworth.*
A study of the general principles of astronomy, illustrated by observatory work. Open to those who have completed trigonometry.

II. Practical astronomy. [3 or 6] I, II. *Professor Learenworth.*
The theory of instruments, the use of the ephemeris and nautical almanac; the various methods of determining time, latitude and longitude, parallax, the position of the celestial bodies, and the method of least squares; observatory practice including photography, and spectrum-analysis. Open to those who have completed analytical geometry, calculus and general astronomy.

FOR GRADUATES.

III. Extended course in practical astronomy. *Professor Learenworth.*

IV. Orbit work. *Professor Learenworth.*
Computation of orbits; the determination of the orbits of planets and comets; perturbations.

V. Astrophotography. *Professor Learenworth.*
The making and measuring of astronomical photographs; the determination of right ascension, declination, parallax, etc.

BOTANY.

FOR UNDERGRADUATES AND GRADUATES.

V. Cytology. Junior or senior I, II. *Professor McMillan and Dr. Lyon*
Laboratory work and collateral reading. The course includes a survey of cell structure and the various phenomena of division, fusion and metamorphosis, together with a review of the history of cytologic investigation from the time of Malpighi and Grew to the present. Assignments from the work of Strasburger, Hennegny, Hertwig, Wilson, Guignard, Beneden and Driesch will be made and methods of cytological research indicated in the laboratory. Open to those who have completed course III or IV. Open also as a major or minor to candidates for the degree of master of science.

VI. Algology. Junior or senior. I, II. *Assistant Professor Tilden.*
Lectures, laboratory and reference work. Instruction is also given in the preservation of material. The work of the first semester includes a detailed comparative morphological and taxonomic study of the freshwater algae, Cyanophyceae and Chlorophyceae, (with a systematic examination of the forms found in the Minneapolis water supply) and of the second semester a similar course in the seaweeds, Phaeophyceae and Rhodophyceae. Either

IX. Plant ecology. Junior or senior II. *Professor MacMillan.*
Lectures, collateral reading and field observations. The course is designed to cover generally the domain of adaptational adjustments in plant embryology, anatomy, physiology and distribution. Particular attention is devoted to the problems of ecological distribution. Open to those who have completed course I or III. Open also as a minor to candidates for the degree of master of science.

X. Wood technology. Junior or senior I. *Assistant Professor Freeman.*
This course will include a histological study of the most important woods of commerce and the special taxonomy of the trees and shrubs of Minnesota. Field trips, lectures and laboratory. Open to those who have completed course I or III.

FOR GRADUATES.

XI. Morphology and taxonomy. *Professor MacMillan.*
Important literature and necessary apparatus will be provided for whatever research is entered upon under the direction of the department, and the results of the investigation will be required to be prepared for publication. The course is an elastic one and will be adapted to the special training and requirements of those pursuing it. Open as a major or minor to candidates for an advanced degree.

XII. Problems in plant pathology and mycology. *Assistant Professor Freeman.*
Morphological, physiological and cultural problems in the diseases of plants. Methods of infection and culture in the study of disease in plants will be given. Open as a major or minor to candidates for an advanced degree.

XIII. Problems in algology. *Assistant Professor Tilden.*
Research work may be done on special groups or along any of the following lines: the freshwater algae of Minnesota; the algae of the Minneapolis and St. Paul water supplies; the algae of hot springs; lime-secreting algae; arctic marine algae (material from Vancouver Island); tropical marine algae (material from the Hawaiian Islands). Special facilities for study are offered by the Minnesota Seaside Station on Vancouver Island which is open during the summer vacation. Open as a major or minor to candidates for an advanced degree.

XIV. Problems in cytology and embryology. *Dr. Lyon.*
Special problems in cell morphology, life histories, embryology and histogenesis. The student will be provided with the necessary reagents, apparatus and plant-house facilities. Those so desiring may also select a subject for research from a large number of important problems, material on which has already been carefully selected and preserved for cytological and embryological study. Open as a major to candidates for an advanced degree.

XV. Paleobotany. *Dr. Sardesen.*
Lectures and laboratory work with collateral reading designed to cover the historical literature. Schenck's Handbuch will be used as a guide in the laboratory. Open as a partial minor to candidates for the degree of master of arts or of science.

CHEMISTRY.

FOR UNDERGRADUATES AND GRADUATES.

IV. Quantitative analysis. *Professor Sidener.*
Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis

V. Volumetric analysis. *Professor Sidener.*
Lectures and laboratory work. The course includes an introduction to volumetric analysis with a discussion of standard solutions and the necessary stoichiometric calculations.

VI. Organic chemistry. *Professor Frankforter.*
Lectures and laboratory work. This course includes the aliphatic series with a preparation of the more important compounds supplemented by Levy's Anleitung zur Darstellung Organischer Praparate.

VII. Organic chemistry. *Professor Frankforter.*
Lectures and laboratory work. This course includes the aromatic series with a preparation of some of the more important compounds supplemented by Fischer's Organischer Praparate.

VII. Theoretical chemistry. *Assistant Professor Harding.*
Lectures and readings. The course includes a study of Lothar Meyer's Modernen Theorien der Chemie, Oswald's Grundriss der Allgemeinen Chemie and Remsen's Theoretical Chemistry.

IX. History of chemistry. *Professor Frankforter.*
Lectures and reading. This course includes a full historical discussion of alchemy and chemistry.

X. Water analysis. *Professor Frankforter.*
Lectures and laboratory work. The course includes an exhaustive discussion of the chemical and sanitary properties of water.

XI. Gas analysis. *Assistant Professor Harding.*
Lectures and laboratory work. The work includes an exhaustive chemical examination of the common gases, with a determination of light and heat efficiency of combustible gases.

XII. The chemistry of carbohydrates. *Assistant Professor Nicholson.*
Lectures and laboratory work. The course includes a discussion of the carbohydrate group with the important methods of analysis.

XIII. Industrial chemistry. *Professor Sidener.*
Laboratory work and reading. The course includes the analysis of various commercial products.

XIV. Wine and beer analysis. *Assistant Professor Harding.*
Lectures and laboratory work. The course includes the determination of alcohol and other constituents in wine and beer, with a special study of fermentation.

XV. Special problems. *Professor Sidener.*
Laboratory work. The course includes the working out of various mineralogical, technological and metallurgical problems.

XVI. Photographic chemistry. *Professor Frankforter.*
Lectures and laboratory work. The course includes a study of the compounds affected by the chemical rays of light, and a discussion of developers and fixers, photo-engraving, photo-reliefs and color photography.

XVII. Electro-chemistry. *Professor Frankforter.*
Lectures and laboratory work. The course includes the qualitative and quantitative separations of the metals by electrolysis.

XVIII. Micro-chemical analysis. *Assistant Professor Harding.*
Lectures and laboratory work. The course includes the methods for the determination of minute quantities of substance by means of the microscope.

XIX. Food adulterations. *Assistant Professor Harding.*
An examination of common food products for adulterants.

XX. Iron and steel analysis. *Professor Sidener.*
Lectures and laboratory work. The course includes the rapid determination of iron by the various methods, as well as the determination of the associated elements, sulphur, phosphorus, silicon, manganese and carbon.

XXI. Mineral analysis. *Professor Sidener.*
The course includes the analysis of building stones and some of the most important minerals.

XXII. Inorganic preparations. *Assistant Professor Harding.*
The preparation of inorganic salts, supplemented by Bender's Anorganische Preparatkunde.

XXIII. Colloquium. *Professor Sidener.*
A thorough quiz in general inorganic chemistry.

XXIV. Colloquium. *Professor Frankforter.*
A thorough quiz in general organic chemistry.

XXV. Special problems. *Professor Sidener.*
This course includes work on ores of base metals, limestones, slags, etc.

XXVI. *Physical chemistry.* *Professor Frankforter.*
Lectures and laboratory work. The laboratory work will include that laid down by Jones and Walker with such references as Nernst and Ostwald.

This work must be taken in regular class. For details, see program of the School of Chemistry.

FOR GRADUATES.

Courses offered by Professor Frankforter.

For the major work in chemistry leading to the higher degree, no specific courses are offered. On the contrary, the candidate will be given some chemical problem which will require original investigation to solve. The laboratories are specially prepared to offer topics for investigation along the following lines:

1. *General Inorganic Chemistry.*
2. *Analytical Chemistry.*
3. *Technological Chemistry.*
4. *Electro-chemistry.*
5. *Organic Chemistry with the following special topics:*
   (a) The Alkaloids. (b) The Terpens. (c) The Resins.
6. *Physical Chemistry.*

COMPARATIVE PHILOLOGY.

This department, besides offering courses in (1) the general principles of linguistic science, affords an opportunity for elementary studies in (2) comparative Indo-European philology, and more particularly the investigation of (3) old Germanic dialects. Related courses in (4) English philology will be found under 'English Language and Literature.'

Courses offered by *Professor Klaeber.*

FOR UNDERGRADUATES AND GRADUATES.

I. *General Introduction to the Science of Language.* (The life and growth of language.)

II. *Studies in Semasiology.*

III. *Introduction to Germanic Philology.*

IV. *Comparative Phonology of English and German.*

FOR GRADUATES.

I. *Comparative Grammar of the Greek, Latin, and Germanic Languages*; with a general survey of the field of Indo-European Philology.

II. *Urgermanische Grammatik.*

III. *Gothic*: Grammar and Reading of the Gospels. The relation of Gothic to the other Teutonic dialects will be especially emphasized.

IV. *Old Saxon*: Grammar and Interpretation of the Heliand.

V. *Old High German.*

Courses II, III *and* IV, V, will be given in alternate years.

ECONOMICS, PUBLIC FINANCE AND INTERNATIONAL LAW.

FOR UNDERGRADUATES AND GRADUATES.

The particular lines and subjects of study are selected by individuals or groups after consultation with the professors of the department.

When insufficiently grounded in elementary subjects, graduates are permitted to join undergraduate sections, but are expected to do more work than is required of undergraduates.

III. *Money and Banking.* II. *Professor McVey.*
A course in the principles of money and banking, dealing with fundamental principles illustrated by existing monetary systems and legislation. Text books, lectures, papers and discussions.

IV. *Modern Industrial Legislation.* II. *Professor McVey.*
A course based upon McVey's Modern Industrialism. This course deals with the problems and legislation arising from industrial conditions such as labor questions, trusts, monopolies, etc. Assigned topics, lectures, and collateral reading.

V. Corporation Finance. I. *Professor McVey.*
A study of the methods of financing modern corporations, their position in the law and the analysis of their accounts and statements. Text-books, Green, Corporation, Finance; Ripley, Trusts, Pools and Corporations; Wyman's Cases; Robinson's Investment Securities; Woodlock, Anatomy of a Railroad Report; Lectures, collateral reading and problems.

VI. Public Finance Part I. I. *Professor Folwell.*
Public expenditures national, state and local, from the standpoint of public wants; budget framing; treasury administration and accounting; public debts in peace and war. Illustrations chiefly from American practice. Lectures and exercises.

VII. Public Finance Part II. II. *Professor Folwell.*
The public revenue, national, state and local—from taxation and other sources. In particular, the principles and practice of taxation in the United States.

VIII. Advanced Economics. I. *Professor McVey.*
In this course further consideration is given to selected topics from the course in elementary economics. Carver Distribution of Wealth is used as a text, supplemented by readings and problems. Lectures, papers and discussions.

IX. Transportation. II. *Professor Folwell.*
The evolution of transportation in the United States, and of railroads in particular. Economic aspects, public policy and finance of railroading. Open to senior engineers.

X. Monetary History of the United States. [1] I. II. *Professor McVey.*
In this course the problems arising from the changes and alterations in the money of the United States from 1770-1900 are discussed. The work consists of lectures and assigned topics based upon Hepburn's Contest for Sound Money and Noyes' Thirty Years of American Finance. Students registering for this course are required to have the element of economics, course I. and money and banking course V. The section meets one hour each week throughout the year. The hour of meeting will be determined by the convenience of students and instructor.

XII. Methods of Investigation. [1] II. *Professor McVey.*
A course in methods of using libraries, collecting and organizing material, followed by the actual investigation of important questions.

**XIV. Economic Schools and Movements.* d. h. I. II. *Professor Folwell.*

**XV. Statistics and Economics.* d. h. I. II. *Professor Folwell.*
*These courses are given in alternate years.

XVI. International Law. I. *Professor Folwell.*
An elementary treatment by lectures with required exercises; illustrations chiefly from American history.

XVII. Political Schools and Movements. d. h. I. II. *Professor Folwell*
This course is given in a seminar for graduates and seniors especially interested and qualified. It alternates with courses XIV and XV above.

EDUCATION.

For Graduates.

Preliminary Requirements: Students who desire to undertake graduate work in education must have a general knowledge of psychology and of the history of education, and some acquaintance with the theory of education. For a minor in education the candidate may pursue studies either in the theory and practice of elementary teaching, the organization and methods of secondary education, or in advanced educational theory and administration. Students who undertake a major in education are expected to do work in at least two of these fields. Selection will be made by the candidate on the approval of the head of the department from the following courses:

IV. Secondary Education. I. *Professor James.*

V. Practice of Elementary Teaching. I. *Professor Rankin.*

VI. Practice of Secondary Teaching. II. *Professor Rankin.*

IX. School Supervision. II. *Professor Rankin.*
X. Comparative Study of School Systems. I. *Professor James.*
XI. Modern Educational Theories. II. *Professor James.*
XII. Problems in Elementary Education. I. *Professor Rankin.*
XIII. Problems in Secondary Education II. *Professor James.*

ELECTRICAL ENGINEERING.

The courses offered by the department of electrical engineering are open to graduate students having the required preliminary training. Thorough courses in physics and mathematics are essential prerequisites. The laboratory, shop and library of the department provide facilities for a moderate amount of research work in addition to the regular courses of study.

The laboratory equipment includes about forty dynamo electric machines of various types and sizes for direct and alternating currents, such as constant current and constant potential direct current generators and motors, single phase and polyphase alternators, commutating, induction and synchronous motors and rotary converters, each furnished with suitable regulating devices. A number of these machines have been equipped with special devices for experimental purposes. Lamps, rheostats, batteries, fans and brakes afford convenient and ample means for taking up the energy of dynamos and motors. To facilitate testing, there are a number of pairs of similar machines. A three-ton traveling crane facilitates handling the machines. Power is obtainable from a main shaft driven by the engines of the lighting plant, or by motors connected with the University power circuits, with a storage battery or with the circuits of The Minneapolis General Electric Company, which supplies direct current at 500 volts and alternating current at 2,250 volts. The laboratory has equipment for obtaining low voltage direct or alternating current up to 2,000 amperes, for continuous EMF up to 2,000 volts and for alternating EMF up to 40,000 volts. An excellent assortment of instruments of well-known American and foreign makers is available for laboratory use. A well equipped standardizing laboratory furnished with certified standards of current, electromotive force and resistance, allows the frequent checking of instruments, so that students may work to any desired degree of refinement. The meter and lamp testing laboratories are furnished with a wide variety of arc and incandescent lamps and meters with all necessary standards and other accessories. The electro-chemical laboratory provides facilities for the construction and testing of various cells, for electro-plating and other electrolytic processes and for the formation and study of electric furnace products. Alternators, rotary converters, transformers, lamps, motors, condensers, special apparatus and suitable instruments afford facilities for the experimental study of alternating currents. Telephone transmitters, receivers and accessories provide for practice in assembling and testing the ordinary telephonic apparatus and circuits and for investigation.

The department library contains an excellent collection of electrical and allied works, including a full set of United States Patent Office Gazettes. New books and trade publications are being added continually. Files of twenty-two journals are nearly complete and others are being collected and bound. These, with the files in the general and other departmental libraries of the University, offer excellent facilities for research work. The reading room receives regularly the leading American and foreign periodicals devoted to electrical engineering and allied interests.

For Undergraduates and Graduates.

I. Applied electricity. [2] Junior I. 36 hours. *Professor Shepardson.*
Outline of industrial uses of electricity; units; application of Ohm's law; methods and calculation of wiring; electrical instruments and measurements. Text book: Shepardson, Electrical Catechism. Preparation required: physics, course I.

II. Dynamos and motors. [2] Junior II. 72 hours. *Assistant Prof. Springer.*
Theory of electro-magnet and direct current dynamo and motor; methods of regulation, construction and operation of dynamos and motors; methods of testing. Preparation required: electrical engineering, course I; physics, courses I and II (a); differential and integral calculus.

III. Alternating currents. [3]. Senior I, II. 108 hours. *Professors Eddy and Shepardson.*
Phenomena, measurement and use of alternating currents; theory of line, transformer, generator and motor; types of apparatus. Textbook: Steinmetz, Alternating Current Phenomena. Preparation required: electrical engineering, courses I and II.

IV. Electrical engineering practice. Electric railway. [2] Senior I. 18 hours. One-half semester. *Assistant Professor Springer.*

History and development; different systems of distribution, location and calculation of feeders; line and track construction; choice of motors, trucks, generators and engines; operation and repairs. Text-book: Gotshall, Electric Railway Economics. Preparation required: electrical engineering, course II.

V. Electrical engineering practice. Batteries. [2] Senior I. 18 hours. One-half semester. *Assistant Professor Springer.*

General theory of primary and secondary cells; types and methods of construction; commercial applications; operation of battery plants; construction and test of cells by students; test of a commercial plant. Text-book: Lyndon, Storage Battery Engineering Preparation required: electrical engineering, course II.

VI. Electrical engineering practice. Electric lighting. [2] Senior I. 18 hours. One-half semester. *Professor Shepardson.*

Comparison of different sources of light; photometry, physics of the arc; history, design and regulation of arc lamps; adaptation to constant currents, constant potential and A. C. circuits; carbons; history, manufacture and economy of incandescent lamps; distribution of light. Text-book: Bell, Art of Illumination. Preparation required: electrical engineering, course II.

VII. Electrical engineering practice. Electrical transmission. [2] Senior II. 18 hours. One-half semester. *Professor Shepardson.*

Utilization of natural forces; various methods of transmission; theory of electric motor; power distribution with constant current, constant potential and alternating systems; design of line; study of particular plants. Preparation required: electrical engineering, courses I, II and VI.

VIII. Electrical engineering practice. Central stations. [2] Senior II. 18 or 36 hours. One-half or one semester. *Professor Shepardson.*

Preliminary surveys; choice of electrical systems; load diagrams; best units of power; comparison of steam, gas and water power; location, design and erection of station buildings; boilers, engines, dynamos, storage batteries, switch board and lines; operation and regulation; maintenance of plant; emergencies; examination of stations in Minneapolis and St. Paul. Preparation required: electrical engineering, courses II. and VI.

IX. Electrical engineering practice, telegraph and telephone. [2] Senior II. 18 or 36 hours. One-half or one semester. *Professor Shepardson.*

Various systems and instruments used in local and long distance telegraphy and telephony, design and construction of switchboards and lines; protection from inductive and other disturbances; police, fire alarm and district messenger systems. Preparation required: electrical engineering, courses I and VI.

X. Electrochemistry. [2_5] Senior II. 36 or 72 hours. *Professor Shepardson.*

Theoretical and experimental study of electrolysis, electrodeposition and electric furnaces.

XI. Electrical design. [2_5] Junior II. 72 hours. *Assistant Professor Springer.*

Problems in designing circuits, electro-magnets and dynamos; complete working drawings and specifications to accompany each design. Text-book: Wiener, Dynamo Electric Machines. Preparation required: physics, courses I and II; electrical engineering, courses I and II; machine design, course XI.

XII. Electrical design. [2_5] Senior I. 72 hours. *Professor Shepardson.*

Design of a dynamo or other problem as assigned. Preparation required: electrical engineering, courses II and IV.

XIII. Electrical design. [3_5] Senior II. 108 hours. *Professor Shepardson.*

Designs, specifications and estimates for an electric light or power plant, or other approved problem. Preparation required: electrical engineering, courses IV and VI.

XIV. Electrical laboratory. [3_5] Junior II. 108 hours. *Assistant Professor Springer.*

Tracing circuits and locating faults; measurements of conductivity and insulation; calibration and use of instruments; operation and characteristic curves of dynamos and motors. Preparation required: physics, courses I and II, electrical engineering, courses I and II.

XV. Electrical laboratory. [2, or 4,] First semester [3,] Second semester. Senior I. 72 or 144 hours; II. 108 hours. *Professor Shepardson.*
Photometric and electrical tests of incandescent and arc lamps and regulating devices. Experimental study of alternating currents; regulation and efficiency tests of alternators, transformers, rotaries and motors.

XVI. Electrical laboratory. [1, or 2,] Senior I or II. 36, 72 hours. *Professors Shepardson and Springer.*
Efficiency tests and special problems.

XVII. Electrical measurements of precision. [2,] Senior I, or II. 72 hours. *Assistant Professor Springer.*
Lectures and laboratory work. Measurements of resistance, voltage, current, self-induction and capacity; standardization of measuring instruments. Open to a limited number.

XVIII. Plant operation. Senior I, II. *Professor Shepardson and Mr. Dixon.*
Practice in operation and care of boiler, engines, motors, dynamos and circuits of the University lighting plant. Nine runs of four hours each.

XIX. Journal reading. [1,] Senior I. 36 hours; II. 36 hours *Professor Shepardson*

XX. Electric power. Senior I. 54 or 72 hours. *Assistant Professor Springer.* For Civil, Mechanical and Mining Engineers.
Elements of theory and practice of electrical measurements, wiring, dynamos, motors and electric lighting. Thirty-six lectures and recitations and forty-eight hours laboratory. Text-book: Shepardson, Electrical Catechism. Preparation required: physics, course I.

XXI. Dental electricity. [2] Senior I. Dentists. 27 hours. *Assistant Professor Springer.*
Electrical and magnetic units; electrical instruments and measurements; electro-dental apparatus. Recitations and experimental lectures Text-books: Shepardson, Electrical Catechism, and Custer, Dental Electricity. For seniors in dentistry.

XXII. Electrical measurements of precision. *Assistant Professor Springer.*
Lectures and laboratory work. Precise measurements of resistance voltage, current, self-induction and capacity; standardization of measuring instruments.

XXIII. Illumination engineering. *Professor Shepardson.*
Lectures and laboratory work Investigation of performance of electric and gas lamps, reflectors and diffusers; luminous efficiency, distribution, color characteristics, physiological phenomena methods of determining location, kind and quantity of lights for obtaining desired illumination.

XXIV. Telephone engineering. *Professors Shepardson, and Eddy.*
Lectures and laboratory work. Theoretical and experimental study of telephonic apparatus; lines and line phenomena, including induction, transpositions, loading coils, etc.

XXV. Alternating current phenomena. *Professor Shepardson.*
Lectures and laboratory work. Study of wave-forms, transient phenomena; oscillographic investigations; tests of apparatus.

ENGINEERING AND MECHANICS.

For Undergraduates and Graduates.

I. Applied mechanics. [90] Junior I. *Professor Eddy.*
Statics and dynamics including the laws of equilibrium, motion, work and energy as applied to rigid bodies, and a study of the strength and elastic properties of materials of construction required in the design of beams, posts, masonry arches and the equilibrium polygon. Open to students who have completed the work of the first two years in mathematics and physics.

II. Hydraulics and pumping machinery. [90] Junior II. *Professor Eddy.*
The laws of the equilibrium pressure and flow of liquids and gases; the theory of the action of pumps and air compressors. Open to those who have completed course I in applied mechanics.

III. Thermodynamics of steam and other engines. [54] Senior I. *Professor Eddy.*

The mechanical theory of heat as applied to steam, gas and oil engines, by analytical and graphical methods. Open to those who have completed courses I and II, in applied mechanics and hydraulics.

IV. Water turbines. [36] Senior I. *Professor Eddy.*

The general mathematical theory of hydraulic turbines, especially with reference to the design of the various types of reaction turbines as affecting their efficiency; turbine governors. Open to those who have completed course II in hydraulics.

V. Steam turbines. [36] Senior II. *Professor Eddy.*

The thermodynamics of the various types of steam, turbines, and theory of their design and construction. Open only to those who have completed courses II and IV on the steam engine, etc., and water turbines.

VI. Refrigerating machinery. [18] Senior II. *Professor Eddy.*

The thermodynamics of ammonia machines of the compression and absorption types, etc. Open to those who have completed course III in the steam engine.

FOR GRADUATES.

Professor Eddy.

Selections from the following list of courses in theoretical mechanics and mathematical physics will be offered each year to graduates (or possibly to undergraduates) of sufficient preparation in mathematics and physics according to the needs of the students applying and the amount of time at the disposal of the professor, with whom arrangements should be made at as early a date as possible.

VIII. Theory of elasticity.

IX. Hydrodynamics and fluid motion.

X. Kinetic theory of gases.

XI. Potential function and electrical theory.

XII. Fourier's Series, spherical harmonics, etc.

XIII. Electro-magnetic theory of light.

XIV. Theory of function of the complex variable.

XV. Directional calculus and vector analysis.

ENGLISH LANGUAGE AND LITERATURE.

FOR GRADUATES.

Courses in English Philology offered by Professor Klaeber.

I. Old English (Anglo-Saxon): Grammar and Reading of Selections.

II. Critical study of the Beowulf.

III. Introduction to the Middle English Language and Literature.

Related courses will be found under "Comparative Philology."

FRENCH.

(Italian and Spanish.)

FOR UNDERGRADUATES AND GRADUATES.

V. Lectures and conversations concerning the writers of the classical period and readings of works produced during this period, including La Fontaine, Corneille, Racine, Moliere; some modern authors will be read for the purpose of comparison. *Mr. Frelin.*

Open to those who have completed courses I and II or course III.

VI. Advanced French Conversation. *Professor Benton and Mr. Frelin.*

VII. Lectures, in French, on the literature of the XIXth century. I, II *Professor Benton.*

The works of many of the writers of this century will be read and reports given in class, including Chateaubriand, Victor Hugo, Balzac, Renan, Taine, Bourget, Francois. Advanced French Composition.

X. *Spanish, advanced.* I, II. *Mr. Melom.*
Advanced grammar, Cervantes, Calderon, Lope de Vega.

FOR GRADUATES.

XI. *Romance philology. Old French.* *Professor Benton.*
French and other Romantic languages from popular Latin. Reading old sis des Auteurs Francais du Moyen Age, par L. Ciedat. Some of the oldest monuments of the French language interpreted and translated into modern French, such as Serments de Strasbourg; La Vie de Saint Alexis; La Cantilene d'Eulalie; the chronicles of Villehardouin, La Chanson de Roland, Froissart. Phonetic changes studied and their laws examined. Special attention is given to those forms which have entered into the English language. This course is especially valuable to students in English philology.

XII. *History of the drama.* *Professor Benton.*

XIII. *Italian.* Dante's Divine Comedy. *Professor Benton.*

XIV. *Old Spanish.* *Professor Benton.*
Development of Castilian dialect. El Poema del Cid.

GEOLOGY.

FOR UNDERGRADUATES AND GRADUATES.

III. *Industrial geography.* Junior or senior II. *Professor Hall and Mr. Ball.*
(a) The relations of the natural development of North America to its physical structure.
(b) The geography of Minnesota in its relations to the industrial resources and development of the state.
Open to those who have taken course I or II.

IV. *Geology of Minnesota.* Junior or senior II. *Professor Hall.*
(a) An historical survey of the facts and principles of pre-Cambrian geology as exemplified in the geological features of the Lake Superior region and of Northern and Eastern Minnesota.
(b) A discussion of the geology and mineral resources of the state, particularly with reference to its deposits of clay, building stones and ores.
Open to all who have taken course I.

VII. *Paleontology.* Senior I, II. *Assistant Professor Sardeson.*
The chief types of organisms as represented by fossils will be studied successively. The leading fossils and their phylogenetic history will be treated with considerable detail. Lectures and demonstrations. Open to students of geology and biology.

VIII. *Paleontologic practice.* Senior I, II. *Assistant Professor Sardeson.*
The course may be taken by advanced students in geology and biology in conjunction with course VII. Exercise in the preparation and study of materials, examination of collections, and reading will be carried on with a view to more complete knowledge of the groups of fossil organisms as presented in course VII. Laboratory, and field work.

X. *Petrography.* Junior or senior II. *Mr. Parsons.*
An investigation of the megascopic and microscopic characters of crystalline rocks; a discussion of their habit, mineral composition and genetic relations. The course discusses the historical succession and broader stratigraphic relations of rocks; it also extends into an examination of some Minnesota groups of crystallines. Practically a continuation of course IX. Laboratory, with lectures and reference reading.

XII. *Ore deposits.* Junior or senior I. *Professor Hall.*
History of mineral discovery and development in the Americas; a discussion of the origin and distribution of ore deposits, embracing the chemical processes involved in their formation and subsequent alterations; a description of the geology and mineralogy of ore bodies, particularly those yielding gold, silver, copper, iron, lead and zinc.

XIV. *Special problems.* Senior II. *Professor Hall*
The investigation by individual students of particular problems, involving the field work of an investigation of some particular for-

mation and with the laboratory investigation and reading incident to the study of the material collected. The methods of systematically recording and interpreting geological and mineralogical data as observed in the field, the keeping of note-books and the preparation of geological maps, profiles and sections will be taught.

FOR GRADUATES.

XVI. Petrographical problems. *Professor Hall and Mr. Parsons.*
A study of rocks as geological bodies; the genesis of rocks and their chemical and dynamical alterations, illustrated in the gneisses and gabbro schists of the Minnesota river valley or the granites and basic eruptives of central Minnesota

XVII. The Keweenawan eruptives. [1] *Professor Hall and Mr. Parsons.*
Of eastern and northeastern Minnesota, their stratigraphic relations, textural and structural characters; or other problem to be selected on consultation.

XVIII. Glacial geology. I. *Professor Hall.*
The local features of glacial phenomena. Field work will form the special feature of this course, embracing the formations at Minneapolis or some area accessible from it, as a survey of the glacial lakes in the vicinity, the gorge of the Falls of St. Anthony, the Dalles of the Saint Croix and other problems. The special field to be selected on consultation.

XIX. Paleontologic geology. *Assistant Professor Sardeson.*
A study of the Ordovician fauna with special illustrations from the Ordovician of Minnesota and neighboring states

XX. Paleontology. *Assistant Professor Sardeson.*
The study of a selected group of fossils; a practical acquaintance with the forms and literature of the group is sought. The course is to be supplemented by a thesis.

MINERALOGY.

FOR UNDERGRADUATES AND GRADUATES.

IV. Optical mineralogy. Junior or senior I. *Mr. Parsons.*
A study of the microscopic structure of crystals and crystal grains. An application of methods used in determining minerals by their optical properties; goniometric and stauroscopic practice, embracing the elements of lithology. Lectures and laboratory work.

V. The morphology of minerals. Junior or senior II. *Mr. Parsons.*
A study of crystallography, embracing projection and the geometric relations of crystal planes. The identification of minerals from crystal measurement and mathematical calculation. Crystal nomenclature.

VI. Physico-chemical methods with their applications. Senior I. *Mr. Parsons.*
The method of micro-chemical analysis described and demonstrated; the leading elements found in minerals are determined through the aid of crystalline precipitates of known compounds. Special attention is given to the study and determination of the rock-making minerals.

VII. An outline of mineralogy. [1] Junior or senior. *Mr. Parsons.*
A study of methods of identification of minerals, with their applications. Conferences, reading and demonstrations. Throughout the year.

FOR GRADUATES.

VIII. *Professor Hall and Mr. Parsons.*
Original problems in morphological and physical mineralogy.
Investigations in mathematical crystallography and its application to crystal development and structure. Further applications than are made in course IV of the optical characters of minerals in identification of mineral species.

IX. *Mr. Parsons.*
Special investigations in physical and chemical mineralogy.
Special attention is here given to tenacity and electrical properties and their relation to crystal form, cleavage and fracture. Dimorphous compounds are investigated and the conditions governing their formation studied. The physical properties of artificial mineral compounds are compared with those of natural minerals.

X. *Professor Hall and Mr. Parsons.*
Description of mineral occurrence and association. Genetic relationships. Field work in connection with the different phases of the particular problem in hand.

The equipment of the Department of Geology and Mineralogy is sufficient for many lines of graduate work. The department has collected from many localities, both within and without the state, and the Geological Survey made extensive collections during the years of its active field work. The material thus gathered, the published literature on the state and the field within easy access from the University afford suggestions of unsolved problems in a number of different geological lines.

GERMAN.

FOR UNDERGRADUATES AND GRADUATES.

X. *Modern authors. German literature of the Nineteenth century.* Prerequisite, course IX. I, II. *Professor Moore.*
First semester.—Romantic school and Junge Deutschland.
Second semester.—German literature since 1848.

XI. *History of German literature.* Prerequisite course IX. I and II. *Mr. Juergensen.*
Lectures in German. Reviews and topical research on the part of the students.

XII. *Seminar in German drama.* [1] I, II. *Professor Schlenker.*
This course aims to give in outline the history of German dramatic literature from its beginnings to, and including, the classic drama. Open to graduates; also, by permission of the instructor, to undergraduates, but without credit.

XIII. *History and literature of the Reformation.* Prerequisite, course X. I, II. *Professor Moore.*
Readings from Brandt, Luther, Hutten, Sachs, Murner and Fischart. Selections from the histories of Jansen and Egelhaaf.

XIV. *Middle High German.* I, II. *Professor Schlenker.*
Study of the language and literature of the period. Paul's Mhd. Grammatik. Selected readings from Der Arme Heinrich, Niebelungen Lied, Gudrun, Walter Von der Vogelweide, etc.

FOR GRADUATES.

XV. *The German Volkslied.* *Mr. Williams.*
Outline of the history and development of the Volkslied. Study of selected numbers in Uhlands Volkslieder with references to other general and special collections. Influence of the folk-song upon lyric and ballad writers.

XVI. *Lessing and the Age of Enlightenment.* *Professor Moore.*
Reading of Lessing's critical and controversial writings.

GREEK.

FOR GRADUATES.

XVIII. *Advanced Course in Poetry.*
Epic and Lyric Poetry *Professor Hutchinson*
Dramatic Poetry *Professor Brooks*

XIX. *Advanced course in Oratory* *Assistant Professor Savage.*

XX. *Later Greek* (322 B. C.—200 A. D.) *Professor Hutchinson.*

XXI. *Advanced course in Modern Greek.* *Professor Brooks.*
Inasmuch as the exact nature of the work will differ with the desires and purposes of the applicants who must be dealt with individually, it has not been thought best to attempt a more specific statement than the above. No undergraduate courses in Greek will be accepted as part of the work leading to an advanced degree.

HISTORY.

FACILITIES.

The Department of History is equipped with library material for "practice courses" in research in American History, especially the colonial and revolutionary periods, in English and French medieval history, in the French Revolution, and in certain phases of European Nineteenth Century history. Valuable additions to the University resources in some of these lines are to be found in the excellent Library of the State Historical Society, and in the State Library at the Capitol in St. Paul (thirty minutes distant), and in the City and Athenaeum libraries in Minneapolis.

In none even of the lines mentioned, however, is the Department satisfactorily prepared to give more than two years of graduate work, with due regard for economy of the student's time and energy. Therefore, if a student desires to take his doctorate in history here, he must be prepared, until the library facilities are materially improved, to do at least a third of his work in libraries elsewhere, under direction of the Department.

COURSES OF INSTRUCTION.

The following are "general courses" (lectures and reading, with study of selected documents and some research work). They are open to upper classmen in the undergraduate college who have completed one or two elementary courses there; and they may be taken as minors, or parts of minors, for the master's degree. Any one of them may be taken, also, for part of a major towards the master's degree, provided, (1) that the applicant has made large general preparation in other fields of history, and, (2) that the course chosen be accompanied by sufficient work in more intensive courses in the same field. (Thus if an applicant is well prepared in European history, including English constitutional history, but has had little American history, he might be allowed a major in V followed by two, three, or four courses selected from VII-XIV.)

III. The Renaissance and Reformation. I. *Assistant Professor White.*

Open to those who have completed either I or II, and a desirable preparation for IV.

The Renaissance and Reformation will be studied as general European movements, with the emphasis upon the work of individual men and upon ideas rather than upon politics and institutions. The purpose of the course will be to show how the medieval world became the modern world.

IV. Europe since 1789. I, II. *Professor Anderson.*

Open to those who have completed course I or II. The entire class meets twice each week for lectures or recitations. The third exercise is devoted to the study of important historical documents, drawn principally from Anderson's Constitutions and other Select Documents illustrative of the History of France, 1789-1901. This work is done in small groups which meet in the European history seminar room.

The history of France occupies the most prominent place in the course, that of other countries being grouped about it, as far as possible. Much attention is given to international affairs, the principal territorial changes being illustrated with a series of wall maps prepared for the course under the direction of the instructor. A special effort is made to put the students into a position to understand the present governments and politics of the leading European states.

V. Constitutional history of the United States to 1840. I, II. *Professor West.*

Open to those who have completed course II; and required for courses VI—IX, and for XI, XIII, and XIV. The aim is to make this a "practice course;" the work is done partly by co-operative topical reports, and students are expected to consult primary sources to a greater degree than is possible in most undergraduate courses. During part of the year the class will meet once a week in small sections for the study of documents.

VI. American History, 1841-1885. II. *Professor Anderson.*

Open to those who have completed, or are pursuing, course V.

Special attention is given to the development of the slavery issue in politics, the political history of the Civil War and reconstruction.

XV. Historical method and bibliography. [2] II. *Assistant Professor White.*
Open to those who have completed course I or course II. The course is designed especially for those intending to do advanced work in history. It aims to make clear to the students the genesis of the modern historical method and to introduce him in a practical way to the use of the best tools in historical study. The work divides naturally as follows:

1. Exercises in historical criticism and interpretation. One or more important historical sources will be studied intensively by the class.
2. History of historical writing; especially the work of Von Ranke and his followers and the origin of the seminar system. Some account will be taken of present methods and advantages of study in Germany and France.
3. Bibliography. Purpose, to gain a working knowledge of existing helps to historical study, such as standard bibliographers, historical magazines, source material, etc.

While the knowledge of Latin or the modern languages is an advantage, it is not a necessity in this course.

XX. English history, 1660-1905. I. *Professor Anderson.*
Open to those who have completed course II. The period from 1660 to 1815 is covered in a rapid survey. From 1815 the work is more intensive, the topics and readings affording an opportunity to become acquainted with the principal British reviews and with two or three of the leading newspapers.

XXI. Greek history. I. *Assistant Professor Westermann.*
Especial attention will be given to the period following Alexander's conquests.

The following courses are "intensive" or "advanced" courses. Each one of them requires the completion of the corresponding "general" course in the list above. They may be taken, in proper combinations, for majors for the master's degree, or, by ones or twos, for minors.

VII. The making of the constitution of the United States. I, II. *Professor West.*
Open to those who have taken course V with distinction, and to graduates. Each member of the class studies in detail the transition in one of the original colonies to commonwealth government, with the constitution of his chosen state. The work of the Philadelphia convention is then taken up and the accounts of later writers are compared with the sources. "We the people," the "compact" theory, and the province of the supreme court as "final arbiter," are topics especially investigated, with such further aids as the writings of the day and the discussions of the ratifying state conventions afford. Besides the class work each student will present a written report upon the history of some important bill providing for the admission of a state, and some constitutional question in connection with congressional legislation.

VIII. American history since 1789 *as shown in the development of constitutional law.* *Professor West.*
In alternate years, not offered in 1906-07. Open to seniors who have completed course V, to graduates, and to qualified law students. Course VII is a desirable preparation. This course is not designed to be a systematic treatment of either history or constitutional law. It consists of a careful analysis of cases selected from Thayer's Cases on Constitutional Law, studied in their historical setting and with reference to the course of development.

IX. Studies in American biography. I. *Professor Anderson.*
Open to seniors who have completed course V and to graduates.
In this course the work will each year center about the political activity of a single important character. In the choice of a subject two points will be especially borne in mind.

1. To select a character not only important *per se* but representative of some great historical movement or idea.
2. To select one who has left an abundance of material, valuable not only for his own part, but throwing light upon the action of others.

It is the aim to give each member of the class an opportunity to work up carefully topical divisions of the field and some acquaintance with the entire body of writings relating to the subject. Not given in 1906-07. When next offered, the subject will be Thomas Jefferson.

X. A critical study of historical masterpieces. II. *Professor Anderson.*
Open to undergraduates who have taken two courses in history, and to graduates.
The object of this course is to develop the habit of reading history critically. Each year a masterpiece of historical literature will be minutely and critically studied. Every student will be required to read critically the entire work studied and in addition, to analyze and report upon assigned portions of it. These reports will be made the basis of the class work, which will consist mainly of discussions carried on by the students under the direction of the instructor. Not given in 1906-07.

XI. The history of American diplomacy. I. *Professor Anderson.*
Offered to seniors and graduate students who have had two courses in history or one in history and one in international law. History V is the best preparation. The course is designed to afford instruction upon the following matters: (1) The organization and methods of the diplomatic corps. (2) The history of the most important diplomatic negotiations. (3) The effect of the foreign policy upon the internal affairs of the country.

XII. The history of European diplomacy since 1789. II. *Professor Anderson.*
Offered to seniors and graduate students who have had two courses in history or one in history and one in international law. History IV is the best preparation.
Ability to read easy French is required. The course centers about a critical reading of the principal treaties.

XIII. Colonial expansion and administration. II. *Professor West.*
Open to those who have completed IV or V. The history of the colonial acquisitions of the great nations will be surveyed rapidly, and colonial institutions and governments will be studied and compared in detail.

XIV. A critical study of authorities for early New England history—based upon a reading of Winthrop's New England. [2] I. II. *Professor West.*
Open to graduates and seniors who have completed course V. This is primarily a course in historical criticism. Each member of the seminar has a group of secondary authorities assigned him which he is to criticise in the light of the original sources. The study involves also a careful comparison of the chief sources with each other, and incidentally it leads to a minute treatment of political, social and economic development in early New England. The number admitted to the course is strictly limited to eight. Given in alternate years.

XVIII. The Beginnings of the English Judiciary.
II. *Assistant Professor White.*

XIX. Expansion of America as studied in its highways of immigration.
I. II. *Assistant Professor McDonald.*
Open to students who have completed course V and to qualified graduates. This is a study of roads and methods of pioneer travel in that westward movement of population which extended the inhabited area of the United States from the seaboard to the Mississippi valley.
Not offered in 1906-7.

XXII. An intensive course on some topic in Greek history,—the subject to be varied from year to year. II. *Assistant Professor Westermann.*

LATIN.

FOR UNDERGRADUATES AND GRADUATES.

I. Teachers' course in Caesar. *Professor Pike.*
A review and drill upon Books I-IV, of the Gallic war.
A review of Grammar and elementary Latin composition; a discussion of various problems connected with teaching.

II. Teachers' course in Virgil. *Professor Pike.*
A review and drill upon Books I-VI of the Aeneid, a review of Prosody and practice in the quantitative method of pronouncing Latin verse.

III. Advanced Latin composition and lectures on Latin style. *Professor Pike.*

IV. Virgil's Aeneid Books VII-XII. *Professor* **Pike.**
The instructor will translate and comment. The student will not be required to prepare a translation but will be expected to read the Latin understandingly after the instructor's explanation.

V. Roman Elegiac Poetry. *Professor* **Clark.**
Selections from Catullus Tibullus, Propertius and Ovid will be translated with a study of the rise, development and characteristics of Roman Elegiac poetry.

VI. Correspondence of Cicero. *Professor* **Clark.**
Reading course in the Letters of Cicero with a study of his life and of the history of his times.

VII. Roman Satire. *Professor* **Clark.**
Juvenal, Persius, Horace and the Fragments of early Satire with a study of the rise, development and nature of Roman Satire.
Of these courses Nos. III, V, VI, and VII are open only as minors to graduate students. Nos. I, II, and IV are open as minors only on permission of professor in charge.

FOR GRADUATES.

VIII. Lucretius. *Professor* **Clark.**
Translation and interpretation of the VI Books "de rerum natura" with a study of his philosophy in its relation to his sources and to other Roman writers.

IX. Outlines of Roman law. *Professor* **Clark.**
Reading of "Robinson's Selections of Roman Law" and of the first book of "The Institutes of Justinian" with lectures and topical study of Roman private law.

X. Graduate seminar. *Professor* **Pike.**
Interpretation of the Epistles of Seneca with a study of Stoic Philosophy at Rome.

XI. Orations of Cicero. *Assistant Professor* **Granrud.**
Reading and interpretation of a few representatives speeches. Special attention will be devoted to the technique and the language and grammar of the orations.

LAW.

FIRST GRADUATE COURSE.

I. *Dean* **Pattee.**
The first course offered for the degree of Master of Laws is that of the *Philosophic Basis of Jurisprudence.* This course constitutes an inquiry into the nature of law in its most general signification. It considers the truths of reason, the "laws of nature" so-called, and the positive law or Jurisprudence. It considers the nature of International and Municipal law, and illustrates by means of judicial authorities how the primary truths of reason operate in the realm of human law.

II. Science of the State. *Professor* **Folwell.**
This course considers the segregation from the comprehending science of politics, and the co-ordinate sciences of government and jurisprudence. The citizen and subject population; the territory, its extent and content, subdivisions, relation of people to the land, comparison of great and small states; theories of the state; liberty and opportunity as the ends of the state; the state as the organ of power, and guardian of rights; the essentia of constitutions.

III. Constitutional history and jurisprudence. *Judge* **Pierce.**
This course is devoted to a critical study of the "dual system" of constitutional government of which the American Republic is the conspicuous example. The Federal constitution and the State constitutions are illustrated separately, in both their historical and their legal aspects, as distinct parts of one system, but which are designed to work harmoniously in unison, and are both necessary to the successful operation of the system. The Federal Courts are shown to have so conducted their administration of their high

duties as to have contributed to the proper development of the State side of the system, and to have made the Federal Government the firm bulwark of local self-government in the States.

Those who enter this course as candidates for the degree must have already received the degree of bachelor of laws, from this or some other law college having a three years' course of study. Those who spend the entire year in the work prescribed for this course, and pass a satisfactory examination upon the subjects taken, will be entitled to the degree of master of laws.

But no graduate of another law school, who has not been admitted to the Bar in Minnesota, will be matriculated in this course as a regular student for the degree of LL. M.; but any person who possesses the requisite legal learning may enter the course as a special student and pursue any or all of the studies offered.

SECOND GRADUATE COURSE.

Students who have received the degree of LL. B., from this or some other law school requiring three years' study of law for said degree, and who have also received the degree of LL. M., from this or some other school after not less than one year of graduate study, and who have taken high rank in all the studies leading to these degrees, may apply to the faculty for the degree of Doctor of Civil Law. A knowledge of French or German, as well as of Latin is required, and special proficiency in Roman history is necessary to entitle a student to candidacy for such degree.

There is no prescribed time within which students are required to do their work in this course, but they must make themselves proficient in the subjects of Roman law, political science, comparative constitutional law, and the philosophy of jurisprudence before any thesis will be accepted from them.

None of the aforementioned degrees will be conferred until a satisfactory thesis is presented to the faculty by the student, and the thesis for the doctor's degree must be one evincing original investigation and special excellence.

Whether a class will be organized in this course during the academic year of 1906 and 1907 will depend upon the number of applicants for admission.

MATHEMATICS.

For Undergraduates and Graduates.

VIII. Curve tracing. II. *Professor Downey.*
By aid of the calculus. Open to those who have completed the first six courses.

IX. Differential equations. [3 and 2] I. *Dr. Manchester.*
Open to those who have completed the first seven courses.

X. Solid analytical geometry. [3 and 2] I, II. *Assistant Professor Bauer.*
The plane, the straight line in space, quadric surfaces, applications. Open to those who have had the first seven courses.

XIII. Method of least squares. [2] *Professor Leavenworth.*
A study of the combination and adjustment of observations and the discussion of their precision as applied especially to engineering, physics and astronomy. Open to those who have completed the first seven courses.

For Graduates.

XVI. Advanced differential and integral calculus. [2] *Professor Downey.*
This course goes farther into some of the subjects treated in courses VI. and VII. and takes up some important subjects not included in those courses.

XVII. Theory of curves and surfaces. [2] *Assistant Professor Bauer.*
This is a course in Differential Geometry. The fundamental equations of the theory of curves and of surfaces will be developed. The work will be based upon Scheffer's *Theorie der Curven* and *Theorie der Flaechen.*

XVIII. Theory of functions of a complex variable. [2] *Dr. Manchester.*
Lectures, readings and problems. The course presupposes a knowledge of Differential and Integral Calculus and Differential Equations.

XIX. History of mathematics. [2] *Professor Haynes.*
Lectures and reading, under direction, of works in the mathematical library on the ancient and modern development of mathematics.

XX. Projective geometry. [3] *Assistant Professor Kirchner.*
A study of the theories and methods of Projective geometry. Perspective, homology, duality, cross-ratios, involution, reciprocals, conics, systems of conics, ruled surfaces, and special problems and exercises.

XXI. Perspective. [3] *Assistant Professor Kirchner.*
The principles and practice of perspective, including shadows, reflections, distortions, corrections, systems, methods, the practical problem, and inverse constructions.

MECHANICAL ENGINEERING.

FOR UNDERGRADUATES AND GRADUATES.

VIII. Shop economics. Senior II. 36 hours. (Elective.) *Professor Flather.*
Shop and factory organization and management: cost systems.

XI. Machine Design. Junior I and II. 216 hours. *Professor Flather and Mr. Oliver.*
Calculation and design of such machine parts as fastenings, bearings, rotating pieces, belt and tooth gearing. Recitations, lectures and drawing-room practice. Open only to students pursuing course I in mechanics.

XII. Machine design. Junior II. 72 hours. (Second half semester.) *Professor Flather and Mr. Oliver.*
Application of graphical methods to the design of valve gears and link motions: Zeuner diagrams, indicator cards. Lectures and drawing-room practice. Open only to those pursuing course XVIII.

XIII. Machine design. Steam engine. Senior I. 144 hours. *Professor Flather.*
Calculations and working drawings for a high speed automatic steam engine. Theoretical diagrams and determination of details. Preparation: Courses XII and XVII.
Gas engine. An alternative course in gas engine design is offered those who have completed course XIX.

XIV. Machine design. Senior II. 144 hours. *Professor Flather.*
Original designing, including machinery for changing size and form. Boiler design, cranes, pumping and transmission machinery and engineering appliances. Lectures, problems and drawing-room practice. Preparation: course XI.

XV. Tool design. Senior I or II. 72 or 144 hours. *Professor Flather.*
Design of special tools for manufacturing interchangeable parts; jigs and milling fixtures. Preparation: courses V and XI.

XVI. Engineering design. Senior II. 72 or 144 hours. *Professor Flather.*
Problems, designs and estimates for power plants, central stations and factory equipment. Selection of motive powers, pumps, shafting, piping and accessory plant. Preparation: courses XVII, XVIII, and XIX.

STEAM ENGINEERING.

XVII. Steam boilers. Junior I. 18 hours. *Professor Flather.*
Application of theory and practice in the design and construction of steam boilers, chimneys, boiler settings and accessories, smoke prevention, mechanical stokers; methods of operating boilers with safety and economy. Open only to students pursuing course I in mechanics.

XVIII. Steam engine. Junior II. 54 hours. *Professor Flather.*
Mechanics of the steam engine. Work in the cylinder; effect of reciprocating parts; steam distribution. Mechanism of the steam engine. A study of the details of modern steam engines. Valves and valve gears. A study of the slide valve, link motions and other reversing gear; automatic cut-off gears and the Zeuner diagram. The steam engine indicator. Principles and operation of the instrument, indicator rigging; indicator cards; compounding. Preparation, course I. in applied mechanics.

XIX. Gas engines and producers. Junior II. 36 hours. ***Mr. Oliver.***
Principles of operation of two cycle and four cycle engines; cylinder construction and arrangement; valve gears and starting mechanisms; system of speed control, ignition and cooling. Application of the indicator and consideration of indicator diagrams.
A study of the power gas producer including suction and pressure types for various fuels; construction and operation of the generator and accessory apparatus. Application to various industrial purposes. Recitations and lectures. Open only to students pursuing course V in chemistry.

XXIII. Mechanical engineering. Senior I. 36 hours. *Professor* ***Flather.***
Measurement of power. A study of the methods employed in measuring power. Dynamometers, Prony brakes; measurement of water power; water meters; weir measurement, flow of water in pipes; measurement of electric power, efficiency of motors; power required to drive machine tools and shafting. Recitations and lectures. Preparation, course II in applied mechanics.
Air compressors and motors, and the transmission of power by compressed air. Recitations and lectures. Preparation, course II in applied mechanics.

XXIV. Mechanical engineering. Senior I. 36 hours (Elective.) ***Mr. Oliver.***
Heating and ventilation. Principles of heating and ventilation. Construction and operation of heating apparatus. Steam, hot water, exhaust, vacuum and fan systems. Lectures, recitations and problems.
Journal Club—Open to the seniors and juniors. Once a week.

MECHANICAL ENGINEERING LABORATORY.

XXV. Strength of materials. Junior I. 72 hours.
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Laboratory work investigating the strength and physical qualities of iron, steel, brass, copper, belting, chains, beams. Open only to students pursuing course I in mechanics.

XXVI. Mechanical laboratory. Junior II. 72 hours.
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Continuation of course XXV; also exercises in valve setting, indicator practice, calibration of steam gauges, calorimetry, efficiency of screws and hoists. Preparation: course XVIII.

XXVII. Hydraulic laboratory. Junior II. 72 hours.
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Hydraulic measurements, calibration of weirs, nozzles, orifices and meters, tests of water meters, rams, pulsometers, pumps and other hydraulic apparatus. Preparation: course XXV.

XXVIII. Mechanical laboratory. Senior I. 108 hours
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Calibration of dynamometers and other apparatus. Testing lubricating value of oils; tests of injectors, steam engines and boilers, and complete power and lighting plants. Preparation: course XXV.

XXIX. Mechanical laboratory. Senior I. 108 hours.
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Hydraulic measurements, calibration of weirs, nozzles, orifices and meters. Tests of water motors, rams, pulsometers, steam pumps and other hydraulic apparatus. Calibration of dynamometers and other apparatus. Testing lubricating value of oils; tests of injectors, steam-engines and boilers. Preparation: course XXVI.

XXX. Mechanical laboratory. Senior II. 144 hours.
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Tests of gas and hot air engines; gas producers; air compressors; automobile and locomotive testing and other special work. Preparation: course V in chemistry, and XXVIII.

XXXI. Mechanical laboratory. Senior II. 72 or 144 hours (Elective.)
Assistant Professor Kavanaugh and ***Mr. Shoop.***
Special research work and commercial tests.

XXXII. Mechanical laboratory. Senior II. 72 hours.
Assistant Professor Kavanaugh and Mr. Shoop.
Special modification of courses XXIX and XXX, covering work in hydraulic measurements, steam engine and boiler testing for students in mining and metallurgy.

FOR GRADUATES.

RAILWAY MECHANICAL ENGINEERING.

The following courses are available to seniors desiring to prepare themselves for special work in railway engineering.

XXXIII. Railway technology. Senior I. 72 hours
Assistant Professor Kavanaugh.
The object of this course is to familiarize the student with the principal details of construction of locomotives, and consists of a systematic course of shop visits carried on in the various railroad shops in the vicinity, supplemented by lectures and recitations.

XXXIV. Railway design. Senior II. 144 hours. *Professor Flather.*
(a) Of link and valve motions. Continuation of course XII with
(c) Of the locomotive boiler.
(d) Of assembled parts. Preparation: course XXXIII.

XXXV. Locomotive construction. Senior II. 36 hours. *Professor Flather.*
Lectures, reading and recitations on design and construction of locomotives, supplementing course XXXIV. This treats—
(a) Of parts not involving the boiler and use of steam; but in-
special applications of the Stephenson link.
(b) Of locomotive and car details.
cluding the carriage, as frames, springs and equalizing arrangements, running gear, brakes, trucks, lubrication.
(b) Of locomotive boilers and connected parts. Types, proportions, grates, flues, smoke-box arrangements and stacks. Riveted joints, bracing and staying. Lagging, smoke prevention.
(c) Of the locomotive engine. Details, heat insulation, cylinder proportions for various types, weight on drivers, special service; crank effort diagrams with inertia of reciprocating parts, cylinder and receiver ratios for compound engines, starting valves for compounds.

XXXVI. Locomotive road testing. Senior II.
Professors Flather and Kavanaugh.

(4) Advanced work will be given to graduate students in
(1) Engineering design.
(2) Experimental Investigations in the Laboratory.
(3) Railway Engineering.

In each of these courses the student must satisfy the head of the department that he is able to satisfactorily carry on the work proposed.

This work will be largely a continuation of that laid down in the courses for undergraduate students, and will consist in original designing and experimental research along various engineering lines; studies and investigations relating to the economic administration of manufacturing plants; also special lines of investigation will be followed in connection with railway mechanical engineering. This will be accompanied by a similar line of work in the drawing room in which original problems will be taken up by the student.

PHILOSOPHY AND PSYCHOLOGY.

FOR UNDERGRADUATES AND GRADUATES.

I. Analytic psychology. II. *Mr. Swenson.*
An advanced course treating in detail the more important problems of psychology.

II. Experimental psychology—the senses. I. *Assistant Professor Miner.*
Four hours laboratory work and one hour discussion. Typical experiments on sensation and movement. [Not given 1906-7]

III. Experimental psychology—higher mental processes. II.
Assistant Professor Miner.
A continuation of course II. [Not given 1906-7]

IV. Psychological interpretations. I. *Assistant Professor Miner.*
Unusual and pathological mental states are studied for the light they throw on normal mental life. The sub-conscious, dreams, telepathy, hypnotism, secondary personalities, are among the topics treated.

V. Research in Psychology. I. and II. *Assistant Professor Miner.*
Original work on special topics.

VI. Ancient philosophy. I. *Professor Wilde.*
Lectures and reading of Greek philosophy.

VII. Modern philosophy. II. *Professor Wilde.*
Lectures and reading of philosophy since the Renaissance.

VIII. The principles of ethics. I. *Professor Wilde.*
Systematic study of the principles of conduct.

IX. Philosophy of religion. II. *Professor Wilde.*
A study of the development and significance of religion.

X. Logic of science. I. *Mr. Swenson.*
A study of the presuppositions of the sciences.

XI. Philosophy of Spencer. II. *Mr. Swenson.*
A critical reading of the *First Principles.*

FOR GRADUATES.

Courses from the following list will be offered to graduates each year as determined by the needs and qualifications of the students presenting themselves.

I. Philosophy of Aristotle. *Mr. Swenson.*
A critical reading of the Metaphysics in the Greek.

II. Philosophy of Kant. *Mr. Swenson.*

III. Philosophy of Hume. *Mr. Swenson.*

IV. Descartes, Spinoza and Leibniz. *Mr. Swenson.*

V. History of ethics. *Professor Wilde.*

VI. Systematic ethics. *Professor Wilde.*

VII. German idealism. *Professor Wilde.*

VIII. Metaphysics. *Professor Wilde.*

IX. Swedish Philosophy. *Professor Carlson.*

X. Psychological problems. *Assistant Professor Miner.*

PHYSICS.

FOR UNDERGRADUATES AND GRADUATES.

I. ***Mechanics, properties of matter, heat, sound.*** [6] I. *Professor Jones.*
Experimental lectures, recitations and laboratory work.
Open to those who have completed Algebra and Trigonometry of courses III. and IV.

II. ***Light, electricity and magnetism.*** [6] II. *Professor Jones.*
Experimental lectures, recitations and laboratory work.
Open to those who have completed course I.

III. ***Electric measurements.*** [3] I. *Professor A. Zeleny.*
Lectures and laboratory work.
Open to those who have completed course II.

IV. ***Physical manipulations and laboratory technique.*** [3] II. *Professor A. Zeleny.*
Open to those who have completed courses I. and II.

V. ***Theoretical mechanics.*** [3] II. *Professor Jones.*
Open to those who have completed Calculus and course I.

VI. ***Advanced laboratory work.*** [3] I. *Prof. J. Zeleny.*
Open to those who have completed course II.

VII. *Advanced laboratory work.* [6] I. *Professor J. Zeleny.*
Open to those who have completed course II.

VIII. *Advanced laboratory work.* [3] II. *Professor J. Zeleny.*
Open to those who have completed course VI.

IX. *Advanced laboratory work.* [6] II. *Professor J. Zeleny.*
Open to those who have completed course VI.

FOR GRADUATES.

X. *Kinetic theory of gases.* [3] *Assistant Professor Erikson.*
Open to those who have completed course II.

XI. *Radio-activity.* [3] *Mr. Kovarik.*
Open to those who have completed course II.
Advanced laboratory work. Open to those who have completed course VI.

XII *Discharge of electricity through gases.* [3] *Professor J. Zeleny.*
Open to those who have completed course II.

XIII. *The theory of light.* [3] *Professor Jones.*
Open to those who have completed course II.

XIV. *The mathematical theory of electricity and magnetism.* [3] *Assistant Professor A. Zeleny*
Open to those who have completed course III.

XV. *Laboratory practice* *Professor J. Zeleny.*
Original investigation in some special field being the principal feature of this work.

These courses may not be given simultaneously. Students wishing to pursue one or more of these courses should consult the head of the Department.

POLITICS.

FOR UNDERGRADUATES AND GRADUATES.

III. *The elements of jurisprudence.* I. *Professor Schaper.*
A study of those human relations requiring legal regulation considered from the American point of view: the nature and sources of law, status, rights and wrongs, sovereignty, corporations, etc. The course is intended as a preparation for active citizenship as well as for the study of law. The student will practice looking up cases summarizing principles. The course is based on a text, with lectures and assigned reading.

II. *Comparative government.* I. *Professor Schaper.*
An account of the government as the agent of the state; a comparative study of the organization and workings of the governments of the great European powers of today, including the French, German, British and others. Text with lectures and assigned reading.

IV. *American constitutional law.* [2] **Seniors and graduates I and II.** *Professor Schaper.*
This is an advanced course in the study of the principles of our constitutional law based on important supreme court decisions and standard works.

IX. *Politics and administration.* [2] I and II. *Professor Schaper.*
A course in politics and administration throughout the year. A study of American administration as a branch of public law and as a science, including an examination of the extra-legal institution, the political party; its nature, organization, function, evils and reforms. Such topics as the initiative and referendum, proportioned representation and direct primaries versus the convention plan are taken up.

VIII. Theory of the state. II. *Professor Schaper.*
A study in the theory of the state, its origin, nature, purpose and its justification; the state on its physical side, that is, the elements of population and territory. Important theories, like the divine, contract, instinct, the modern socialistic, anarchistic and social welfare, are considered; also the question of state interference and state management of industries It includes a study of classification of states and of governments, of sovereignty, the origin, nature and classification of law. This course follows course I. A text book with lectures and topical readings.

VII. Municipal administration. II. *Professor Schaper.*
A comparative study in modern city charters and methods of administration. The relation of the city to the state, the delimitation of its sphere of activity, its liability for tort, and an investigation into the causes of corruption and merits of proposed reforms.

FOR GRADUATES.

XI. Seminar in Political Science. I and II. *Professor Schaper.*
the discussion of current problems in administration, politics and public law.

SCANDINAVIAN.

FOR UNDERGRADUATES AND GRADUATES.

VI. Scandinavian literature. *Professor Carlson.*
History of the literature and a study of special authors.

FOR GRADUATES.

Courses offered by *Professor Carlson.*

VII. Icelandic or Old Norse.
The history, language and literature of Iceland and Norway from earliest times to 1500 A. D.

VIII. Old Swedish.
The history, language and literature of Sweden from earliest times to 1500 A. D.

IX. Old Danish.
The history, language and literature of Denmark from earliest times to 1500 A. D.

X. Modern Danish language and literature.

XI. Modern Swedish language and literature.

XII. Modern Norwegian language and literature.

SEMITIC LANGUAGES.

FOR UNDERGRADUATES AND GRADUATES.

I. Elementary Hebrew. I, II. *Assistant Professor Deinard.*
Harper's Elements of Hebrew and reading of easy prose passages of the Old Testament.

II. Advanced Hebrew. I, II. *Assistant Professor Deinard.*
Critical reading of some Old Testament book, with a review of Hebrew grammar.

III. Elementary Arabic. I, II. *Assistant Professor Deinard.*
Socin's Arabic Grammar and reading of the prose selections contained in it.

IV. Advanced Arabic. I, II. *Assistant Professor Deinard.*
Selected Suras of the Koran and a review of Arabic grammar.

V. Elementary Aramaic or Syriac. I, II. *Assistant Professor Deinard.*
Strack's Grammatik des Biblischen Aramaisch, and Brockelman's Syrische Grammatik.

VI. History of the Hebrews to the close of the Persian period.
I, II. *Assistant Professor Deinard.*
Political, religious and social. The English Bible will be used as a text book, a careful study of the Palestinian and Assyro-Babylonian inscriptions will be made, and the works of some modern writers on Hebrew history will be consulted. No knowledge of any Semitic language is required for this course.

FOR GRADUATES.

Courses offered by *Assistant Professor Deinard.*

I. Critical study of one of the following Old Testament books:
Isaiah, The Minor Prophets, The Psalms, or Job.

II. Early Arabic poetry.
And the relation of the Arabic, grammatically considered, to the Hebrew.

III. Reading of the Aramaic portions of the Old Testament.
And a review of Aramaic grammar.

IV. History, prophecy and the monuments.
Studies in the early history of the Semites.

SOCIOLOGY.

FOR UNDERGRADUATES AND GRADUATES.

V. Social Groups. I. *Professor Smith.*
An examination of the clan and the village in primitive life, a study of demography to discover the effect of environment upon social organization, and a comparison with the nature of and reasons for the modern city.

VI. The Study of Institutions. I. *Professor Smith.*
The genesis of custom and the beginnings of law with the geographical and race influences in the growth of states, will be studied, as well as the various forms of the family and their relation to forms of civilization.

VII. Elements of Sociology. I. *Assistant Professor Jenks.*
This course is similar to I, but will be more exhaustive. Text books, lectures, assigned readings, and thesis. Open to Juniors and Seniors.

VIII. Anthropology. II. *Assistant Professor Jenks.*
An advanced course. A study of the different races of America, Asia, Africa, and Oceanica: a description of the types of primitive culture; an investigation of the origin and development of various phases of culture as of forest, plain, desert, and island; and a presentation of anthropological problems. Text books, lectures, assigned readings and thesis. Open to Juniors and Seniors.

IX. The Philippines. I. *Assistant Professor Jenks.*
This course will present the geography, physiography and resources of the Philippine Islands. A careful comparative study of the four large culture groups of people will be made; tropical influence will be noted; the present policy of the Insular Civil Government will be outlined, so far as it tends to modify the natural characteristics and the modern culture of the inhabitants. This course aims to present a model for the investigator of human culture, and to prepare students for government, business or missionary service in the Philippines. Lectures, illustrated lectures, assigned readings and reports.

STRUCTURAL ENGINEERING.

Courses offered by *Professor Constant.*

FOR UNDERGRADUATES AND GRADUATES.

I. Structural designs. Prerequisite, courses in stresses and structural details. Senior I. 170 hours; II. 170 hours.
Theory and design of steel structures, including railway and highway bridges, standpipes and towers, and other problems of structural interest. Theory of higher structures. Reference: Johnson's Stresses, Merriman's Part III and IV Bridge Series. Ten hours per week.

II. Masonry construction. Prerequisite, I. Senior I. 136 hours.
Properties of stones, bricks, cement and concrete, and their use in engineering structures. Foundations, retaining walls, piers and abutments, dams and chimneys. Theory of reinforced concrete. Theory and design of masonry arches. Design of stone and concrete structures. Lectures and textbook work, two hours per week; drawing room work, six hours per week. Reference books: Baker's Masonry, Church's Mechanics, and current periodical engineering literature.

FOR GRADUATES.

III. Swing and lift bridges.
Detailed study of mechanism and power for operating moving bridges, and complete design, with working drawings for a swing or bascule bridge.

IV. Higher structures.
Theory and design of cantilever, suspension and arch bridges. Analysis of indeterminate structures and complex portal bracing. General theory of flexure and application to special problems.

Graduate Students 110

Adams, Cynthia,	Geology and Mineralogy.
Anderson, P. J.,	German.
Andrews, S. W.,	Elec. Measure. of Precision.
Baird, Roy,	Law.
Bass, Lillian.	French, English, Greek.
Bates, Wm. Earl, L. L. M.,	Law.
Beeler, L. H., M. A.,	Political Science.
Beggs, Mr.,	Greek.
Bell, Elizabeth, M. A.,	Philology, English.
Bell, Margaret G.,	German.
Brooke, Helen M. A.,	German.
Brooke, W. E.,	Theoretical Mech. and Math. Physics.
Brady, Eva W., M. A.,	History.
Brown, C. W.,	Physics.
Buenger, Theodore,	Greek, Latin.
Butters, Fred K.,	Geology and Mineralogy.
Burrill, P. C.,	Physics, Astronomy, German.
Byrnes, Mary,	History.
Carlson, Philip,	Political Science.
Cheyney Edward,	Forestry, English, German.
Conway Estelle, M. A.,	German, History.
Cooper, W. T.,	History.
Dalaker, H. H.,	Astronomy, Theor. Mechanics and Math. Physics.
Denegre, James D.,	Law.
Ellinger, George H.,	German.
Erickson, H. A.,	Physics, Astronomy, Theoretical Mechanics and Math. Physics.
Faunce, Carroll, M. A.,	German.
Fisher, Jas.,	Chemistry, Physics.
Frary, Francis C., M. S.,	Electro Chemistry.
Fugleskjel, O. O., M. A.,	Scandinavian.
Funk, Henry D. M. A.,	History, Philology.
Gates, F. W.,	Astronomy.
Gaumnitz, Daniel, M. Agr	Botany, Agriculture.
Goldman, Sara.	History.
Graves, Ethel,	History.
Griggs, Robt., M. A.	Geology and Mineralogy.
Grimsby, W. H., Ph. D.,	Scandinavian, History.
Hall, Jennie.	German, Geology and Mineralogy.
Hanson, Peter.	Sociology, Mun. Govt., R. R. Transp.
Harholdt, Marie, M. A.,	Philology, German.
Hayward, Thomas E.,	German.
Harrington, Miss.	Latin.
Harvey, Elizabeth, M. A.,	Philosophy and Psychology.
Hatton, R.,	Economics, Political Science.
Hendrickson, H. N., M. A.	Latin, Pedagogy.
Henry, Laura.	German.
Herman, Arthur L.,	Law.
Hohn, C. G.,	Economics, Political Science, Philology.
Holmstedt, Victor.	History.
Huff, Ned, M. A.,	Geology and Mineralogy, German.
Kovarik, A.,	Theor. Mechanics and Math. Physics Astronomy, Physics.
Love, Harry D., M. A.,	German, Latin, Greek.

McClintock, W. M.,	Electrical engineering.
McCurdy, Pearl,	Latin.
McLaughlin, Eliz.,	History.
McElmeel, B. C.,	History.
McKey, Jos. A., M. A.,	English, French, German.
Magnusson, Leifer, M. A.,	French.
Maley, Linda,	History.
Mattson, Rev., P., Ph. D.,	Scandinavian.
Mehan, James E.,	Law.
Melby, Gustav, M. A.,	Scand., Philology, Semitic Lang
Melom, Carl,	French.
Mercer, Hugh V.,	Law.
Middleton, Miss, M. A.,	Spanish, French.
Miller, F. C. Ph. D.	Pol. Sci., Hist., Geol.
Moore, Albert R.,	Law.
Moore, Edith, M. A.,	History.
Myron, O. C., M. A.,	Philosophy and Psychology, History.
Nelson, E. A.,	History.
Nixon, Lillian M. A.,	French.
Northrop, Jessie,	History.
Oglevee, Nannie G.,	German.
Olds, Bessie,	Drawing Design.
Oleson, Peter, M. A.,	German, History.
Orsborn, H. E.,	Geology.
Osterberg, Arthur G.,	Law.
Peabody, Eunice,	Philosophy and Psychology.
Pehoushek, Charles,	German.
Peterson, G. A., Ph. D.,	Philology, Scand.
Potter, Frances B.,	French.
Random, Gilbert R.,	Physics.
Rechert, Rev. C.,	Political Science.
Pierce, A. A.,	History, German.
Ringstad, Edw., C., M. A.,	Scandinavian. Philology.
Rollefson, Edw., M. A.,	German.
Schefrees, John,	Philosophy and Psychology.
Sandvall, Ruth, M. A.,	Latin, Greek, German.
Severson, Sam,	Philosophy and Psychology.
Sheldon, Eleanor	German.
Shellenberger, Emma,	History, French.
Shimizu, Tomesabura,	Law.
Sherraway, R. R.	Theor. Mechanics and Math. Physics.
Skinner, S. A., M. A.,	Botany, Zoology, Chemistry.
Smith John W.,	Law.
Stevens, Homer Wm.,	Law.
Stuart, Robert Kincade,	Law.
Swanson, Anna, M. A.,	Philology.
Thompson, Eva,	History, Geology and Mineralogy.
Thompson, Wm. E.,	Law.
Thorson, N. Anton,	German.
Truesdell, W. H., M. S.,	Geology and Mineralogy.
Tucker, Florence,	German, Latin.
Urseth H. A., M. A.,	Philology.
Warrington, Helen, M. A.,	German, History
West, Ruth,	German, History
Willhoit, A. D., M. A.	Chemistry, Metallurgy.
Willis, Hugh E.,	Law.
Yardley Mary, M. A.,	German, Latin.
Zeleny, A., Ph. D.,	Theoretical Mech. and Math. Physics.

THE UNIVERSITY OF MINNESOTA

BULLETIN

Vol. IX. JULY 31, 1906 No. 11

The College of Dentistry

The University Bulletins are issued every six weeks during the University year, at least six numbers every calendar year. Entered at the Post-office in Minneapolis as second-class matter.

MINNEAPOLIS, MINNESOTA.

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THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

The University

The University of Minnesota comprises the following named colleges, schools, and departments :

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS . . . The President of the University	*Ex-Officio*
The HON. JAMES T. WYMAN, MINNEAPOLIS, . . . The President of the Board	1907
The HON. JOHN A. JOHNSON, ST. PETER, . . The Governor of the State	*Ex-Officio*
The HON. JOHN W. OLSEN, ALBERT LEA . . . The State Superintendent of Public Instruction	*Ex-Officio*
The HON. STEPHEN MAHONEY, MINNEAPOLIS . .	1907
The HON O. C. STRICKLER, NEW ULM	1907
The HON. S. G. COMSTOCK, MOORHEAD	1909
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The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910

C. D. DECKER, AUSTIN,
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
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THE COLLEGES

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GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

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LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee.
The University press committee.
The committee on athletics.
The committee on University relations to other institutions of higher learning.
The committee on health and sanitation.
The committee on commencement and other University functions.
The committee on catalogue, programs and courses of study.
The committee on student entertainments and social affairs.
and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

The representatives to the Council from the several colleges of the University are as follows:

The College of Science, Literature and Arts
DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering
DEAN F. S. JONES,
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines
DEAN WM. R. APPLEBY

The School of Chemistry
DEAN GEO. B. FRANKFORTER

The College of Education
DEAN GEO. F. JAMES

The Graduate School
DEAN H. T. EDDY

The College of the School of Agriculture
DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law
DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery
DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery
DEAN EUGENE L. MANN

The College of Dentistry
DEAN ALFRED OWRE

The College of Pharmacy
DEAN FREDERICK JOHN WULLING

University Council Committees

The University Auditing Committee.
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics.
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation.
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study.
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee.

The Press Committee.
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions.
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs.
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning.
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures.
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library.
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

The Department of Medicine

The Department of Medicine includes the following named colleges:
The College of Medicine and Surgery.
The College of Homeopathic Medicine and Surgery.
The College of Dentistry.
The College of Pharmacy.

Each college is distinct in the government of its internal affairs, has its own faculty and an independent curriculum, save in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in the various courses, are pursued by all students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in six buildings, five of which are situated upon the University Campus, viz: Medical hall, the Medical Science building, the Laboratory of Chemistry, the Laboratory of Anatomy and the Institute of Public Health and Pathology. In addition, two more buildings, a University Hospital and a building for Operative Surgery, are provided for and will be erected.

Medical hall contains the offices of the dean and secretary of the college of medicine and surgery, and of the deans of the college of homeopathic medicine and surgery and of the college of dentistry; a large amphitheatre and lecture rooms for the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

The Medical Science building is a large three-story and basement building, 75 x 150 ft., especially designed for laboratory uses. The south wing of the building is occupied by the college of pharmacy and the department of physiology. It contains the office and private laboratory of the dean of the college of pharmacy, the pharmaceutical and botanical larboratories, the laboratory of organic chemistry, with preparation and stock rooms. A large lecture amphitheatre, especially arranged for demonstrative work in physiology, the laboratories of experimental physiology and of physiologic chemistry, the offices, library and recitation rooms of this department are also situated in this wing. Upon the basement floor are laboratory stock

rooms, work shop, and the animal rooms devoted to physiologic purposes.

The north wing and center are occupied by the department of Histology and Embryology. Each of these branches has its large, well-lighted laboratories, preparation rooms and private study rooms for research. In addition there are lecture and recitation rooms, smaller laboratories for micro-technique and neurology; animal rooms and operating rooms for experimental work; rooms for photography and photomicrography, for reconstruction work and the making of models and charts; chemical laboratory, departmental library, a vault for the storage of the very valuable collection of series of embryos and sets of histological slides; store rooms and the offices of the professors and assistants.

The Laboratory of Medical Chemistry is a one-story brick building, devoted entirely to the use of this department. It is equipped with amphitheatre, laboratories, preparation rooms, store rooms, and private offices of the professor and assistants.

The Laboratory of Anatomy is a new two-story and basement building, 35 x 60 feet. In the basement are the morgue, injecting room, cold storage vaults, and engine and apparatus for the carbon dioxide freezing plant. On the first floor there is an amphitheatre seating one hundred and seventy-five students, the privates offices of the professors and instructors, a private dissecting room and a smalll laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

The Institute of Public Health and Pathology, now almost completed, will be ready for occupancy for the year 1906-07.

The building, which is 213 feet over all and 100 feet deep in the central portion, consists of a central main portion 60 by 100 feet, with north and south wings each 56 by 75 feet.

In the south wing are housed the State Board of Health laboratories, which are connected by an underground passage with the adjacent Laboratory of Animal Research of the Minnesota State Board of Health. This wing also contains a suite of rooms for a Pasteur Institute in which the special treatment of and research in rabies will be carried on. Diagnostic laboratories are provided for the bacteriological, chemical and pathological work of the State Board of Health, workshops for the repair and making of special apparatus, unpacking, storage, shipping, washing and media rooms are also available. Research laboratories and the offices and special laboratories of the professional members of the staff are here provided together with vaults for records and offices for the clerical staff.

The central portion and north wing provide for teaching and research work in the University Departments of Pathology, Bacteriology and Public Health. The central portion of the building is 100 by 60 feet, being three stories in front and four stories in the rear, where three of the stor-

ies are devoted to museum and library purposes. Here special books and periodicals are provided and interesting pathological and bacteriological specimens and materials, apparatus, methods of construction and other illustrative features of public health are on exhibition. On the first floor is a preparation room for the museum and lecture room, beneath the museum and adjacent to the lecture and autopsy room. Six special laboratories and offices are provided for the Professor of Surgical Pathology, Assistant Professor of Pathology, Demonstrator of Pathology and Bacteriology and the Assistant Director of the State Board of Health Laboratory. The remainder of the central portion is occupied by the lecture and autopsy amphitheatre, special research laboratories, photographic laboratories and a cold storage plant.

In the north wing the main teaching laboratory occupies the full floor space of 75 by 56 feet. It is lighted on three sides and by a skylight and is divided by low partitions into twelve loges, each intended for the use of a group of students. Each loge is fully equipped with all apparatus and supplies which the students may need in the practical work of pathology, bacteriology or public health, so as to render each group independent. A coat room and a room for the distribution of supplies open off the main laboratory. Beneath this is a similar students' research laboratory containing six loges which are to be used for the teaching of such special courses as Pathology of Tumors, Neuro-Pathology, practical Public Health laboratory work, etc. Opening off this is a special laboratory for the teacher in charge, for the issuing of supplies and also a coat room. Other special laboratories, including rooms for the preparation and storage of media and the storage of stock cultures of bacteria, and living quarters for the janitor are also in this wing.

A University Hospital upon the Campus has been provided for through a bequest by the widow of the late Dr. A. F. Elliott; this money, amounting to over $125,000.00 will be used in the construction of a large, thoroughly equipped hospital designed with especial reference to teaching purposes.

The last Legislature provided for a building adjacent to the Medical quadrangle which when completed will give fine accommodation for operative surgery, pharmacology, an animal hospital and for the storage and breeding of animals.

The University Clinical Building is situated in a part of the city most favorable to the development of an out-door service and, at the same time, accessible to the students. It is of two stories and covers 40x150 feet. It affords ample floor space for amphitheatres, waiting rooms, dispensary and class rooms for each of the clinical branches. Wards and laboratories, in which section work in medical and surgical diagnosis can be conducted, have been equipped.

The Department of Medicine is in intimate relationship, through its sev-

eral faculties, with the numerous hospitals, infirmaries and dispensaries of the cities of Minneapolis and St. Paul. Through these agencies it utilizes, for the benefit of its students, the clinical material of these two large cities with a population of 500,000 people. The location of the University between two interurban car lines enhances the value and convenience of these clinical opportunities.

A medical library, containing 4,000 volumes and supplied with current periodicals, is open to all the students of the department. The collection has been chosen with special regard to the need for reference work and collateral reading. The general library of the University and the public and medical libraries of Minneapolis and St. Paul are also open to the students of this department.

College Calendar, 1906-1907

The University year will hereafter open on the second Tuesday in September, and close on the second Thursday in June.

FIRST SEMESTER.

SEPTEMBER	10	Matriculation begins.
"	10 to 17	Registration and assignment of seats, benches and lockers.
"	" "	Entrance examinations.
"	" "	Conditioned examinations.
"	18	Classes called for regular work. Eighteenth annual session.
NOVEMBER	29	Thanksgiving Day. Recess three days.
DECEMBER	22	Holiday recess begins.
JANUARY	8	Work resumed in all departments.
"	28 to 31	Semester examinations.

SECOND SEMESTER.

FEBRUARY	5	Second semester begins.
"	12	Lincoln's Birthday—holiday.
"	22	Washington's Birthday—holiday.
"	27	Examinations begin.

COMMENCEMENT WEEK 1907.

SUNDAY	June 9	Baccalaureate Service.
MONDAY	June 10	Senior Class Exercises.
TUESDAY	June 11	Senior Promenade.
WEDNESDAY	June 12	Alumni Day.
THURSDAY	June 13	Commencement Day—The Thirty-fifth Annual Commencement.
FRIDAY	June 14	Summer Vacation Begins.

The College of Dentistry

FACULTY

CYRRUS NORTHROP, LL. D., *President.*

ALFRED OWRE, D. M. D., M. D., C. M., *Dean, Professor of Operative Dentistry and Metallurgy.*

THOMAS B. HARTZELL, M. D., D. M. D., *Professor of Clinical Pathology, Therapeutics and Oral Surgery.*

OSCAR A. WEISS, D. M. D., *Professor of Prosthetic Dentistry and Orthodontia.*

JAMES O. WELLS, A. M., D. M. D., *Professor of Crown and Bridge-Work and Porcelain Art.*

E. FRANKLYN HERTZ, D. M. D., *Professor of Dental Anatomy and Prosthetic Technics.*

CHARLES A. ERDMANN, M. D., *Professor of Anatomy.*

RICHARD O. BEARD, M. D., *Professor of Physiology.*

THOMAS G. LEE, A. M., M. D., *Professor of Histology and Embryology.*

FRANK F. WESBROOK, M. A., M. D., C. M., *Dean College of Medicine and Surgery, Professor of Bacteriology and Pathology.*

GEORGE B. FRANKFORTER, M. A., Ph. D., *Dean of the School of Chemistry, Professor of Chemistry.*

CHAS. F. SIDENER, B. S., *Professor of Chemistry.*

EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry.*

EVERHART P. HARDING, M. S., Ph. D., *Assistant Professor of Chemistry.*

WINFIELD S. NICKERSON, Sc. D., *Assistant Professor of Histology, Chemistry Assistant.*

FRANK R. WRIGHT, D. D. S., M. D., *Lecturer on Anaesthesia and Chief of Anaesthesia Clinic.*

MARY V. HARTZELL, D. M. D., *Instructor in Comparative Dental Anatomy.*

H. M. REID, D. D. S., *Instructor in Prosthetic Dentistry.*

JAMES M. WALLS, D. M. D., *Instructor in Operative Technics, and Demonstrator of Operative Dentistry.*

FRED S. YAEGER, D. D. S., *Instructor in Crown and Bridge-Work*

J. FRANCIS SCHEFCIK, B. S., Ph. G., M. D., C. M., *Instructor in Materia Medica.*

NORMAN J. COX, B. S., D. M. D., *Instructor in Operative Dentistry.*

DON DUVELLO RIDER, D. M. D., *Instructor in Prosthetic Technics.*

ARTHUR B. ALLEN, D. M. D., *Instructor in Operative Technics.*

AMOS C. WELLS, B. A., D. D. S., *Assistant Demonstrator in Histology and Dental Anatomy.*

ANDREW J. WEISS. *Instructor in Technics.*

E. R. HARE, M. D. *Prosector of Anatomy.*

M. RUSSELL WILCOX, M. D., *Demonstrator in Physiology.*

GEORGE D. HAGGARD, M. D., *Instructor in Physiology.*

IRA HARRIS DERBY, B. S., *Instructor in Chemistry.*

IRA HARRIS DERBY, B. S., *Demonstrator in Chemistry.*

LILLIAN COHEN, M. S., *Instructor in Chemistry.*

ALBERT D. WILHOIT, B. A., *Instructor in Chemistry.*

RODNEY WEST, B. A., *Instructor in Chemistry.*

HAROLD M. NEWTON, *Instructor in Chemistry.*

M. L. NICKERSON, A. M., M. D., *Instructor in Histology.*

R. H. MULLIN, B. A., M. B., *Demonstrator in Pathology and Bacteriology.*

FRANK W. SPRINGER, E. E., *Lecturer on Electricity and Its Uses in Dentistry.*

H. V. MERCER, LL. M., *Lecturer on Jurisprudence.*

A. L. MOORE, *Infirmary Clerk.*

General Information, Rules and Regulations

Note: The College of Dentistry of the University of Minnesota is a member of the National Association of Dental Faculties, and its diplomas are recognized by the Dental Examining Boards of every state.

MATRICULATION AND REGISTRATION.

After matriculating with the registrar of the University and payment of fees, students will be assigned seats, benches and lockers *in the order of their registration with the dean of the college.*

No one is recognized as a student of the school or permitted in the classes, until his receipts are presented to and countersigned by the Dean; this applies to both semesters.

Students shall have their registration completed *not later than the day previous to the day set for regular work to begin.*

REQUIREMENTS FOR ADMISSION.

The requirements for admission to the College of Dentistry are graduation from an accredited four-year high-school course, or its equivalent, and a credit in manual training. Failing to have the latter, the prospective student will be required to demonstrate, by test, the possession of mecanical capability.

It is expected that the credits shall include at least one year's work in latin.

The "equivalent" of a high-school graduation will be twelve one-year credits; a "credit" representing the ground covered in a high-school study, for a course of at least thirty-six weeks, five recitations per week.

Students wishing to matriculate in this school, must present credentials signed by a city, county or state superintendent of schools, a principal of an accredited high school or academy, or the state high-school board.

A regulation blank, upon which to make out these certificates, will be found inside back cover of this Bulletin.

Students not having the above credentials, or an insufficient number of them, may take examinations before a committee appointed by the president, from the college of science, literature and arts, of the university.

Examinations are held only in the English language.

ADVANCED STANDING.

Applicants for advanced standing must present satisfactory evidence

of possessing the preliminary educational qualifications required of the class they desire to enter.

They must also satisfy the professors of the branches from which they wish to be exempt, that the work pursued by them in other institutions was equal in scope and amount to that passed by the class they propose to enter.

No credits are accepted unconditionally, the Faculty reserving the privilege of examining any applicant when deemed necessary.

All certificates pertaining to advanced standing must be presented to the dean who will send them to the respective professors for acceptance or report of further requirements for acceptance.

Students coming from other schools must make up their technic conditions under supervision of the instructors of this school, *at the convenience of the instructor.*

One-year credit will be allowed graduates in medicine, but the dental technic branches of the first year must be taken and completed before advanced work in these branches can be entered upon, and the courses in dental pathology, dental histology and bacteriology taken as they occur in the curriculum.

When a student, for any cause, transfers from one college to another of the National Association of Dental Faculties, his certificate of attendance and standing must be verified by the dean of the school he withdraws from. This is done by correspondence between the executive officers of the two schools.

FEES.

The annual fee is one hundred and fifty dollars. ($150.00). It includes all charges for matriculation, lectures, laboratory courses, dissections, technic materials, microscopes and graduation.

One-half of this fee will be payable when the student matriculates. The accountant's receipts for the portion will entitle the holder to take entrance examinations and to classify. The second half will be payable at the opening of the second semester. These receipts must be presented to, and countersigned by the Dean before entering upon the work of each semester.

A deposit of five dollars ($5.00) will be required in addition to the first semester fee, to cover loss of and breakage or damage to college property. This will be returned at the end of the year, providing there is no charge against the student. This fee is to be deposited with the University accountant each year when the student matriculates.

If the applicant fails to pass the entrance examinations, his fee will be returned by the accountant.

After having entered upon the course of study, fees are not return-

able, and no rebate will be recommended should a student discontinue work, but the faculty may recommend the application of a part to the succeeding year.

Students who fail to pass off conditions at the beginning of the year succeeding the one in which they were incurred, will be charged five dollars ($5.00) for each examination thereafter until they are removed.

Senior students failing to graduate, will be required to pay a fee of fifteen dollars ($15.00) for each branch examined in or taken subsequent to the close of the session in which the failure occurred. A fee of fifteen dollars ($15.00) will also be charged for the completion of each branch of unfinished laboratory or practical work.

Special and graduate students will pay to the accountant a fee of thirty dollars per year for each study they elect to pursue, and additional fees, varying from ten to thirty dollars, for each laboratory course they may enter.

CONDITIONS.

Examinations of conditioned students and of applicants for advanced standing, in the studies of the first and second years, will be held during the first week of the semester. No student, with an entrance condition, will be allowed to register for any junior subject.

Students will not be permitted to take advanced work in any graded study, until they have passed the lower branch.

No one can be classed as a Junior or Senior with more than two conditions.

Students who carry conditions into a succeeding year, may find a resultant conflict of study hours. In that event they will give preference to the unfinished studies of the lower or conflicting course.

No student will be eligible to final examinations in any year, who carries conditions of a previous year unremoved.

Candidates for graduation who carry conditions in studies of previous years, must remove these conditions at the end of the first semester in order to be eligible for final examinations.

STANDING.

The standing of students is determined by the results of recitations, written examinations, laboratory and practical work. It is indicated by the terms (P), "passed"; (I), "incomplete"; (C), "conditioned"; or (F), "failed." The mark of "failed" indicates that the work must be taken over in class.

ATTENDANCE AND DISCIPLINE.

Attendance upon all lectures, and infirmary and laboratory hours, as

scheduled, is obligatory. A complete record of each student's attendance is kept, and all absences and tardinesses are noted.

Students to be eligible for final examinations, must have a record of not less than eighty per cent. in attendance.

Habitual absence, continued indifference to study, or persistently poor scholarship, may subject the student to temporary or permanent suspension.

All laboratory courses must be taken in full and must invariably be entered during the first week in which they begin.

The connection of any student with this college, may be terminated at any time, without a return of fees, whenever such action may be advisable on the ground of immorality or disorderly conduct, or a failure to conform to any of the established rules.

Students detected in the use of outside help, as notes, etc., in quizzes or examinations, or of rendering assistance to other students during examinations, will be subject to suspension for the remainder of the semester. The possession of any secret aids while under examination, will be deemed presumptive evidence of guilt, and will subject the student to the same penalty as if detected in using them.

Any student detected in stealing, will be permanently expelled from the college, and be handed over to the civil authorities to be dealt with according to the law.

The practice of dentistry by students, except under the direct supervision of a preceptor, is prohibited by law in the state of Minnesota, and a rule of the National Association of Dental Faculties, to which this college belongs, reads as follows: "Students in attendance at colleges of this Association are required to obey the laws regulating the practice of dentistry in the various States, and, failing to do this, shall not be again received into any college of this Association." Any student detected in violating this rule will be suspended or expelled.

INSTRUMENTS, BOOKS, TOOLS AND MATERIALS.

All students are required to provide themselves with instruments, books, tools and materials as prescribed by the college.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

A deposit of five dollars will be made with the accountant each year, by

every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, which are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

For schedule of lectures, announcements, changes in college rules, etc., see bulletin board.

Rules and regulations of the infirmary and laboratories are posted in their respective places.

CURRICULUM.

The course in the college of dentistry leads to the degree of doctor of dental surgery. It covers a period of three years of collegiate study, each year representing nine months in actual attendance.

The studies are graded, so far as practicable, throughout the three years, and this grading is arranged with careful reference to the relation which the subjects naturally bear to each other, as follows:

FIRST YEAR.

Anatomy, dental anatomy, comparative dental anatomy, histology and embryology, physiology, chemistry, prosthetic technics.

SECOND YEAR.

Anatomy, materia medica, bacteriology and pathology, clinical pathology and therapeutics, operative dentistry, prosthetic dentistry, orthodontia, crown and bridge work.

THIRD YEAR.

Electricity, metallurgy, physical diagnosis, oral surgery, operative dentistry, prosthetic dentistry, orthodontia, crown and bridge work, dental jurisprudence.

SIX YEARS COURSE.

Beginning with the year 1906-7, the University will offer an optional six years course of study. The first three years of the course to be given in the college of science, literature and the arts. The last three years to be given in the college of dentistry. It leads to the bachelors degree at end of the four first year and to the degree of doctor of dental surgery at the end of the six years course.

Course of Instruction

ANATOMY.

Osteology.
Lectures and recitations upon the human skeleton and supplementary work on the osteology of domestic mammals; three hours each week, for 10 weeks of first semester. Practical study of the skeleton, followed by recitations from the specimen, taken by the class, in sections; 2 hours each section, for 10 weeks, first semester. Required of all first year students.

Syndesmology.
Lectures, recitations and laboratory demonstrations. Three hours each week, for 4 weeks, first semester.

Myology and angiology.
Lectures and recitations covering the entire muscular and arterial systems of the human body, with a supplementary study of comparative myology; 3 hours each week, 16 weeks. Laboratory work consists in identifying the muscles of the human body on dissected preparations and showing their actions. Class, in sections, 4 hours each week for 5 weeks.

Splanchnology.
Descriptive and topographical anatomy of the thoracic viscera, the alimentary and urino-genital organs. Lectures and recitations, 3 hours each week, for 10 weeks.

Descriptive and surgical anatomy.
Head, neck, trunk and extremities. Lectures and recitations, 3 hours each week for 12 weeks.

The nervous system.
Cerebro spinal axis and its membranes; the cranial and spinal nerves; the sympathetic nervous system, and the special-sense organs. Lectures and recitations, 3 hours each week for 8 weeks.

Dissecting. The work extends over a period of eight weeks, requiring 15 hours each week. The dissection of the entire human body is required. The method of work follows that laid down in Holden's Manual of Dissections.

DENTAL ANATOMY.

The subject is taught by a thorough laboratory course, in which the student studies the teeth by dissection, modeling, carvings and drawings. In the study of dental anatomy, human and comparative, the definition, terminology, notation, form and arrangement of the teeth will be fully considered; also macroscopic and microscopic characteristics of sections, including the study of the relation of enamel to dentine and of the pulp canal.

In the study of structural anatomy, teeth will be selected and mounted upon wooden blocks. They will be filed down until the pulp chamber and canals are exposed, and drawings from actual measurements of the different aspects will then be made and carefully studied. Opportunity for the study of microscopic sections and lantern slides will also be afforded. The didactic instruction will be illustrated by "chalk talks," lantern slides, lectures, heroic models and skulls.

The standing of the student will be determined by marks given on the cutting of sections, models, drawings and recitations. Lectures and recitations, covering the influence of form and arrangement of the teeth upon caries will also be given.

COMPARATIVE DENTAL ANATOMY.

The instruction in this subject embraces a comparative study of animal life, giving special attention to number, form and arrangement of teeth, and their

adaptation to food habits, ranging from the horny teeth of invertebrates, to the complex tooth-forms of the most highly specialized animals of the present time. The lectures will be illustrated with the stereopticon, casts, models and skulls.

HISTOLOGY AND EMBRYOLOGY.

This course will consist of lectures, recitations, laboratory work and demonstrations and will include a study of the structure and properties of protoplasm; the cell, its structure and properties, cell division, reproduction, ovum, spermatozoon and formation of blastoderm. A study of the structure and life history of certain type forms of unicellular animals and plants as amoeba, paramoecium yeast, spirogyra, etc., simple metazoa, as hydra, etc.; consideration of the structure of vertebrates; the tissues, as epithelium, connective tissue, cartilage, bone, etc., muscle, nerve, blood and lymph; vascular and lymphatic system. The teeth, enamel, dentine, cementum, pulp, etc. A general outline of the development of the embryo; the formation of the head; development of the jaws, teeth, oral cavity, glands, etc.

N. B.—Recitations, four hours per week; laboratory, six hours per week.

PHYSIOLOGY.

The subject is taught by recitations and lectures illustrated by practical demonstrations. These embrace the discussion, and as far as possible, the observation of physiological ingredients of the animal body; of the physiology of cell life or the fundamental properties of the cell; the nutritive media, blood, lymph and chyle; of the elementary functions of the nervous system; of the muscular tissues; and the epithelial tissues; of the vascular mechanism; of the alimentary canal; of the organs of secretion, excretion and respiration.

CHEMISTRY.

Course I. General Chemistry. PROFESSOR FRANKFORTER.
Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals and their more important compounds, with an introduction to organic chemistry.

Course II. Inorganic Chemistry.
PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.
This course is arranged for those who have already had an elementary course in chemistry. The course includes an introduction to physical chemistry with special reference to the laws of solutions and electrolytic dissociation theory. This work is followed by a systematic study of the non-metals from the general standpoint of the periodic law. Special attention is given to the relationship between the different elements and their analogous compounds.

Course III. Inorganic Chemistry. (Continuation of course II.)
PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.
This course consists of lectures, recitations and laboratory work on the metals. Considerable time will be devoted to those metals which are of special importance to the dentist.

Course IV. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON AND MR. WILHOIT.
Lectures, recitations and laboratory work. The course includes the general reactions of the metals and the qualitative separation and identification.

Course V. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON AND MR. WILHOIT.
Lectures, recitations and laboratory work. Reactions, separations and identification of the acids.

For work in other special or technical lines of chemistry, numerous courses are offered (see Bulletin of the School of Chemistry). Facilities for research work are also afforded in a large number of lines.

The analysis of the urine is dealt with under physiological chemistry in the Department of Physiology, in the pathology of the urinary system in the Department of Pathology and in the clinical laboratories in connection with the microscopy of the urine.

MATERIA MEDICA.

This subject is covered as thoroughly as its importance demands. The writing and correct composition of prescriptions is an important feature. Particular attention is devoted to all therapeutic measures pertaining to dentistry. Practical work consists of the study of crude drugs and preparations, with demonstrations of all the pharmaceutical processes of importance.

BACTERIOLOGY AND PATHOLOGY.

Bacteriology. Lectures, recitations and laboratory work, a short general survey of the problems brought to light by bacteriology, and general methods and technique involved, will be followed by special study of certain micro-organisms, such as pyogenic cocci, B. tuberculosis, B. diphtheriae, etc. These studies will be pursued by means of actual cultivation on the various media, the making and examination of microscopic preparation of pure culture, and both cultivation from and microscopic examinations of infected tissues and fluids of the body, by the students themselves.

Pathology. Lectures, recitations and laboratory work. Special study of inflammations and histological changes occurring in the tissues and fluids, constitute the major portion of this course. Some attention is given to the degenerations and the subject of tumors with special reference to the face and oral cavity. Students prepare and examine many of the specimens and receive loan slides of the rarer types, or those difficult of preparation.

PATHOLOGY AND THERAPEUTICS.

The instruction in this branch will begin with a consideration of the terminology belonging to the subject, followed by the presentation of the lesions of inflammation, local and general, and the degenerate change in the tissues.

The general character of tumors, practical consideration of pathological dentition, interstitial gingivitis, (pyorrhoea alveolaris) pulpitis, pulp nodules, secondary dentine, pericementitis, alveolar abscess, caries of jaw and necrosis, dependent on a diseased condition of the teeth, the various inflammations of the oral cavity, including syphilis and tuberculosis, will all receive due attention.

Therapeutics. This course is given by lectures and recitations, and clinically. The student being instructed in the special therapeutics of dental and oral diseases; systematic treatment in cases requiring it, receives due consideration. New remedies that give promise of value are fully studied and put to practical test in the infirmary, under direct supervision. Antiseptic and disinfectant methods as well as dental hygiene, also receive due attention.

ORAL SURGERY.

The subject of oral surgery will be taught clinically and didactically. The large amount of clinical material presented at the infirmary, furnishes ample opportunity for practical demonstration. Students are required to take charge of cases and carry them through under the advice of the instructor in charge. The didactic lectures will include a full consideration of all the surgical lesions of the oral cavity and associate parts, including oral tumors and the reflex neuroses connected with the fifth pair of nerves; fractures of the maxillae; cleft palate and hare-lip; caries and necrosis of the jaws from constitutional causes; adenoid growths and nasal polypi in their relation to oral surgery; suppuration of the antrum; ulitis; epulic growths; fungoid pulp; ranula; exostosed teeth; ankylosis and dislocation, implantations, obturators, interdental and other forms of dental splints

Arrangements have been made with several clinicians connected with the different hospitals of the city to give several clinics. An abundance of material representing all the different forms of diseased conditions of the mouth and associate parts is to be found in the infirmary service, which will be assigned to students for treatment under direction of the professor of oral surgery.

Clinical lectures on the cases presented will be given from time to time. These cases include alveolo-dental abscesses; caries and necrosis of the maxillary bones; diseased conditions of the antrum; interstitial gingivitis; dislocations and ankylosis; facial neuralgias; tumors of the mouth and associate parts, hare-lip; cleft-palate; implantation cases and fractures.

PHYSICAL DIAGNOSIS AND ANESTHESIA.

The subject of physical diagnosis will be taught didactically and practically,

and will have direct bearing upon the subject of anaesthesia and will be as complete as its importance demands.

A course in urinalysis will be given in connection with this course.

The technics of anaesthetics, both general and local, receive full consideration. All anaesthetics are administered in the clinic, and full instruction concerning their use is given. The members of the senior class are required, under direction, to administer them and extract teeth under these agents.

OPERATIVE DENTISTRY.

Work in this department comprises didactic, technical and clinical instruction.

Didactic. A course of illustrated lectures, covering the entire field of operative dentistry, is given in the junior year; the subject is again thoroughly gone over with quizzes and conference work in the senior year.

Technical. During the junior year a technic course is given, the object of which is to teach as much as possible of operative procedure prior to actual work on patient.

Clinical. A part of the junior and all of the senior year is devoted to clinical practice; there is an abundance of clinical material, and the student has the opportunity to perfect himself by practical work in all branches.

PROSTHETIC DENTISTRY.

The work of the first year is almost entirely technical; only such lectures and demonstrations being given as to enable the student to carry on his work in the laboratory intelligently. The work comprises a consideration of impression materials, taking impressions, and making casts and models, making upper and lower retaining plates for a fellow student's mouth; and after which the upper is broken and repaired; making partial upper plate with rubber base, comprising the making of trial plate, taking bite, mounting case in articulator, grinding and arranging teeth for proper articulation, flasking, packing, vulcanizing and finishing. Making full upper and lower sets of teeth upon rubber base, using plain teeth and arranging same in accordance with the Bonwill-law of articulation; making full upper and lower swaged metal plates, comprising the making of models, molding in sand, casting dies and counterdies; swaging plate to fit model, soldering rim and grinding and polishing metal. Making lower cast-metal plate, comprising the making of models and moulds, casting and polishing.

Didactic. Lectures and recitations of the second year will cover the preparation of the mouth for artificial dentures, choice of impression materials, the various base-plates, their composition and preparation. Porcelain teeth, their composition, form and color as related to temperamental types, and their forms as adapted to the various base-plates.

The various methods of retention, and the indications and uses of the different forms of partial plates is fully considered.

Technical. Making upper swaged plate of german silver, mounting plain teeth thereon to articulate with model of lower natural teeth. Making upper combination swaged metal and rubber plate, mounting gum-section teeth thereon to articulate with lower cast metal plate. Making partial swaged metal plate reinforcement and clasps. Making partial upper swaged metal plate with teeth attached by soldering. Making lower cast metal plate, casting metal around lingual side of teeth and forming gum upon labial and buccal sides with pink rubber. Making lower swaged aluminum plate with turned rim.

Clinical. The student enters the infirmary upon completion of the technic course, and there puts into practice the principles acquired.

PROSTHETIC DENTISTRY—ADVANCED COURSE.

Didactic. Lectures and recitations upon the use, construction and adjustment of obturators and artificial vela in the treatment of cleft-palate cases. Continuous gum-work, construction and uses, will be fully illustrated and demonstrated.

Clinical. An execellent clinic is provided, enabling each student to make not less than twelve dentures, covering the various conditions usually met with in general practice. Cases of unusual occurrence appearing in the clinic will be utilized as special clinics for the advantage of the entire class.

ORTHODONTIA.

The work in the first year of a two-years' course is technical, with such

lectures and demonstrations as will enable the student to perform the laboratory work. In addition to this, the student will be required to attend the lectures given the third year class, so that upon entering the senior year to carry on a clinical case, he will have a general idea of the practice of orthodontia.

The technic course is thorough and complete in its scope, it being deemed necessary that the student should have the requisite skill to make regulating appliances, in order to properly place them in the mouth; in other words, it requires no more skill to make appliances than should be possessed to correctly place and operate them.

Furthermore, no system of "ready-made" appliances is considered wholly adequate or best adapted for the correction of all irregularities, thus the necessity for making them.

The technic work in this year includes a consideration of material for regulating appliances. German silver, its properties, annealing and tempering; drawing wire, making tubing and band material; constructing band with screw; jack-screws of different forms, rotation and expansion appliances, retractors and retainers.

The properties of steels, forging, hardening, tempering and polishing, the making of excavators and chisels, band drivers, band removers and wrenches or keys. Making taps for threading nuts, etc. Each operation is performed by the student after a demonstration by the teacher.

ORTHODONTIA—ADVANCED COURSE.

Didactic. Lectures and recitations upon the classification of irregularities of the teeth; etiology, local and constitutional; evils arising therefrom; advisability of correction; methods of treatment, including a consideration of the positive or intermittent and constant forces.

The principles of application of force and anchorage are given special consideration, rather than appliances.

Retention and methods of accomplishing the same are fully considered.

Clinical. In this year an ample clinic affords opportunity for each student to treat cases of irregularity.

The correction of at least one case by each student is required. The student is also required to observe and inspect the cases of his classmates, thus enabling him to see a large variety of cases with their treatment.

The student will use such of the technic appliances as are adapted to the case in hand and make such new ones from the material left over from the previous year as the case may require.

CROWN AND BRIDGE-WORK.

Didactic. Lectures and recitations will cover the subject of crown and bridge-work. All forms of crowns and bridges will be taken up in order and considered from theoretical and practical viewpoints.

Technical. The technics are arranged so as to include all the fundamental principles of crown and bridge-work. Each student in completing the course will be required to make one of the more important forms of crowns and dummies and to assemble them in bridges.

ADVANCED COURSE.

Didactic. Lectures and recitations on the character, indication, and methods of handling porcelain in crowns and bridges.

Technical. The construction of porcelain crowns and bridges.

METALLURGY.

A course of lectures and laboratory instruction is given in the senior year upon the most important metals with special work upon those used in dentistry.

USES OF ELECTRICITY IN DENTISTRY.

A course of laboratory instruction will be given upon the different forms of batteries, dynamos and motors in use in dental practice. Their construction, use, care and operation. Electricity as used in surgery and for therapeutic purposes, including application of the x rays, will be made clear by laboratory demonstrations and practical application.

DENTAL JURISPRUDENCE.

A course of lectures will be given upon the special duties, obligations and

privileges of professional men, with respect to their patients, fellow practitioners and the general public. Laws relating to expert witnesses, cases of alleged malpractice, liabilities incurred from septic infection, etc., will have due consideration.

The enactments regarding the attainment of legal standing as practitioners in Minnesota and other states will also be fully explained.

DEGREES.

The degree of doctor of dental surgery is conferred by the Board of Regents upon the students who are recommended, by vote of the faculty, for graduation. Candidates for the degree must possess the following essential qualifications:

(1) Twenty-one years of age.

(2) Good moral character.

(3) Three full college years spent in the study of dentistry; the third year, at least, in this University, and the remainder in this or other recognized schools of dentistry.

(4) Satisfactory examinations passed in all branches of the curriculum.

Text-books.

Quain's Anatomy, 10th Edn., Vol. II, part I and II.
Morris' Anatomy.
Edinger's Anatomy of the Brain and Cord.
Gray's Anatomy.
Cunningham's Anatomy.
Broomell's Anatomy and Histology of the Mouth and Teeth.
Black's Dental Anatomy.
Tome's Dental Anatomy.
Underwood's Comparative Anatomy.
Thompson's Comparative Dental Anatomy.
Stohr's Histology.
Foster's Physiology.
Remsen's Inorganic Chemistry.
Long's Dental Materia Medica, Therapeutics and Prescription Writing.
Ware's Practical Therapeutics II Edn.
Burchard's Dental Pathology, Pharmacology and Pathology.
Marshall's Oral Surgery.
Tyson's Physical Diagnosis.
Turnbull's Manual of Anaesthetics.
Evans' Crown and Bridge-work.
Kirk's American Text Book of Operative Dentistry.
Black's Operative Dentistry.
Johnson's Principles and Practice of Filling Teeth.
Essiz's American Text Book of Prosthetic Dentistry.
Guilford's Orthodontia.
Hodgen's Practical Dental Metallurgy.

EXPENSES.

	1st yr.	2d yr.	3d yr.
Tuition, Instruments, Tools and Books	$200.00	$350.00	$175.00
Room, Board, Incidentals	200.00	200.00	200.00

This is a general average and few use more than $1,500.00 for the entire three years.

ALUMNI ASSOCIATION.

An association of the graduates of the college has its annual meeting during commencement week.

Students

Graduates 1905—52.

Baker, Henry W., Wells.
Bancroft, Merton Eugene, Delton, Wis.
Barton, Harry Elijah, Flint, Mich.
Bennett, Charles Edward, Granite Falls.
Bittner, Arthur Hugo, St. Paul.
Borgendale, Edward, Montevideo.
Bowe, John Francis, Waseca.
Brastad, Olaf William, Minneapolis.
Brown, Thos. Andrew, Lake City.
Bugbee, Clyde Sereno, Minneapolis.
Burgan Frederick, Preston, Minneapolis.
Burt, Leonard Henry, Chokio.
Carr, Alvin Eugene, Minneapolis.
Casselman, Don, Huron, S. D.
Corson, Walter Hartley, Ada.
Curtin, James, Arlington.
Deering, Joseph Wm., West Superior Wis.
Dittmarsen, John Elias, Irving.
Doyle, Milo Hayden, Bellingham.
Foster, Charles White, St. Paul.
Gillam, Clarence Gifford, Windom.
Hamlon, Chauncy Wilfred, Jackson.
Hanson, Henry Alexander, Fergus Falls.
Ihle, Edward Anthony, Eau Claire, Wis.
Ingalls, Raymond Eugene, St. Paul.
Johnson, Alfred C., Winthrop.
Kubat, William, Blooming Prairie.
LaDue, Thomas Irving, Fertile.
Lukkason, Joseph, Rushford.
Lyon, Harry David, Minneapolis.
Maves, Herman Albert, St. Peter.
McIntyre, Ralph Emerson, River Falls, Wis.
Miller, Charles Warren, St. Peter.
Moran, Michael Aloysius, Pine Island.
Moskau, Gilbert, Mayville, N. D.
Nelson, Charles, Glencoe.
Nelson, Elof, Amor.
Newgord, Harry Clarence, Minneapolis.
Olson, Theodore John, St. James.
Porter, Harold Ferdinand, Willmar.
Putney, Charles A., Moorhead.
Remele, Henry William, Sleepy Eye.
Sheehan, Thomas Vincent, Luverne.
Shellman, Joseph Frederick, Fergus Falls.
Staples, Forest Edward, Howard Lake.
Strang, Cassius Clinton, Duluth.
Sweeney, Eugene Sylvester, Garfield.
Taylor, William Knox, Minneapolis.
Vandersaal, William, Pomeroy, Pa.
Wallace, Robert, Fergus Falls.
White, Frank Denton, Minneapolis.
Youngberg, Everett LeRoy, Cannon Falls.

3rd Year—35.

Ammundson, Frederick Arthur, St. Peter.
Anderson, Carl Ernfrid, Kenedy.
Baker, Harry Jacob, Rose Creek.
Bjorge, Oscar, Lake Park.
Blondell, Louis Dale, Spencer, Ia.
Boerner, Ernest Wm. F., Buffalo.
Corser, Wayne Bliss, St. Paul.
Fortier, Stephen, Little Falls.
Frederickson, Marcus, Lakefield.
Heddy, Ula Emil, Minneapolis.
Huntington, Walter Sandberg, Marion, Ia.
Jung, William Richard, Fergus Falls.
Jungclaus, Edward Henry, Glencoe.
Kaasen, Kaare, Kristiania, Norway.
Korfhage, Louis William, St. Paul.
Layne, James Thomas, Rushford.
Lestico, Alexander Cameron, Glencoe.
Lier, Emil Hjalmar, Ashby.
Malmgren, Robert Victor, Minneapolis.
Melvin, Merton R., Dumont.
Morstain, William Basil, Minneapolis.
Nilson, Verner Hjalmar, Minneapolis.
Olson, Carlton Percy, Minneapolis.
Rollin, Claus Albin, Minneapolis.
Rowe, Arthur Taylor, Casselton, N. D.
Selvig, Carlus, Rushford.
Smith, Walter Herbert, Fairfax.
† Styer, Matthias L., Caledonia.
† Died, Jan. 2nd.
Tomasek, Joseph Leo., Jackson Junction, Ia.
Turner, George Chester, Canton.
Wahlstrom, Isidor John, Minneapolis.
Weaver, Mortimer R., Spencer, Ia.
Wells, Amos Schumpert, Newberry, S. C.
Winther, Conrad Peter, New Paynesville.
Woodbury, Leslie Maley, Zumbrota.

2nd Year—33.

Aarness, Walter Stain, Montevideo.
Barnitz, Robert Andrew, Austin.
Bauer, Theo. Philip, Minneapolis.
Birnberg, Ansel, St. Paul.
Borgwardt, George, Peterson, Ia.
Britzius, Harry Adams, *M. A., M. S.*, Minneapolis.
Butler, Archibald B., Moline, Ill.
Carlaw, Allen Chester, Northfield.
Carpenter, Dwight Jefferson, Minneapolis.
Conway, Steven Vincent, Minneapolis.
Damon, Geo. Myron, Worthington.
Doely, Owen Eugene, Spring Grove.
Fitzgerald, Francis Gerald, Lake City.
Griffith, Chas Arthur, Hector.
Harmon, Harry Weston, Faribault.
Heleire, Orlen, St. Paul.
Higgins, Clifford Crumbaugh, Kirkwood.
Hollern, Edward John, Sauk Rapids.
Jones, Rolland Ralph, Minneapolis.
May, Clyde Luther, Young America.
Niemi, William, Superior, Wis.
Norwood, William, Balaton.
Page, Wright Benton, Minneapolis.
Pinney, Egbert Ralph, Mankato.
Purdon, Cleveland A., Wahpeton, N. D.
Ramstead, Henry Geo., Eau Claire, Wis.
Rauch, Charles, Minneapolis.
Rosendahl, Peter Oscar, Spring Grove.
Seebach, Oscar Christian, Red Wing.
Smith, Nat Cyrus, Fair Haven.
Thomas, Thos. Heathcote, Spencer, Ia.
Weaver, Homer Abraham, Lancaster, Pa.
Zierold, Arthur Adelbert, Granite Falls.

1st Year—66.

Andrews, Samuel, Minneapolis.
Bandelin, William John, Arlington.
Basford, Clarence Meredith, Austin.
Bergh, Charles John, St. Paul.
*Bigue, Arthur Edmund, St. Paul.
Broderson, Clarence, Fountain City, Wis.
Bunce, Elmer Wayland, Minneapolis.
Capron, Harry, Minneapolis.
*Chapman, Edgar, Minneapolis.
Coleman, Lauren M., Ellendale, N. D.
Collins, Myron Eugene, Spring Valley.
Conway, Jesse Francis, Lake City.
Countryman, Ralph William, Minneapolis.
*Danielson, Henry, Minneapolis.
Donald, Raymond Bristol, Minneapolis.
Doris, John Raphael, St. Paul.
Ebersperger, Joseph Francis, Minneapolis.
Emery, Valmer Charles, Two Harbors.
Franta, Valentine Adolph, Montgomery.
Grafslund, Edwin, Lake Park.
Hagberg, Gust Adolph, Brainerd.
Harrison, Francis Randall, St. Cloud.
Hartman, Harry Leonard, Afton.
Herring, Guy, St. Paul.
James, Meredith Jay, Lake Crystal.
James, William Henry, Lake Crystal.
Johnson, Geo. Lionel, Minneapolis.
Johnson, Joseph, Edina Mills.
Johnson, Reuel Warren, Cannon Falls.
Kaiser, Frederick John, Wells.
Kjelland, Joseph Almon, Rushford.
*Knapp, Howard Eugene, Oconto, Wis.
Knoche, Karl George, St. Paul.
Lange, Henry Frederick, Little Falls.
Lawton, Harry Comegys, St. Paul.
Leary, Daniel James, Portage, Wis.
Lier, Edorf Menton, Ashby.
McMullen, John Stephen, Hutchinson.
Madden, Fred M., Watertown.
*Metcalf, Ray James, Fergus Falls.
Miesen, Peter James, St. Peter.
Mittwer, Arthur Edward, Minneapolis.
Moore, Thomas John, Chatfield.
Munns, Herbert Allen, Minneapolis.
Olson, Charles John, Hastings.
O'Neil, James, Lake City.
Radermacher, Harley Adolph, Barron, Wis.
Rayman, Frederick Luverne, Austin.
Remele, Herman Charles, Minneapolis.
Ringnell, Ernest Berrhart, Minneapolis.
Sandstrom, Carl L., Cloquet.
Schapler, John Earl, Pipestone.
Schmitz, Leroy Christian, Jamestown, N. D.
Simon, Edwin James, Faribault.
Snyder, Lynn, Lake City.
Spurbeck, Lee, Two Harbors.
Tapper, Paul, Cannon Falls.
Trench, William, Dennison.
Van Dyke, Arthur Alexander, Alexandria.
Varco, Lynn Gemmel, Austin.
Vaughn, William Henry, Minneapolis.
Weible, Earl Bell, Weible, N. D.
Whitson, Abram Page., Packwauckee, Wis.
*Wickstrom, Charles, Lisbon, N. D.
Will, Mellville Bruce, Mapleton.
Williams, Louis, Ashland, Wis.

*In attendance part of first se-mester.

Specials—16.

Barnett, Harvey Dwight, St. Paul.
Blix, Adolph Leonard, Bagley.
Bugbee, Clyde Sereno, Minneapolis.
Burgan, Frederick Preston, Minneapolis.
Dittmarsen, John Elias, Irving.
Fagerstrom, Albert Harry, Minneapolis.
Froelich, Geo. Henry, Winnebago City.
Kendall, Ernest Clayton, Merillan, Wis.
Nelson, Geo. Andrew, Kasson.
Olson, Theodore John, St. James.
Schmidt, Adolph Robert, Springfield.
Sheehan, Thos. Vincent, Luverne.
Sivright, Guy Herbert, Hutchinson.
Spurr, Stephen Howard, *M. D.*, Morris.
Thomas, Howard Weed, Ellendale, N. D.
Waiste, Chas. Edgar, Minneapolis.

COLLEGE OF DENTISTRY.

Recommendation for Admission from Accredited Schools.

Dated.....

Name.....
Write ALL names in full

Date of Birth.....**Birthplace**.....

Present Address.....

I hereby certify that the above named person has satisfactorily completed work in High School branches, as indicated in the.....course of the.....High School (or Ac Town (or City) of....., State of....., du years....., and was graduated.....

And further, believing him to be a person of good moral character and studious habits, I recommend that he b the Freshman Class of the COLLEGE OF DENTISTRY, University of Minnesota.

☞ (The school officer certifying to the credits below, will please draw a line through the branches not taken and enumerate all others. credits in the school named.)

STUDIES	No. Weeks Study	No. Hours per Week	Grade	TEXT BOOKS	REMARKS
ENGLISH—1st year (1)					
2nd year (1)					
3rd year (1)					
4th year (1)					
ELEMENTARY ALGEBRA (1)					
PLANE GEOMETRY (1)					
HIGHER ALGEBRA (½)					
SOLID GEOMETRY (½)					
LATIN, Grammar (1)					
Cæsar.....Books (1)					
Cicero.....Books (1)					
Vergil.....Books (1)					
GREEK, GRAMMAR (1)					
Anabasis.....Books (1)					
Iliad.....Books (1)					
GERMAN GRAMMAR,-1st yr (1)					
LITERATURE,-2nd yr (1)					
FRENCH GRAMMAR,—1st yr (1)					
Literature,—2nd yr (1)					
HIST'Y-Ancient to 800 A. D. (1)					
Modern from 800 A. D. (1)					
HISTORY OF ENGLAND (½)					
SENIOR AMERICAN HIST'Y (½)					
CIVICS (½)					
POLITICAL ECONOMY (½)					
COMMERCIAL GEOG. (½ or 1)					
PHYSICS (1)					
CHEMISTRY (½ or 1)					
PHYSIOGRAPHY [½]					
BOTANY (½ or 1)					
ZOOLOGY (½ or 1)					
ASTRONOMY (½)					
GEOLOGY (½)					
DRAWING (*1, 2, 3, or 4)					
SHOP WORK (1, 2, 3, or 4)					
Other subjects included in Commercial, Manual Training or other courses.					

The passing grade in this school is.....

.....*Princi*

.....*Present Residen*

(1) Twelve one-year credits are required for admission. A "credit" represents the amount of work done in a high school co ~~of thirty-six weeks, five recitations per week. Certificates to be accepted must indicate these facts.~~ It is not essenti give the grade, but the subjects must be marked "Pass" to show they have been successfully completed.

(2) Students wishing to matriculate in this school, must present credentials signed by City, County or State Superintenden Schools, a principal of an accredited High School or Academy, or the State High School Board.

(3) A separate blank must be filled out for each school attended. Additional ones furnished on request.

(4) All writing upon this certificate must be done with ink.

SEND THIS RECOMMENDATION AND APPLICATION DIRECTLY TO THE DEAN OF THE COLLEGE.

THE APPLICANT WILL ALSO FILL OUT WITH CARE THE FOLLOWING.

Name of parent or guardian.....

Post-office address of parent or guardian.....

How long since you attended school?.....

What occupation have you been engaged in since then?.....

Have you had experience in mechanical pursuits, if so what?.....

Have you a natural or acquired taste for mechanics?.....

Is your eyesight good?..... Is your general health good?.....

Give for reference, name, post-office address of your family physician, pastor, or some well known citizen of your town or ci

BULLETIN

OF THE

MINNESOTA SCHOOL OF MINES

MINNEAPOLIS

VOL. 9 AUGUST, 1906 No. 12

TABLE OF CONTENTS

The University bulletins are issued every six weeks during the University year, at least six numbers every calendar year. Entered at the Post-office in Minneapolis as second-class matter.

MINNEAPOLIS, MINNESOTA.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

University Calendar, 1906-1907

THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FIRST SEMESTER

SEPTEMBER	10 M	Entrance examinations and registration	
	11 T	Entrance examinations and registration	
	12 W	Entrance examinations and registration	
	13 Th	Entrance examinations and registration	
	14 F	Entrance examinations and registration	
	15 S	Examinations end and registration completed	1 w
	17 M	Classes called for regular work (First College classes organized, 1869)	
	22 S		2 w
	29 S		3 w
OCTOBER	6 S		4 w
	13 S		5 w
	20 S		6 w
	27 S		7 w
NOVEMBER	3 S		8 w
	10 S		9 w
	17 S		10 w
	24 S		11 w
	29 T	Thanksgiving Day Recess three days	
DECEMBER	1 S		12 w
	8 S		13 w
	15 S		14 w
	22 S	Holiday recess begins (no classes)	15 w
	25 T	Christmas Day	
JANUARY	1 T	New Year's Day	
	8 T	Work resumed in all departments	
	12 S		16 w
	19 S		17 w
	28 M	Semester Examinations VII and VIII hour classes	18 w
	26 S	Semester Examinations I hour classes	
	29 T	Semester Examinations II hour classes	
	30 W	Semester Examinations III hour classes	
	31 Th	Semester Examinations IV hour classes	
FEBRUARY	1 F	Semester Examinations V hour classes	
	2 S	Semester Examinations VI hour classes	

SECOND SEMESTER

FEBRUARY	4	M	Second semester begins—Classes called for regular work
	9	S	..... 1 w
	12	T	Lincoln's birthday—Holiday
	16	S	..... 2 w
	18	M	University Charter, 1868. General Sibley died 1891.
	22	F	Washington's birthday—Holiday
	23	S	..... 3 w
MARCH	2	S	..... 4 w
	9	S	..... 5 w
	16	S	..... 6 w
	23	S	..... 7 w
	30	S	..... 8 w
APRIL	6	S	..... 9 w
	13	S	.....10 w
	20	S	.....12 w
	27	S	.....13 w
MAY	4	S	.....11 w
	11	S	.....14 w
	18	S	.....15 w
	25	S	.....16 w
	27	M	Senior examinations begin
JUNE	1	S	.....17 w
	3	M	Semester examinations. I hour classes
	4	T	Semester examinations. II hour classes
	5	W	Semester examinations. III hour classes
	6	Th	Semester examinations. IV hour classes
	7	F	Semester examinations. V hour classes
	8	S	Semester examinations. VI hour classes .....18 w

COMMENCEMENT WEEK 1907

SUNDAY	June 9	Baccalaureate Service
MONDAY	June 10	Senior Class Exercises
TUESDAY	June 11	Sigma Xi Address. Senior Promenade
WEDNESDAY	June 12	Alumni Day
THURSDAY	June 13	Commencement Day—The Thirty-fifth Annual Commencement
FRIDAY	June 14	Summer Vacation Begins

PROGRAM OF EXAMINATIONS, SEPTEMBER, 1906

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS
THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS
THE SCHOOL OF MINES
THE COLLEGE OF LAW
THE SCHOOL OF CHEMISTRY.

The numbers placed after the subjects, when given, indicate the rooms in which the examinations will be held.

—DAY—	—HOUR—	—SUBJECTS FOR ADMISSION TO THE— FRESHMAN CLASS
Monday, September 10,	8:00—10:30	[1] Elementary Algebra.
	10:45— 1:15	[1] Higher Algebra
	2:30— 5:00	[1] Plane Geometry
Tuesday, September 11,	8:00—10:30	[1] Solid Geometry
	10:45— 1:15	[2] All History Subjects.....17
	2:30— 5:00	[2] Civics 16
Wednesday, September 12,	2:00— 5:00	[3] Geology 18
		[3] Physiography 18
		[2] Commercial Geography 16
Thursday, September 13,	8:00—10:30	[6] Drawing 24
		[6] Shop Work .....
		[2] Political Economy.....16
	10:45— 1:15	[1] German
	2:30— 5:00	[1] French
		[1] Latin Grammar
Friday, September 14,	8:00—10:30	[1] Greek
		[1] Cæsar
	10:45— 1:15	[1] Cicero
		[1] Virgil
	2:30— 5:00	[4] Chemistry
		[5] Physics
		[3] Botany ..... B
		[3] Zoology 29
		[1] Astronomy 35

[1] Place to be announced; [2] Library Building; [3] Pillsbury Hall; [4] Chemical Laboratory; [5] Physics Building; [6] The Shops.

The University

The University of Minnesota comprises the following named colleges, schools, and departments :

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS The President of the University	*Ex-Officio*
The HON. JAMES T. WYMAN, MINNEAPOLIS The President of the Board	1907
The HON. JOHN A. JOHNSON, ST. PETER The Governor of the State	*Ex-Officio*
The HON. JOHN W. OLSEN, ALBERT LEA The State Superintendent of Public Instruction	*Ex-Officio*
The HON. STEPHEN MAHONEY, MINNEAPOLIS	1907
The HON O. C. STRICKLER, NEW ULM	1907
The HON. S. G. COMSTOCK, MOORHEAD	1909
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910

C. D. DECKER, AUSTIN
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee
The University press committee
The committee on athletics
The committee on University relations to other institutions of higher learning
The committee on health and sanitation
The committee on commencement and other University functions
The committee on catalogue, programs and courses of study
The committee on student entertainments and social affairs

and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

University Council Committees

The University Auditing Committee
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

Representatives to the Council

The College of Science, Literature and Arts

DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering

DEAN F. S. JONES
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines

DEAN WM. R. APPLEBY

The School of Chemistry

DEAN GEO. B. FRANKFORTER

The College of Education

DEAN GEO. F. JAMES

The Graduate School

DEAN H. T. EDDY

The College of the School of Agriculture

DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law

DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery

DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

General Alumni Association

MAYOR DAVID P. JONES

The School of Mines

OFFICERS

CYRUS NORTHROP, LL. D., *President*

OFFICERS OF THE DEPARTMENTS OF MINING AND METALLURGY

WILLIAM R. APPLEBY, M. A., *Dean and Professor of Metallurgy*
CHARLES E. VAN BARNEVELD, B. A., Sc., E. M., *Professor of Mining Engineering*
PETER CHRISTIANSON, B. S., E. M., *Assistant Professor of Assaying*
BENJAMIN F. GROAT, B. S., *Professor of Mechanics and Mathematics*
EDWARD P. MCCARTY, E. M., *Assistant Professor of Mining*
LEVI B. PEASE, M. S., *Instructor in Assaying*

OFFICERS OF THE DEPARTMENT OF GEOLOGY AND MINERALOGY

CHRISTOPHER W. HALL, M. A., *Professor of Mineralogy and Geology*
ARTHUR L. PARSONS, B. A., *Instructor in Mineralogy*

OFFICERS OF THE DEPARTMENT OF CHEMISTRY

GEORGE B. FRANKFORTER, Ph. D., *Professor of Chemistry*
CHARLES F. SIDENER, B. S., *Professor of Chemistry*
EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry*

OFFICERS OF THE DEPARTMENT OF ELECTRICAL ENGINEERING

GEORGE D. SHEPARDSON, M. A., M. E., *Professor of Electrical Engineering*
FRANK W. SPRINGER, E. E., *Assistant Professor of Electrical Engineering*

OFFICERS OF THE DEPARTMENT OF MECHANICAL ENGINEERING

JOHN J. FLATHER, Ph. B., M. E., *Professor of Mechanical Engineering*
WILLIAM H. KAVANAUGH, M. E., *Assistant Professor of Mechanical Engineering*

OFFICERS OF OTHER DEPARTMENTS GIVING INSTRUCTION

FREDERICK S. JONES, M. A., *Professor of Physics*
WILLIAM H. KIRCHNER, B. S., *Assistant Professor of Drawing*
JOHN ZELENY, B. S., B. A. Res.-Ph. D., *Associate Professor of Physics*

ADMISSION

Examinations for admission will be held at the beginning of the year. See calendar and program of examinations.

No student will be registered for first semester's work after September 29th, 1906, and second semester's work after February 16th, 1907.

All applicants should present themselves to the registrar who will furnish them with application blanks and directions covering examinations and registration.

Women will not be admitted to any course offered in the School of Mines.

GENERAL REGULATIONS GOVERNING ADMISSION

I. Students will be admitted to the freshman class on *passing the regular entrance examinations.*

II. No student will be admitted *if conditioned in more than three half-year subjects,* or their equivalent.

III. Graduates of any Minnesota State high school will be admitted *without examination, provided—*

(1) That the school maintain a *full four-year course* of high school work.

(2) That the applicant present to the registrar the principal's certificate showing the satisfactory completion *of all the studies required for admission* to the desired University course.

IV Graduates of Minnesota State high schools who are deficient in *not more than three half-year subjects* or their equivalent, *may be excused* from entrance examinations *in such subjects as the enrollment committee may decide;* such candidates should present themselves to that committee *not later than Tuesday of examination week.*

V. Graduates of Minnesota State high schools whose principal's certificate shows them to be deficient in *more than three half-year subjects* or their equivalent, even though they have made such additional preparation as they deem necessary, must take, nevertheless, the regular entrance examination in all subjects, as provided in sections I and II, unless excused by vote of the faculty; and persons wishing to present reasons for such excuse *should report to the enrollment committee not later than Tuesday of examination week.*

VI. Graduates of the *advanced courses of Minnesota normal schools* will be admitted upon the same terms as graduates of State high schools.

VII. Any Minnesota high school or academy *not under supervision of the State High School Board,* but requiring for graduation *a four-years' course,* exclusive of the common school branches, conforming *essentially in distribution of time* to the entrance requirements of at least one of the University courses, will, upon application, be inspected by a committee, and, after favorable recommendation, *may be accredited by the faculty* in all respects as are the State high schools, *provided*—

(1) That the school be *open to inspection* at any time by the University;

(2) That it take such *supplementary examinations as may be prescribed* from time to time.

VIII. *Graduates from schools in other states,* whose diplomas admit to *reputable colleges* in the state in which the *school is located,* will be received subject to the regulations that apply to graduates of Minnesota State high schools.

IX. Applicants from schools not coming within any of the above classes *must take the regular entrance examinations* or present State High School Board certificates.

In all cases the faculty reserves the right to require a student to take supplementary examinations if he does not sustain himself creditably in his course.

The enrollment committee will meet every day during the week commencing September 11th, in School of Mines Building, room 25, at 9 o'clock a. m.

REQUIREMENTS FOR ADMISSION TO THE FRESMMAN CLASS

N B.—Time element, as indicated with each subject, is essential:—

English, four years, including

(a) Classics. (b) Principles of composition

(c) Practice in written expression

Algebra, elementary, one year

Algebra, higher, one-half year

Geometry, plane, one year

Geometry, solid, one-half year

In addition to the above named required subjects, for which no substitutes will be accepted, the student shall present evidence of having completed work in any of the following subjects, entitling him to eight year-credits:

Astronomy

Bookkeeping

Botany

Chemistry

Civics

Drawing

French
- Grammar
- Literature

Geology

German
- Grammar
- Literature

Greek
- Grammar
- Anabasis

History
- Ancient, to Charlemagne, one year.
- Modern, from Charlemagne, one year.
- England, one-half year.
- Senior American, one-half year.

Latin
- Grammar
- Cæsar
- Cicero
- Virgil

Physics

Physiography

Political Economy

Shopwork

Zoology

SYLLABUS

The following statements indicate, in a general way, the ground expected to be covered in the study of the various subjects accepted for admission.

English (four years).

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four years' course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

(a) English Classics
(b) The Principles of Rhetoric
(c) Practice in Written Expression

(a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespere's "Macbeth," Milton's "Paradise Lost," books one and two; Burke's "Conciliation with America"; Carlyle's essay on "Burns." In the study of these works the student should come to know the leading facts connected with the author and his time; he should become familiar with the subject-matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.

A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected: at least two of Shakespere's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.

(b) The work in the Principles of Composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.

(c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression. The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

Elementary Algebra (one year)

Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations (with one, two, and several unknown quantities) followed by problems, theory of exponents, involution (including the binominal theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

Higher Algebra, First Part (one-half year)

While this subject does not include any topics not named under Elementary Algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of Higher Algebra

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

Plane Geometry (one year)

Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

Solid Geometry (one-half year)

Any of the standard texts on this subject will furnish the necessary preparation. The excesses requiring solutions and demonstrations should not be omitted.

Advanced Standing—The University accepts records from all reputable colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in the University.

Records from institutions whose entrance requirements are not essentially equivalent to the requirements of the University will not be accepted unquestioned. The credit allowed will be decided in individual cases by the enrollment committee.

DAILY ROUTINE

The morning session begins at 8:30 o'clock; a general assembly of the faculty and students is held each day at 10:25 o'clock, at which there are brief and simple religious exercises.

EXAMINATIONS

Students failing to receive a yearly average of 75 per cent on any subject shall have the privilege of a supplementary examination before the opening of the following year provided their general average for the year is 60 per cent.

The faculty will exclude students from attending classes in any subject upon recommendation of the department concerned.

Students failing to pass supplementary examinations must register the next year for those subjects in which they have failed. They may take in addition other subjects appearing in courses of instruction, pages 35 to 39, with the exception of Mining and Metallurgical courses, based upon requirements of the various courses and daily program. They may also take certain electives in other colleges, provided suitable arrangements can be made.

Each student must obtain from the Registrar his yearly average in all subjects and present himself for supplementary examinations according to the following program:

Tuesday, September 11
- 8:00-12:00 Mathematics and Mechanics
- 1:00- 5:00 Mining Engineering subjects

Wednesday, September 12
- 8:00-10:30 Chemistry
- 10:45- 1:15 Drawing and Descriptive Geometry

Thursday, September 13
- 8:00-12:00 Metallurgical subjects
- 10:45- 1:15 Mechanical Engineering subjects
- 2:30- 5:00 Physics

Friday, September 14
- 8:00-12:00 Electrical Engineering subjects
- 2:30- 5:00 Geology and Mineralogy

All students must report in time to make suitable arrangements with departments concerned in case of conflicts in program.

No other supplementary examinations will be given. Students failing to report for supplementary examinations will be compelled to take work over in class as in case of failures.

Students failing to present themselves for final examination at the end of the first or second semester will be given zero on the examinations.

Students whose absences in either semester exceed four weeks in the aggregate are not permitted to take examinations without special permission of the faculty.

UNCLASSED STUDENTS

No unclassed students will be admitted to the School of Mines.

GRADUATION

Students completing courses of study to the satisfaction of the faculty are entitled to receive the appropriate degrees. Any person may undergo, at suitable times, examinations in any subject. If such person pass in all the studies and exercises of a course, he is entitled to the appropriate degree, *provided,* that at least one full year be spent at the University before such degree shall be granted, and *provided,* the examination in every case be held before a committee of the faculty appointed for that purpose.

Special Statements

In the School of Mines there are two regular courses of study, viz.: Mining Engineering and Metallurgy, leading to the degree of Engineer of Mines (E. M.), and Metallurgical Engineer (Met. E.) respectively.

The degree of Met. E. may be conferred upon a candidate who received the degree of E. M. in four years, and vice versa, provided such a candidate completes an additional year's work at the school and presents a suitable thesis.

All theses must be completed not later than April 1st. The accepted thesis must be bound according to the adopted style and deposited with the department offering the degree desired.

Candidates for advanced standing must pass a satisfactory examination for admission and also upon those studies which have been pursued by the class they propose to enter.

Students from other institutions will be admitted to the standing to which their credentials or the examinations taken under the direction of the faculty of this school may entitle them.

Students in the college of science, literature and the arts, in the college of engineering and mechanic arts, and school of technical and applied chem-

istry, who contemplate taking a degree in this school after completing their course, are recommended to select their electives with reference to as full a preparation as possible for the technical work of the course they propose to enter.

FEES

A registration fee of fifteen dollars is required at the beginning of each semester from residents of the state, and thirty dollars from non-residents.

The various laboratory fees are as follows:

Chemical laboratory	Per semester	$5.00
Mineralogical Laboratory	"	3.00
Assaying laboratory	"	15.00
Mechanical laboratory	"	6.00
Electrical laboratory	"	5.00
Ore testing laboratory	"	10.00

The trip to the mines made by the junior class costs the student from one hundred to one hundred and seventy-five dollars.

Books costs about as follows:

Freshman year	$12.00 to	$15.00
Sophomore year	5.00 to	8.00
Junior year	18.00 to	25.00
Senior year	10.00 to	30.00

A number of books are recommended to the student, but the purchase of them is optional. The lower estimates given will cover the cost of books that must be purchased.

Each member of the freshman class must be provided with a set of draughting instruments. The necessary instruments will cost about fifteen dollars.

SUMMARY OF EXPENSES

FRESHMAN YEAR

Incidental fee	$30.00
Chemical laboratory fee	10.00
Mineralogical laboratory fee	6.00
Assaying laboratory fee	15.00
Books	13.00
Draughting instruments	15.00
Note book and supplies	6.00
	$95.00

SOPHOMORE YEAR

Incidental fee	$30.00
Chemical laboratory fee	14.00
Books	8.00
Note books and supplies	2.00
	$54.00

JUNIOR YEAR

Incidental fee	$30.00
Trip to the mines	$100.00 to 175.00
Books	20.00
Note books and supplies	2.00
	$152 to $227.00

SENIOR YEAR

Incidental fee	$30.00
Chemical laboratory fee	10.00
Electrical laboratory fee	5.00
Ore testing laboratory fee	10.00
Mechanical laboratory fee	6.00
Books	20.00
Note book and supplies	2.00
	$83.00

For non-residents the incidental fee is $60 per year.

Good board can be obtained at a cost varying from $2.50 to $4.00 per week. Room rent varies from $5.00 to $10.00 per month. With two occupying one room, the rent per student would be considerably lower.

ORGANIZATION

The organization of the School of Mines dates back to 1889, when the general faculty of the University recommended to the board of regents its establishment. In 1891 the Legislature of the State of Minnesota voted an appropriation for establishing and equipping the school. Two annual appropriations have since been made for its support. The legislature of 1901 appropriated $47,500 for a new School of Mines Building. In 1903 the legislature appropriated $25,000 for completing and equipping the School of Mines Building, and in 1905 an additional sum was provided for equipment.

SCHOOL OF MINES BUILDING

The School of Mines building is now completed and equipped. The building is designed to accommodate only the technical work of the School of Mines, as adequate building accommodations have already been furnished for chemistry, geology, mineralogy, drawing and mechanical and electrical engineering. The new building is 150 feet long by 65 feet wide. It is a brick building, three stories high. The lower floor is occupied by the assaying and metallurgical laboratories; the second floor contains offices, two large lecture rooms, departmental library, and a museum; the third floor provides two quiz rooms, a large, well lighted draughting room, thesis room and a dark room and a blue print room. This building makes possible the development of the work already begun and offers facilities for more extended work along technical lines.

LOCATION

The University of Minnesota is located in the city of Minneapolis, on the east bank of the Mississippi river. The School of Mines has its buildings and laboratories on the same ground. Students of the School of Mines have, therefore, all the opportunities afforded by a large university.

Minneapolis is surrounded by and is in direct communication with several important mining and smelting districts. As the city is a railroad center, transportation at special rates is readily obtained.

FIELD WORK

Field work is conducted at the iron mines in the northern part of this state, in the copper and iron regions of Michigan, in the mines and smelters of Montana, Colorado, Utah and California, and in the coal mines of Pennsylvania.

At least one of these districts will be visited by each class, affording splendid opportunities for study and observation.

The field work in mining and metallurgy consists of one trip at the close of the Junior year. Not less than three weeks and not more than four weeks shall be devoted to actual work, exclusive of traveling.

Students must deposit with *Accountant,* at least *two weeks* before time set for the departure of class, a sum sufficient to cover following expense items:

1st. All transportation
2nd. Sleeping car fare
3rd. Board and lodging
4th. Necessary mine supplies

Incidental expenses are not included in the above items and must be met individually.

A statement of expenditures will be rendered at the close of the work and any balance existing will be refunded.

The amount of deposit required will vary, according to the locality visited, from $100.00 to $175.00, and will be announced each year when arrangements for trip are completed.

THE ELLIOT SCHOLARSHIP LOAN FUND

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the sum of $5,000 was placed in the hands of the Board of Regents as a scholarship fund. The income from this fund is loaned students in the School of Mines on the following conditions:

The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to be repaid, without interest, at the earliest convenience of the recipients.

LIBRARY

The library consists of about two thousand volumes. This number represents only those works that treat directly of mining and metallurgical subjects.

The school has a complete set of the leading mining and metallurgical journals, and other similar books of reference. The leading periodicals are accessible to all. Constant references in lectures compel the student to keep himself well informed as to the latest methods, machinery and changes in practice going on in his special line of work.

In addition to the above, many thousand volumes on chemistry, mineralogy and geology complete a most valuable working and reference library. A card index is kept of all articles of value and interest appearing in the leading periodicals.

PHOTOGRAPHY

Photographs of surface and underground appliances, metallurgical plants, copies of drawings and other photographs are indispensable to the study of mining and metallurgy. With the report of his field work every student is expected to present photographs, as well as sketches, of various objects under consideration. There is also a very complete set of lantern slides illustrating the principal methods of underground workings and metallurgical plants, at home and abroad. Several hundred slides have been made in the department's laboratory which bear directly on the work done in Minnesota and the neighboring northwest. Many valuable photographs are constantly being made. Blue prints of these are given students as illustrations. Much time is thus saved usually spent in making sketches and diagrams.

CLASSIFICATION OF SUBJECTS

The work falls under the following subdivisions, supplemented by thorough courses in mathematics, physics, chemistry, mineralogy and geology:

(*a*) *Assaying*—to determine if ore has value for treatment. (*b*) *Mining engineering*—to furnish material for treatment. (*c*) *Ore testing*—To determine best method of treatment. (*d*) *Ore dressing*—furnishing products for metallurgical treatment. (*e*) *Metallurgy*—smelting and refining of ores and ore dressing products; reduction to metals.

DEPARTMENT OF MINING ENGINEERING

Mining engineering extends through sophomore, junior and senior years. The subjects given together with the sequence necessary, are treated in the accompanying outline of the course.

Until the second term of the junior year, the course consists of lectures

and recitations only. In the subsequent work, text-books are used in connection with the lectures.

In the senior year, problems in hoisting, hauling, pumping, ventilation and similar subjects become an important part of the work.

Field work in Mining At the close of the junior year the students are required to spend four weeks in some mining district studying underground work and metallurgical operations. A part of the time is devoted to the making of mine and geological surveys.

A complete type-written report must be submitted before the student may register for the following year's work.

This report must cover the work done on the trip and must be fully illustrated with sketches drawn to scale. Reports will not be accepted after September 25th.

All field work must be taken at the time specified.

Designs and specifications The student makes in connection with his thesis work working drawings of mine cars, skips and other parts of mine equipment that are usually designed and made on the ground.

Mine surveying The work in surveying is designed solely for mining engineers. In the sophomore year, second semester, the work consists of the elements of plane surveying with special reference to the computations necessary.

Field work in surveying—Course VIII. The month of August, preceding the opening of the junior year, is spent in the practice of plane surveying. About an hour per day is given to lectures or recitations and the remainder of the day to field work.

The students are divided into squads of two or four, and each is required to complete the following exercises and surveys:

1. Chaining
2. Compass reading
3. Adjustment of hand levels and practice in leveling
4. Adjustment and use of wye levels
5. Adjustment of mining transit
6. Reading angles
7. Traverse with steel tape
8. Azimuth traverse with stadia
9. Survey of mining claim according to the regulations of the U. S. Government
10. Measurement of earthwork
11. Laying out railroad tangents, curves and crossings

Each squad must provide itself with a 6-foot steel tape, graduated to hundredths.

This course is open only to those who have taken Course VII, or its equivalent, and is part of the work of junior year.

During the second semester of the junior year the higher theoretical work in plane and mine surveying and mine mapping is studied. While visiting the mines in junior year a survey of a mine, or some part of a mine is actually made and the survey platted.

Surveying instruments of the latest and best makes are furnished students for this work.

Ore dressing The lectures and recitations in ore dressing extend through the first semester of junior year, and comprise the detailed study of ore dressing and concentrating machinery, together with the study of typical combinations of dressing machines as found in the several mining districts of the United States.

In connection with the theoretical work, the ore dressing and testing plant of the school is utilized for practical illustrations.

During the coming year, experimental work in ore concentration will be conducted.

COURSE IN MINING ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER

Chemistry (Chemistry I)—4₂ hours, Professor Nicholson
Drawing (Drawing I)—4₂ hours, Professor Kirchner
Mathematics (Mathematics I)—5 hours, Professor Groat
Mineralogy (Geology and Mineralogy, Mineralogy I)—4₂ hours, Professor Hall and Mr. Parsons

SECOND SEMESTER

Assaying (Metallurgy I)—4 hours, Professor Appleby
Assaying Laboratory (Metallurgy I)—4₂ hours, Professor Appleby, Professor Christianson and Mr. Pease
Chemistry (Chemistry II)—4₂ hours, Professor Nicholson
Drawing (Drawing I)—2₂ and 2 hours, Professor Kirchner
Mathematics (Mathematics II)—5 hours, Professor Groat
Mineralogy (Geology and Mineralogy, Mineralogy I)—4₂ hours, Professor Hall and Mr. Parsons.

SOPHOMORE YEAR

FIRST SEMESTER

Chemistry (Chemistry III)—4₂ hours, Professor Sidener
Drawing (Drawing II)—4₂ hours, Professor Kirchner
Mathematics (Mathematics III)—5 hours, Professor Groat
Metallurgy (Metallurgy III)—3 hours, Professor Appleby
Physics (Physics I)—4 hours, Professor Jones

SECOND SEMESTER

Chemistry (Chemistry V)—42 hours, Professor Sidener
Drawing (Drawing III)—22 hours, Professor Kirchner
Mathematics (Mathematics IV)—5 hours, Professor Groat
Metallurgy (Metallurgy IV)—3 hours, Professor Appleby
Mining (Mining I)—4 hours, Professor McCarty
Plane Surveying (Mining VII)—3 hours, Professor McCarty.
Physics (Physics I)—4 hours, Professor Jones

SUMMER WORK—MONTH OF AUGUST

Mine Surveying (Mining VIII)—4 weeks, Professor van Barneveld and Professor McCarty.

JUNIOR YEAR

FIRST SEMESTER

Geology (Geology and Mineralogy, Geology I)—2 hours, Professor Hall
Mechanics (Mechanics I)—5 hours, Professor Groat
Mechanical Laboratory (Mechanical Engineering XXIII)—22 hours, Professor Kavanaugh
Metallurgy (Metallurgy V)—4 hours, Professor Appleby
Mine Mapping (Mining X)—22 hours, Professor McCarty
Mining (Mining II)—5 hours, Professor van Barneveld
Petrography (Geology and Mineralogy, Geology III)—22 hours, Mr. Parsons
Ore Dressing (Mining V)—4 hours, Professor McCarty

SECOND SEMESTER

Mechanics (Mechanics II)—5 hours, Professor Groat
Mechanical Laboratory (Mechanical Engineering XXIV)—22 hours, Professor Kavanaugh
Metallurgy (Metallurgy VI)—4 hours, Professor Appleby
Mine Surveying (Mining IX)—3 hours, Professor van Barneveld
Mining (Mining II)—5 hours, Professor van Barneveld
Petrography (Geology and Mineralogy, Geology VI)—22 hours, Mr. Parsons
Steam Engines (Mechanical Engineering XVII)—2 hours, Professor Flather

FIELD WORK—MONTH OF MAY

Mining (Mining III)	4 weeks	Professor van Barneveld.
Metallurgy (Metallurgy VIII)		Professor Appleby.
		Professor Christianson.
		Professor McCarty, Mr. Pease.

SENIOR YEAR

FIRST SEMESTER

Chemistry (Chemistry XVI)—42 hours, Dr. Frankforter
Electric Power (Electrical Engineering V)—32 hours, Professor Springer
Geology (Ore Deposits—Geology and Mineralogy, Geology IX)—4 hours, Professor Hall
Mechanics (Mechanics III)—4 hours, Professor Groat
Mining and Mining Engineering (Mining IV)—5 hours, Professor van Barneveld
Ore Testing (Metallurgy II)—2 hours, Professor Appleby
Ore Testing Laboratory (Metallurgy II)—42 hours, Professor Appleby, Professor Christianson and Mr. Pease
Thesis—4 hours

SECOND SEMESTER

Chemistry (Chemistry XX)—42 hours, Dr. Frankforter
Designs and Specifications (Mining VI)—42 hours, Professor van Barneveld
Geology (Special Problems—Geology and Mineralogy, Geology X)—22 hours, Professor Hall
Mechanical Laboratory (Mechanical Engineering XXVIII)—22 hours, Professor Kavanaugh
Mining and Mining Engineering (Mining IV)—5 hours, Professor van Barneveld
Thesis—4 hours

DEPARTMENT OF METALLURGY

This subject is well illustrated with representative ores of all the most important metals, drawings of furnaces, models and samples of all the different furnace products. The lectures treat of all the principal methods now in use.

The practical work consists in visits to smelting and refining works which are accessible. The work in metallurgy extends through three years.

ASSAYING

The lectures treat of and describe apparatus, reagents, assay furnaces,

fuels, etc., in connection with this subject. The principles of assaying and sampling are fully explained. A collection of representative ores of various metals with a collection of corresponding slags are shown, and instruction is given as to nature and quantity of fluxes. Special and rapid methods of testing slags and metallurgical products as employed in western smelting works are emphasized.

The laboratory course includes preparing and testing reagents, making cupels, etc., and assaying samples of ore, furnace and mill products; different charges are tried and practical conclusions drawn. Assays of bullion for fineness.

Great importance is attached to the work in the laboratory. A large well ventilated furnace room in which are located muffle and crucible furnaces, and another room of similar dimension equipped with desks, pulp and bead balances, afford accommodations to a large number of students. Ores of various metals of known value are given the students, who are required to make up the necessary charges and submit their reports in detail. This work is offered to students completing the necessary courses in mineralogy and chemistry.

The Assay Laboratories are located in the new School of Mines Building and consist of:

1st. Preparation room. This room is 62 feet long by 36 feet wide and accommodates 66 students. Here samples and reagents are weighed preparatory to assaying. Each student is furnished with a complete set of apparatus, including a pulp balance for individual use. All operations are therefore conducted with the greatest economy of time and entirely apart from the furnace room. The separation of the preparation room from the furnace room is of greatest importance. Nearly all ores are crushed and pulverized by suitable machines run by electric motors. Students are compelled to pulverize by hand a minimum number of samples, thereby saving much time for extended and advanced work in special lines.

2nd. Furnace room. This room is 60 feet long by 42 feet wide. The high ceiling and special ventilation provided for this room make it a most comfortable assay furnace room. It provides for the accommodation of twelve (12) double-decked muffle furnaces, twenty-four (24) crucible furnaces and twelve gasoline furnaces. After the sample has been placed in a suitable vessel for fusion, it is taken to the furnace room, which communicates directly with the preparation room.

3rd. Balance room. This room is 31 feet long by 16 feet wide. In this room are various types of balances for accurately weighing gold and silver beads and bullion. The room is specially lighted by electric cove lights from the ceiling. The balances are placed on heavy brick piers which are independent of the walls of the building.

ORE TESTING

The lectures treat of the use and purposes of all the machinery connected with the subject, supplemented with detail drawings.

There are complete testing works connected with the department where the student may see the working of, and handle for himself, crushers, rolls, Huntington mill, concentrating machinery, such as vanners, buddles, jigs, pan for amalgamation, settlers, reverberatory furnaces for oxidizing and oxidizing-chloridizing roasts, leaching and chlorination plants, as well as sizing apparatus and hydraulic separators. Sufficiently large amounts of ore are given to make the necessary tests upon the different machines, and the students report the best method of treatment. The first semester of senior year is devoted to instruction and laboratory work, and is required of students both in mining and metallurgy.

The ore testing works meet educational as well as commercial needs.

Educational. The ore testing plant acquaints the student with the construction and manipulation of the principle typical machines used in the leading ore dressing establishments of the country. It is here that students in mining and metallurgical engineering get the requisite practical experience. They handle all machines and operate on sufficiently large amounts of material to determine the methods best suited to a given ore to extract the largest amount of metal with the least possible loss.

Commercial. Ore testing works are an important factor in mining and metallurgical projects. The commercial object is to determine the best method of treating a given ore so as to yield the largest percentage of the metal it contains at the least possible cost. Samples varying from 500 pounds to car load lots can be treated by various methods.

The ore testing works are located on the east bank of the Mississippi, between the Great Northern and Northern Pacific railroads. Located at this point on the University campus, it offers the very best facilities for both educational and commercial purposes.

As the funds appropriated for the erection of such a plant were sufficient to purchase only the necessary machinery, the business men of Minneapolis generously provided a suitable building. This building, 94x66 feet, is built of brick and stone.

Machinery. The plant contains all the machinery necessary to illustrate the various processes of ore testing, viz.: A Bridgman mechanical sampler, size B; a link belt bucket elevator; a pulley feeder complete; a pair of 12½ x12 geared rolls complete; a four compartment spitzkasten; a three compartment Hartz jig; a Collum jig complete with cone for driving; a three and a half foot Huntington mill complete; a three stamp mill, 275-pound stamps; a five stamp mill, 850-pound stamps; a Challenge automatic feeder for five-stamp battery; a suspended Challenge feeder for three-stamp battery; a Tulloch feeder for Huntington mill; a single deck buddle, twelve

feet in diameter; a four-foot plain belt Frue vanner; a Cammett concentrator; a Hooper pneumatic concentrator; a Century drop motion jig; a three-foot amalagamating pan; a five foot settler; a Bruckner roasting furnace, with fire-box on wheels; a chlorination barrel; a battery tightener; a two-horse power vertical boiler; a steam drying pan; three trommels, with driving arrangement and gears; a one thousand-pound Reedy elevator, complete with worm gear; two overhead crawls, each with eighty-foot track; one-ton pulley block; a quarter-ton pulley block; a scoop car, with flat wheels; two twenty-horse power electric motors; three MacDermott automatic samplers, etc.

COURSE IN METALLURGY

FRESHMAN YEAR

FIRST SEMESTER

Chemistry (Chemistry I) 4₂ hours, Professor Nicholson
Drawing (Drawing I) 4₂ hours, Professor Kirchner
Mathematics (Mathematics I)—5 hours, Professor Groat
Mineralogy (Geology and Mineralogy, Mineralogy I)—4₂ hours, Professor Hall and Mr. Parsons

SECOND SEMESTER

Assaying (Metallurgy I)—4 hours, Professor Appleby
Assaying laboratory (Metallurgy I)—4₂ hours, Professor Appleby, Professor Christianson and Mr. Pease.
Chemistry (Chemistry II)—4₂ hours, Professor Nicholson
Drawing (Drawing I)—2₂ and 2 hours, Professor Kirchner
Mathematics (Mathematics II)—5 hours, Professor Groat
Mineralogy (Geology and Mineralogy, Mineralogy II)—2 hours, Professor Hall and Mr. Parsons

SOPHOMORE YEAR

FIRST SEMESTER

Chemistry (Chemistry III)—4₂ hours, Professor Sidener
Drawing (Drawing II)—4₂ hours, Professor Kirchner
Mathematics (Mathematics III)—5 hours, Professor Groat
Metallurgy (Metallurgy III)—3 hours, Professor Appleby
Physics (Physics I)—4 hours, Professor Jones

SECOND SEMESTER

Chemistry (Chemistry V)—4₂ hours, Professor Sidener
Drawing (Drawing III)—2₂ hours, Professor Kirchner

Mathematics (Mathematics IV)—5 hours, Professor Groat
Metallurgy (Metallurgy IV)—3 hours, Professor Appleby
Mining (Mining I)—4 hours, Professor McCarty
Plane Surveying (Mining VII)—3 hours, Professor McCarty
Physics (Physics I)—4 hours, Professor Jones

SUMMER WORK—MONTH OF AUGUST

Mine Surveying (Mining VIII)—4 weeks, Professor van Barneveld and Professor McCarty

JUNIOR YEAR

FIRST SEMESTER

Geology (Geology and Mineralogy, Geology I)—2 hours, Professor Hall
Mechanics (Mechanics I)—5 hours, Professor Groat
Mechanical Laboratory (Mechanical Engineering XXIII)—22 hours, Professor Kavanaugh
Metallurgy (Metallurgy V)—4 hours, Professor Appleby
Mine Mapping (Mining X)—22 hours, Professor McCarty
Mining (Mining II)—5 hours, Professor van Barneveld
Petrography (Geology and Mineralogy, Geology III)—22 hours, Mr. Parsons
Ore Dressing (Mining VI)—4 hours, Professor McCarty

SECOND SEMESTER

Mechanics (Mechanics II)—5 hours, Professor Groat
Mechanical Laboratory (Mechanical Engineering XXIV)—22 hours, Professor Kavanaugh
Metallurgy (Metallurgy VI)—4 hours, Professor Appleby
Mine Surveying (Mining IX)—3 hours, Professor van Barneveld
Mining (Mining II)—5 hours, Professor van Barneveld
Petrography (Geology and Mineralogy, Geology VI)—2 hours, Mr. Parsons
Steam Engines (Mechanical Engineering XVII)—2 hours, Professor Flather

FIELD WORK—MONTH OF MAY

Metallurgy	4 weeks	Professor van Barneveld
(Metallurgy VIII)		Professor Appleby, Professor Christianson
Mining (Mining III)		Professor McCarty and Mr. Pease

SENIOR YEAR

FIRST SEMESTER

Chemistry (Chemistry XVI)—42 hours, Dr. Frankforter
Electric Power (Electrical Engineering V)—32 hours, Professor Springer
Geology (Ore Deposits—Geology and Mineralogy, Geology IX)—4 hours, Professor Hall
Mechanics (Mechanics III)—4 hours, Professor Groat
Mining and Mining Engineering (Mining IV)—5 hours, Professor van Barneveld
Ore Testing (Metallurgy II)—2 hours, Professor Appleby
Ore Testing Laboratory (Metallurgy II)—42 hours, Professor Appleby, Professor Christianson and Mr. Pease
Thesis—4 hours

SECOND SEMESTER

Chemistry (Chemistry XX)—42 hours, Professor Nicholson
Designs and Specifications (Mining VI)—42 hours, Professor van Barneveld
Electro-Chemistry (Chemistry XVII)—32 hours, Dr. Frankforter
Electro-Metallurgy (Metallurgy VII)—3 hours, Professor Christianson.
Mechanical Laboratory (Mechanical Engineering XXVIII)—22 hours, Professor Kavanaugh
Mining and Mining Engineering (Mining IV)—5 hours, Professor van Barneveld
Thesis—4 hours

Courses of Instruction

COURSES IN CHEMISTRY

Course I. General and qualitative analysis — Freshman, first semester

Lectures and laboratory work. The course includes special general chemistry and the reactions of the metals as applied to their separation and identification.

Course II. Qualitative analysis — Freshman, second semester

Lectures and laboratory work. The work in this course will include an examination of alloys, minerals, slags and other compounds. Open to those who have completed course I. Four times a week. 136 hours.

Course III. Quantitative analysis — Sophomore, first semester

Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis. Open to those who have completed course II. Four times a week. 136 hours.

Course V. Volumetric analysis — Sophomore, second semester

Lectures and laboratory work. The course includes an introduction to volumetric determinations with a discussion of standard solutions and the necessary stœchiometric calculations. Open to those who have completed course III. Four times a week. 136 hours.

Course XVI. Special problems — Senior, first semester

Laboratory work. The course includes the working out of various mineralogical, technological and metallurgical problems, with work on ores of base metals, limestone, slags, etc. Open to those who have completed course V. Four times a week. 136 hours.

Course XVII. Electro-chemical analysis — Senior, second semester

Lectures and laboratory work. The course includes the qualitative and quantitative separation of metals by electrolysis. Open to those who have completed course XVI. Three times a week. 102 hours.

Course XX. Iron and steel analysis — Senior, second semester

Lectures and laboratory work. The course includes the rapid determination of iron by the various methods, as well as the determination of associated elements, sulphur, phosphorus, silicon, manganese, carbon and others. Open to those who have completed course V. Four times a week. 136 hours.

COURSES IN DRAWING

Course I. (a) *Freehand* — Freshman, first semester

Lettering, geometric forms and engineering details in outline, including working sketches, translations and the elements of perspective. Twice a week, 68 hours.

(b) *Mechanical* — Freshman, first and second semester

Conventional methods, lettering, machine and structural details and standard sizes and shapes. Four times a week. 136 hours.

(c) *Descriptive geometry—Applications* Freshman, second semester
Problems relating to points, lines, planes, solids, interpenetrations, surfaces of revolution, tangents and developments, including the constructive geometry involved. Recitations and lectures. Twice a week. 34 hours.

Course II. Descriptive geometry Sophomore, first semester
Orthographic, isometric, horizontal, topographic, oblique and perspective projections, shades and shadows, line shading and brush tinting. Sketches pertaining to mining and metallurgical plants. Open to students who have completed course I. Twice a week. 34 hours.

Course III. Working drawings Sophomore, first and second semester
Engineering details, assembly drawings, mechanical movements, tracing and blue printing. Study of shop methods and drafting room systems. Details are obtained from actual machines and structures as far as possible. Mining machinery. Four times a week. 68 hours.

COURSE IN ELECTRICAL ENGINEERING

Course V. Electric power Senior, first semester
Elements of theory and practice of electrical measurements, wiring, dynamos, motors and electric lighting. 36 lectures and 48 hours laboratory. Preparation required: Physics, course I. Three and six hours per week.

COURSES IN GEOLOGY AND MINERALOGY

MINERALOGY

Course I. General mineralogy Freshman, first semester
The physical and chemical characters of minerals; a study of the native elements and the ores of the common metals; the occurrence and association of economic minerals.
Descriptive mineralogy and classification; rock-forming minerals; genetic relationships and distribution.
Laboratory work consists of tests illustrating the range of minerals and the application of chemical and blowpipe analyses to the determination of species; and introduction to the methods of quantitative blowpipe analysis; special topics; reference reading and discussions. Eight hours a week.

Course II. Physical mineralogy Freshman, second semester
An introduction to crystallography; physical characters of greatest service in rapid determination. Hand specimen practice preparatory to rock study. Lectures and field work. Two hours a week.

Course III. Optical mineralogy Junior, second semester
A study of the structure of crystals and crystal grains. An application of the methods of determination by optical properties; the use of the petrographer's microscope, embracing the elements of lithology. Lectures and laboratory work. Four hours a week.

GEOLOGY

Course I. Physical geology Junior, first semester
1. Geodynamics, discussing the atmosphere, water, terrestrial heat, plants and animals as geological agents. 2. Structural geology, explaining stratification, displacements, dislocations, fractures, induced rock-structures and mineral veins in their relation to the arrangement of materials in the earth. 3. Physiographic geology, pointing out the more prominent earth features and discussing their origin, significance and the agencies affecting them. Field excursions are required. Scott's Introduction. Two hours a week.

Course III. Petrographical geology Junior, first semester
General consideration of the origin and occurrence of rocks, i. e., Petrogenesis. The structure and texture of rocks. Preliminary studies of the mineral, physical and chemical constitution of the

crystalline rocks with a view to their general description. Kemp's Handbook of Rocks. Reference reading and demonstrations. Four hours a week.

Course VI. Petrography Junior, second semester
An investigation of the megascopic and microscopic characters of crystalline rocks; a discussion of their crystalline habit, mineral composition and genetic relations. The course extends into an examination of some Minnesota groups of crystalline rocks. Practically a continuance of course III of mineralogy. Laboratory, with lecture, and reference reading. Four hours a week.

Course IX. Ore deposits Senior, first semester
History of mineral discovery and development in the Americas; a discussion of the origin and distribution of ore deposits, embracing the chemical processes involved in their formation and subsequent alterations. A description of the geology and mineralogy of ore bodies, particularly those yielding gold, silver, copper, iron, lead and zinc. Kemp's Ore Deposits. Four times a week.

Course X. Special problems Senior, second semester
The investigation by individual students of particular problems, involving the field work of an investigation of some particular formation and the laboratory investigation and reading incident to the study of the material collected. The methods of systematically recording and interpreting geological and mineralogical data as observed in the field; keeping of notebook, preparation of geological maps, profiles and sections will be taught. Four times a week.

COURSES IN MATHEMATICS

Course I. Algebra and plane trigonometry Freshman, first semester
Rational integral functions, factors and roots of general quadratic, factor and remainder theorems, factors and values of $f(x)$, graphs, cube roots of unity and factors of $(a^3+b^3+c^3-3abc)$, progressions and notation, development of $f(x)$ and undetermined coefficients, convergence, divergence, equivalence, exponential theorems, logarithmic series and logarithms, summation of series, derived functions, theory of equations, trigonometric ratios, right triangles, general definitions of functions, analytic relations, trigometric equations, oblique triangles. Five hours per week.

Course II. Algebra, analytic geometry and spherical trigonometry Freshman, first semester
Spherical formulæ and solution of spherical triangles, permutations and combinations, determinants, systems of co-ordinates, loci, straight line, transformation, equations of the conics, limits, areas and limits of sums, differentiation and integration of elementary forms, probabilities. Four hours per week. Preparation, course I.

Course III. Analytic geometry and infinitesimal analysis Sophomore, first semester
Properties of the conics, equation of 2d degree, higher plane curves, co-ordinates in space, point, plane, straight line, quadric surfaces, review of nature of differentiation and integration, elementary forms, geometric applications, successive derivatives, expansion of functions, indeterminate forms, rates, partial derivatives, maxima and minima, change of variable, applications to analytic geometry. Five hours per week. Preparation, course II.

Course IV. Differential and integral calculus Sophomore, second semester
Applications continued, rational fractions, rationalization, formulæ of reduction, multiple integration, various systems of co-ordinates, approximate integration, some differential equations of mechanics, least squares. Five hours per week. Preparation, course III.

COURSES IN MECHANICS

Course I. Statics and mechanics of materials Junior, first semester
Mathematical conditions of equilibrium, frames, theory of elasticity, design for beams, shafts, boiler plates, etc. Five hours per week. Preparation, mathematics IV and physics.

Course II. Kinetics and hydraulics Junior, second semester

Motion of rigid bodies; numerous problems in work, power, energy, friction and hydraulics. Five hours per week. Preparation, course I.

Course III. Thermodynamics and prime movers Senior, first semester

Properties of steam, perfect gases, heat engines, water power, theory of turbines. Four hours. Preparation, course II.

COURSES IN MECHANICAL ENGINEERING

Course XVII. Steam engine Junior, second semester. 36 hours.

Mechanics of the steam engine. Work in cylinder; effect of reciprocating parts; steam distribution. Mechanism of steam engines. A study of the details of modern steam engines. Valve and valve gears. A study of the slide valve, link motions and other reversing gear; automatic cut-off gears and the Zeuner diagram. The steam engine indicator. Principles and operation of the instruments, indicator rigging; indicator cards; compounding. Preparation, course I in applied mechanics. Two hours a week.

Course XXIII. Strength of materials Junior, first semester. 72 hours

Laboratory work investigating the strength and physical qualities of iron, steel, brass, copper, belting, chains, beams, brick and stone. Preparation, course I applied mechanics. Four hours a week.

Course XXIV. Mechanical laboratory Junior, second semester. 72 hours

Continuation of course XXI; also exercises in valve setting, indicator practice, calibration of steam gauges, efficiency of screws and hoists. Preparation, course XVI. Four hours a week.

Course XXVIII. Mechanical laboratory Senior, second semester. 72 hours

Hydraulic measurements. Calibration of weirs, nozzles, meters and other hydraulic apparatus; calorimetry; tests of pumps, engines and boilers. Open to students who have completed course XXIV. Four hours a week.

COURSES IN METALLURGY

Course I. Assaying Freshman, second semester

Determination of values of the ores. Lectures, recitations and laboratory work. Open to those who take course I chemistry, and have completed course I mineralogy.

Course II. Ore testing Senior, first semester

Determination of methods of ore treatment. Lectures and practical work. Open to those who have completed course I and mining course V.

Course III. General metallurgy and metallurgy of iron. Sophomore, first semester

Including the subjects of combustion, fuels, refractory material and furnaces. Lectures and recitations on metallurgy of iron. Open to those who have completed course I.

Course IV. Metallurgy of wrought iron and steel Sophomore, second semester

Lectures and recitations. Open to those who have completed course III.

Course V. Metallurgy of the precious metals. Junior, first semester

Gold, silver and platinum. Lectures and recitations. Open to those who have completed course IV.

Course VI. Metallurgy of the base metals Junior, second semester

Associated with precious metals, including lead, copper, etc. Lectures and recitations. Open to those who have completed course V.

Course VII. Electro-metallurgy Senior, second semester

Lectures and recitations. Open to those who have completed course VI.

Course VIII. Field work in metallurgy Junior, first semester
Conference and reports. Last four weeks of semester. Open to those who have completed course VI.

Course IX. Designs and specifications Senior, second semester
Supplementing thesis.

COURSES IN MINING

Course I. Explosives, blasting, air compressors and quarrying. Sophomore, second semester
Four hours a week.

Course II. Mining Junior, first and second semesters
Mode of occurrence of ore bodies; prospecting, shaft-sinking, tunneling, drifting, stoping, timbering. Methods of metal mining. Methods of coal mining. Hydraulic mining. Open to those who have completed course I. Five hours a week.

Course III. Field work Junior, second semester
Practice in mine surveying and field geology, studying in mines. Open to those who have completed courses I, II. Last four weeks of the semester.

Course IV. Mining and mining engineering Senior, first and second semester
Mine management. The examination of a mining property. Sampling ore reserves, etc. Mine accounts. Mine accidents. Mining law. Mining machinery, underground transportation, hoisting, pumping and ventilation. Electricity applied to mining. Open to those who have completed course III. Five hours a week.

Course V. Ore dressing Junior, first semester
Mechanical preparation of ore for the market, for metallurgical treatment, etc. Four hours a week.

Course VI. Designs and specifications Senior, second semester
Designs of mine cars, skips, head-frames, etc., in connection with thesis work. Open to those who have completed senior I. Eight hours a week.

Course VII. Plane surveying Sophomore, second semester
Computation, platting, with special reference to mine surveying. Three times a week.

Course VIII. Field work Junior
Practice in plane surveying during the month of August, with special reference to mine surveying. Open to those who have completed course VII.

Course IX. Mine surveying Junior, second semester
Computations, methods, etc. Open to those who have taken courses VII and VIII. Three times a week.

Course X. Mine mapping Junior, first semester
Four hours a week.

COURSE IN PHYSICS

Course I. General physics Sophomore, first and second semesters
Experimental lectures. Four times a week.

Students

SENIORS—13

Brandt, John, St. Paul.
Clement, Lester, Winona.
Harrington, Guy P., Hutchinson.
Howes, Frank T., Minneapolis.
Kurtzman, Paul S., Rochester.
Moenke, William F., Belle Plaine
Morgan, Charles, Zumbrota.
Neustadt, B. R., La Salle, Ill.
O'Connor, Edward S., Highwood.
Rawson, Horace C., Fergus Falls.
Rose, William A., Duluth.
Wallace, Geo. W. Jr., Duluth.
Wheeler, Walter H., Minneapolis.

JUNIORS—21.

Bassett, R. H., Minneapolis.
Cowin, James, Minneapolis.
Edwards, Frank R., Bowdle, S. D.
Gillan, S. L., Minneapolis.
Hanks, I. B., Minneapolis.
Jackson, Charles F., Minneapolis.
McCreery, Arthur, Northfield.
McRae, Randolph J., Duluth.
Malcolmson, G. E., Minneapolis.
Noehl, B. F., Kasson.
Ziesemer, Harry M., Fergus Falls.
Oberg, Anton C., Watertown.
Olund, H. E., St. Paul.
Parker, Walter H., Stillwater.
Parks, Edgar K., St. Paul.
Probst, E. A., Minneapolis.
Roed, Olaf, Minneapolis.
Smith, Edgar W., Minneapolis.
Steele, Charles W., Minneapolis.
Swenson, Karl P., Minneapolis.
Wiest, M. A., New Rome.

SOPHOMORE CLASS—40

Barclay, Durant, St. Paul.
Becker, John A., Hastings.
Bischoff, Harry, St. Paul.
Bliss, Herbert S., Duluth.
Boyle, Patrick J., Brainerd.
Clark, W. G., Minneapolis.
Congdon, William B., Duluth.
Crowley, Jay, Stillwater.
Dahl, C. F., St. Hilaire.
Davy, Jesse J., Stewart.
Dedolph, Fred, St. Paul.
Deichen, William A., St. Paul.
Farnam, F. C., Minneapolis.
Fletcher, R. H., Minneapolis.
Fuglie, A. E., Ashby.
Garrity, Harry, Minneapolis.
Goodwin, W. R., Minneapolis.
Grimes, John Alden, Minneapolis.
Grygla, Eugene, Minneapolis.
Halladay, F. C., Brainerd.
Haynes, Jack E., St. Paul.
Hoaas, Ole G., McIntosh.
Hull, Wm. N., Minneapolis.
Jacobson, Robert, St. Paul.
Kennedy, J. J., St. Paul.
Kennedy, Thomas, St. James.
Knickerbocker, Arthur, Staples.
Locke, Alfred, Minneapolis.
Millar, H. A., Minneapolis.
Miss, Walter, St. Paul.
Olmstead, John S., St. Paul.
Parkhill, Walter, Pelican Rapids.
Peterson, Joseph S., Minneota.
Rood, Lynn, St. Paul.
Snyder, S. O., St. Paul.
Snyder, S. O.
Strong, John L., St. Paul.
Tyler, Adin P., Minneapolis.
Vanstrum, George R., Minneapolis.
Young, Courtland J., Superior, Wis.
Zaiser, Hugo V., Red Lake Falls.

FRESHMAN—47

Akin, Howard M., Willow River.
Anderson, A. Truman, Minneapolis.
Baas, Roy S., Moline, Ill.
Caldwell, Harold A., Minneapolis.
Channon, William, Minneapolis.
Chelsey, J. G., Minneapolis.
Cole, Willard, Lisbon, N. D.
Conkey, Charles R., Minneapolis.

Farrington, Thayer B., St. Paul.
Flanner, Edwin T., Minneapolis.
Fritzberg, Ernest A., Biwabik.
Gaston, LeRoy, Minneapolis.
Gavin, Lawrence T., Staples.
George, David W., Pipestone.
Grant, Roy C., Duluth.
Graves, A. Richard, Minneapolis.
Heath, Clarence L., Janesville.
Hedenstrom, Louis H., St. Paul.
Hedin, P. T., Minneapolis.
Hicks, Lincoln C., Rochester.
Hoyt, Samuel, Minneapolis.
Johnson, Charles W., Chisago City.
Johnson, Karl O., Minneapolis.
Johnson, Lloyd W., Minneapolis.
Jones, Leonard R., Minneapolis.
Kearney, George S., Minneapolis.
Knox, Fay, Grand Rapids.
Lathrop, Harry, Minneapolis.
Lawrence, M. J., Wahpeton, N. D.
Mihleisen, F. R., Minneapolis.
Moir, Arthur D., Minneapolis.
Moody, R. G., Minneapolis.
Mowatt, William F., Delano.
Newell, John R., Shakopee.
Perkins, Allyn F., Colorado Springs, Colo.
Quade, Edward H., Janesville.
Ruble, Ray, East Chain Lake.
Santo Julius H., Janesville.
Shields, L. J., St. Paul.
Swanson, Axel, Monticello.
Swartz, Samuel G., St. Paul.
Taylor, Harold, Minneapolis.
Teachout, Leigh, Lake Crystal.
Thomas, Clarence, Minneapolis.
Wharton, N. Earl, Ashland, Wis.
Wiley, Carl M., Minneapolis.
Williams, Homer A., Minneapolis.

The University Catalogues are published by authority of the Board of Regents, as a regular series of bulletins. The number issued each year varies from ten to twelve. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.


L'ETOILE DU NORD

THE UNIVERSITY OF MINNESOTA

BULLETIN

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The School of Chemistry

The University Bulletins are issued every six weeks during the University year, at least six numbers every calendar year. Entered at the Post office in Minneapolis as second class matter.

MINNEAPOLIS, MINNESOTA.

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THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

The University

The University of Minnesota comprises the following named colleges, schools, and departments :

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the goverment and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

*By the later act the President has been given a vote.

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act

relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The said Board of Regents shall succeed to and have control of the books, records, buildings, and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for. Provided, that all contracts made at that time, binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress, above mentioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the Uni-

versity during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the nature and results of all important experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS	*Ex-Officio*
The President of the University	
The HON. JAMES T. WYMAN, MINNEAPOLIS	1907
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER . . .	*Ex-Officio*
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA	*Ex-Officio*
The State Superintendent of Public Instruction	
The HON. STEPHEN MAHONEY, MINNEAPOLIS . .	1907
The HON O. C. STRICKLER, NEW ULM	1907
The HON. S. G. COMSTOCK, MOORHEAD	1909
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910

C. D. DECKER, AUSTIN
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee
The University press committee
The committee on athletics
The committee on University relations to other institutions of higher learning
The committee on health and sanitation
The committee on commencement and other University functions
The committee on catalogue, programs and courses of study
The committee on student entertainments and social affairs

and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

Representatives to the Council

The College of Science, Literature and Arts

DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering

DEAN F. S. JONES
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines

DEAN WM. R. APPLEBY

The School of Chemistry

DEAN GEO. B. FRANKFORTER

The College of Education

DEAN GEO. F. JAMES

The Graduate School

DEAN H. T. EDDY

The College of the School of Agriculture

DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law

DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery

DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

General Alumni Association

MAYOR DAVID P. JONES

University Council Committees

The University Auditing Committee
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

University Calendar, 1906-1907

THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

FIRST SEMESTER

SEPTEMBER	10 M	Entrance examinations and registration	
	11 T	Entrance examinations and registration	
	12 W	Entrance examinations and registration	
	13 Th	Entrance examinations and registration	
	14 F	Entrance examinations and registration	
	15 S	Examinations end and registration completed....	1 w
	17 M	Classes called for regular work (First College classes organized, 1869)	
	22 S	.....	2 w
	29 S	.....	3 w
OCTOBER	6 S	.....	4 w
	13 S	.....	5 w
	20 S	.....	6 w
	27 S	.....	7 w
NOVEMBER	3 S	.....	8 w
	10 S	.....	9 w
	17 S	.....	10 w
	24 S	.....	11 w
	29 T	Thanksgiving Day Recess three days	
DECEMBER	1 S	.....	12 w
	8 S	.....	13 w
	15 S	.....	14 w
	22 S	Holiday recess begins (no classes).....	15 w
	25 T	Christmas Day	
JANUARY	1 T	New Year's Day	
	8 T	Work resumed in all departments	
	12 S	.....	16 w
	19 S	.....	17 w
	28 M	Semester Examinations VII and VIII hour classes.....	18 w
	26 S	Semester Examinations I hour classes	
	29 T	Semester Examinations II hour classes	
	30 W	Semester Examinations III hour classes	
	31 Th	Semester Examinations IV hour classes	
FEBRUARY	1 F	Semester Examinations V hour classes	
	2 S	Semester Examinations VI hour classes	

SECOND SEMESTER

FEBRUARY	4	M	Second semester begins—Classes called for regular work
	9	S	..... 1 w
	12	T	Lincoln's birthday—Holiday
	16	S	..... 2 w
	18	M	University Charter, 1868. General Sibley died 1891.
	22	F	Washington's birthday—Holiday
	23	S	..... 3 w
MARCH	2	S	..... 4 w
	9	S	..... 5 w
	16	S	..... 6 w
	23	S	..... 7 w
	30	S	..... 8 w
APRIL	6	S	..... 9 w
	13	S	.....10 w
	20	S	.....12 w
	27	S	.....13 w
MAY	4	S	.....11 w
	11	S	.....14 w
	18	S	.....15 w
	25	S	.....16 w
	27	M	Senior examinations begin
JUNE	1	S	.....17 w
	3	M	Semester examinations. I hour classes
	4	T	Semester examinations. II hour classes
	5	W	Semester examinations. III hour classes
	6	Th	Semester examinations. IV hour classes
	7	F	Semester examinations. V hour classes
	8	S	Semester examinations. VI hour classes .....18 w

COMMENCEMENT WEEK 1907

SUNDAY	June 9	Baccalaureate Service
MONDAY	June 10	Senior Class Exercises
TUESDAY	June 11	Sigma Xi Address. Senior Promenade
WEDNESDAY	June 12	Alumni Day
THURSDAY	June 13	Commencement Day—The Thirty-fifth Annual Commencement
FRIDAY	June 14	Summer Vacation Begins

PROGRAM OF EXAMINATIONS, SEPTEMBER, 1906

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS
THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS
THE SCHOOL OF MINES
THE COLLEGE OF LAW
THE SCHOOL OF CHEMISTRY.

The numbers placed after the subjects, when given, indicate the rooms in which the examinations will be held.

—DAY—	—HOUR—	—SUBJECTS FOR ADMISSION TO THE— FRESHMAN CLASS
Monday, September 10,	8:00—10:30	[1] Elementary Algebra.
	10:45— 1:15	[1] Higher Algebra
	2:30— 5:00	[1] Plane Geometry
Tuesday, September 11,	8:00—10:30	[1] Solid Geometry
	10:45— 1:15	[2] All History Subjects.....17
	2:30— 5:00	[2] Civics 16
Wednesday, September 12,	2:00— 5:00	[3] Geology 18
		[3] Physiography 18
		[2] Commercial Geography 16
Thursday, September 13,	8:00—10:30	[6] Drawing 24
		[6] Shop Work .....
		[2] Political Economy.....16
	10:45— 1:15	[1] German
	2:30— 5:00	[1] French
		[1] Latin Grammar
Friday, September 14,	8:00—10:30	[1] Greek
		[1] Cæsar
	10:45— 1:15	[1] Cicero
		[1] Virgil
	2:30— 5:00	[4] Chemistry
		[5] Physics
		[3] Botany .....B
		[3] Zoology 29
		[1] Astronomy 35

[1] Place to be announced; [2] Library Building; [3] Pillsbury Hall; [4] Chemical Laboratory; [5] Physics Building; [6] The Shops.

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over $800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about $450,000 and the equipment of the buildings at about $300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at $400,000, and the sub-stations located at Crookston and Grand Rapids, at $30,000 more. The buildings and equipment of the department of agriculture are valued at over $400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated $350,000 for the erection of a "Main Building," of which $200,000 is available in 1906, and $150,000 will be available in 1907: this amount will be supplemented by $60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of $410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

The Legislature of 1903 appropriated the sum of $100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100 feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least $125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medical Department of the University.

The Hon. Thomas H. Shevlin has donated to the University $60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this

building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to $1,400,000. The annual interest on these bonds is at present about $53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of $15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of $25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts	$53,000.00	
U. S. Government, Hatch Bill appropriation	15,000.00	
U. S. Government, Morrill Bill appropriation	25,000.00	
Total from the Government		$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of $846,000,000, which will give about	$194,000.00	
A flat appropriation called a deficiency appro. of	60,000.00	
An appropriation for support of School of Mines	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		$263,500.00

Amount received from Student's fees	$126,000.00	
Dental Infirmary receipts	12,000.00	
Station & School, sales and fees	14,000.00	
Miscellaneous Receipts, University	2,000.00	
Total from University		$154,000.00
Total estimated current expense receipts for 1906		$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*

2 *College Libraries,* including those in Law, Medicine, Engineering, Agriculture.

3. *Departmental Libraries,* including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, Histology and Embryology, History, Mathematics, Military Science, Pathology and Bacteriology, Pedagogy, Physics, Physiology, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D, who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy:* All the material collected by the State Zoölogist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English:* A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design..

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum*: This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics*: This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3640 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean*, 35, men; *Forum*, 30, men; *Minerva*, 30, women; *Law Literary*, unlimited, law students; *Castalian*, 35, men; *Theta Epsilon*, 30, women; *Thalian*, 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of the board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, $4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of $5,000, amounting to $250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of $100, $50 and $25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of $25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of $75 for the members of

the team winning the inter-sophomore debate, and another prize of $25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of $100, established by her father, the late Frank H. Peavey. This prize consists of $75 for the members of the team winning the freshman-sophomore debate, and another prize of $25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of fifty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of $200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers $75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of $3,000, which will yield an annual income of about $175. A prize of $100 will be given

to the winner of the first place, $50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

General Information

THE ONE-MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

MILITARY DRILL.

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in Military Science and Tactics at all institutions that are its beneficiaries. The Armory is located on the University campus and has all the facilities usually provided in a modern Armory. The United States Government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

EXPENSES OF STUDENTS.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from $217.00 to $397.00. The same students earning sums varying from $237.00 to $272.00. The young women reported expenses varying from $150.00 to $355.00. These figures do not include fees, and, as the cost of living has increased decidedly, probably 25 per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortablly nor to have as many privileges as these students had.

Board can be had at prices ranging from $2.10 to as high as the student

can afford to pay. In private families board ranges from $3.00 to $5.00.

Furnished rooms vary in price from $8 to $20 per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the young men's or young women's Christian association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their own way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

The School of Chemistry

OFFICERS

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CHARLES F. SIDENER, B. S., *Professor of Chemistry*

EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry.*

EVERHART P. HARDING, Ph. D., *Assistant Professor of Chemistry*

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FRANCIS C. FRARY, B. Chem., *Instructor in Chemistry*

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JAMES DORAN, *Assistant in Chemistry*

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CARL SCHLENKER, B. A., *Assistant Professor of German*

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FREDERICK S. JONES, M. A., *Professor of Physics*
JOHN ZELENY, B. S., Ph. D., *Associate Professor of Physics*

OFFICERS OF THE DEPARTMENT OF DRAWING

WILLIAM KIRCHNER, *Assistant Professor of Drawing*
J. H. QUENSE, *Instructor in Drawing*

Regulations Governing Admission

ADMISSION.

Entrance examinations are held only at the beginning of the college year. Students prevented from entering at the beginning of the year may be admitted at a subsequent date when the circumstances are such as to justify the action. Such students are, however, at a great disadvantage and all students expecting to enter the University are urged to be present at the beginning of the year.

All applicants should present themselves to the registrar who will furnish them with application blanks and directions how to proceed with their examinations and registration.

GENERAL REGULATIONS.

Students bringing records from accredited schools are required to present them on the blank form provided for the purpose by the University. Blank forms may be obtained from the registrar. No other form of certificate will be accepted. Students who do not bring their certificates on the proper form of blank will not be allowed to register until they have secured the certificate on the required form.

I. Students will be admitted to the freshman class on *passing the regular entrance examinations.*

II. No student will be admitted *if conditioned in more than three half-year subjects,* or their equivalent.

III. Graduates of any Minnesota State high school will be admitted *without examination, provided—*

(1) That the school maintain a *full four-year high school course.*

(2) That the applicant present to the registrar the principal's certificate showing the satisfactory completion *of all the studies required for admission* to the desired University course.

IV. Graduates of Minnesota State high schools who are deficient in *not more than three half-year subjects* or their equivalent, *may be excused* from entrance examinations *in such subjects as the enrollment committee may decide*; such candidates should present themselves to that committee *not later than Tuesday of examination week.*

V. Graduates of Minnesota State high schools whose principal's certificate shows them to be deficient in *more than three half-year subjects* or their equivalent, even though they have made such additional preparation as they deem necessary, must take, nevertheless, the regular entrance examination in all subjects, as provided in sections I and II, unless excused by vote of the faculty; and persons

wishing to present reasons for such excuse *should report to the enrollment committee not later than Tuesday of examination week.*

VI. Graduates of the *advanced courses of Minnesota normal schools* will be admitted upon the same terms as graduates of State high schools.

VII. Any Minnesota high school or academy *not under supervision of the State High School Board,* but requiring for graduation a *four-years' course,* exclusive of the common school branches, conforming *essentially in distribution of time* to the entrance requirements of at least one of the University courses, will, upon application, be inspected by a committee, and, after favorable recommendation, *may be accredited by the faculty* in all respects as are the state high schools, *provided*—

(1) That the school be *open to inspection* at any time by the University;

(2) That it take such *supplementary examinations as may be prescribed* from time to time.

VIII. *Graduates from schools in other states,* whose diplomas admit to *reputable colleges* in the states in which the schools are located, will be received subject to the regulations that apply to graduates of Minnesota State high schools.

IX. Applicants from schools not coming within any of the above classes *must take the regular entrance examinations* or present State High School Board certificates.

High School Board certificates will be accepted in lieu of an examination in the subjects which they represent.

In all cases the faculty reserves the right to require a student to take supplementary examinations if he does not sustain himself creditably in his course.

N. B. The time element specified with each subject is essential.

English, four years, including

(a) Classics.

(b) Principles of composition.

(c) Practice in written expression.

Algebra, elementary, one year.

Geometry, plane, one year.

In addition to the above named subjects which are required and for which substitutes cannot be accepted, applicants shall present evidence of preparation in *nine* year-credits, or their equivalent, to be chosen from the following list:

Note—It is provided that if any language is offered from the list of elective subjects, at least two years of that language shall be offered, save in the case of Latin Grammar, which will be accepted as the equivalent of one year of English.

Mathematics (one year).
- *Algebra*, higher, one-half year.
- *Geometry*, solid, one-half year.

Latin (four years).
- Grammar, one year.
- Cicero, six orations, one year.
- Caesar, four books, one year.
- Virgil, six books, one year.

Greek (two years).
- Grammar, one year.
- Anabasis, four books, one year.

German (two years).
- Grammar, one year.
- Literature, one year.

French (two years).
- Grammar, one year.
- Literature, one year.

Spanish (two years).
- Grammar, one year.
- Literature, one year.

History, Ancient, to Charlemange, one year.
- Modern, from Charlemange, one year.
- England, one-half year.
- Senior American, one-half year.
- Until the opening of the University year 1907-08, half-year credits will be accepted in ancient, medieval and modern history.

Civics, one-half year.

Political Economy, one-half year.

Physics, one year.

Chemistry, one year. One-half year credit will be accepted until the opening of the year 1907-08.

Botany, one-half or one year.

Zoology, one-half or one year.

Astronomy, one-half year.

Geology, one-half year.

Physiography, one-half year.

Commercial Geography, one-half or one year.

ADVANCED STANDING.

Advanced Standing—The University accepts records from all reputable colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in this University. In bringing records from other institutions, the certificate must be on the official blank of the institution granting the certificate, and should show:

1. The subjects studied; if a language, the work read, etc.
2. The time spent upon each subject.
3. Ground covered in laboratory work in case of laboratory subjects.
4. The result—it is sufficient to state that the subject was creditably completed.

Records from institutions whose entrance requirements are not essentially equivalent to the requirement of the University, will not be accepted unquestioned; the credit to be allowed will be decided in individual cases by the enrollment committee.

DAILY ROUTINE.

The morning session begins at 8:30 o'clock; a general assembly of the faculty and students is held each day at 10:25 o'clock, at which there are brief and simple religious exercises. Work extends through six days of the week.

At the close of each semester, examinations are held in the studies of that semester.

Students are reported as "excellent," "good," "passed," "incomplete," "conditioned," or "failed."

An "incomplete" must be removed within one month from the opening of the following semester or it becomes a condition.

A "condition" not made up before the subject is offered again becomes a "failure," subject to rules governing failures.

"Failures" must be pursued again in class.

A student who at any time is deficient in more than half a year's work, loses his class rank and is regarded as a member of the next lower class.

Students whose absences in any term exceed four weeks in the aggregate, are not permitted to take the term examinations without special permission of the faculty.

FAILURE TO KEEP UP WITH THE CLASS.

Any student receiving conditions or failures in 60 per cent of the work of the first semester shall be dropped from the rolls, and shall not be allowed to re-enter the University until the opening of the following year.

Any student failing to pass in one-half of the work of any year shall

not be allowed to register until reinstated by action of the faculty upon recommendation of the committee on students' work.

FEES.

All students in the college, who are residents of the state, are charged an incidental fee of fifteen dollars a semester. Non-residents are charged double the fee required of residents of the state, or thirty dollars a semester. No reduction is made for late entrance or for leaving before the end of the semester. Save in the case of the first registration, the incidental fee is increased 25 cents for each day's delay in registration, beginning with the day set for recitations to begin. In addition to this fee, students who take work in laboratories are charged a sum sufficient to cover the cost of material and breakage.

The School of Chemistry

GENERAL STATEMENT.

The two four year courses in chemistry are designed for those who wish to become teachers of chemistry, analysts, investigators, manufacturing and applied chemists. The course in analytical chemistry is arranged especially for teachers, analysts and general scientists. The course in engineering chemistry is intended for those who would become manufacturing and applied chemists and chemical technologists. The courses here presented include general, organic, analytical, technical, theoretical and applied chemistry. Besides chemistry, extended work is offered in physics, mathematics, metallurgy, mineralogy, crystallography, geology, engineering, botany, language and drawing.

Electives are offered in the senior year in order to give the students an opportunity of selecting subjects of special importance to them, but which are not included in the regular courses.

EQUIPMENT.

Laboratories. The building formerly known as Science Hall has been completely remodeled to meet the needs of the department of chemistry. The building is 198 by 78 feet, and consists of several large laboratories well equipped for a wide range of chemical work. The general laboratory is located on the first floor and is large enough to accommodate 350 students. The laboratory tables are arranged with cupboards, drawers and locks, and supplied with gas and water. Connected with this laboratory by means of sliding windows, is a preparation room which is directly joined to the general store room. The remaining part of this floor is given to cloak rooms, furnace and motor rooms and a large lecture room with a gallery designed to comfortably seat 350 students. The qualitative laboratory, located on the second floor, is arranged with tables similar to those of the general laboratory and will accommodate 250 students. The library and three technical laboratories are likewise on this floor. The third floor contains the quantitative laboratory large enough to accommodate 120 students. Directly connected with this laboratory are the balance, preparation, evaporation and drying rooms. There are also on this floor, six special laboratories, an organic laboratory, a physical laboratory, a lecture room and a museum. There is a suite of rooms on the fourth floor entirely given to photography.

Library. The chemical library contains complete sets of many of the important journals. It contains besides these special sets, a well repre-

sented list of analytical and technical works, as well as many rare old works of great historical value. Most of the important journals are taken, thus enabling the student to keep abreast of the times. All books are easily accessible, with only the necessary restrictions to guard against injury and loss.

INDUSTRIAL MUSEUM.

Considerable space is given to a collection in industrial, technical and applied chemistry. There is a large collection of chemicals, with specimens of each in the various stages of preparation and purification; a collection of nearly all the elements, with most of their important salts; a large number of mining and metallurgical specimens, including most of the important ores, together with many rare specimens in crystallography. The collections of coals and petroleums are especially valuable for lecture and technical work. There is a large collection of dyes, organic and inorganic, mordants, textiles, and other materials used in dyeing and bleaching, with a rapidly increasing collection of clays and materials used in making of glass, earthenware, porcelain and brick. A collection of furnace products, models and series of charts, blue prints and photographs illustrating a wide range of technical and chemical processes is being added.

FIVE YEAR COURSE IN ARTS AND CHEMISTRY LEADING TO THE DEGREES BACHELOR OF ARTS AND ANALYTICAL CHEMIST.

The degree bachelor of arts will be conferred upon any student who completes the work prescribed in the first four years of the following course, provided that at least one *long course* shall be chosen from each of the following groups.

(a) English, French, German, Greek, Latin, Rhetoric.

(b) Animal Biology, Astronomy, Botany, Chemistry, Mineralogy, Physics.

(c) History, Philosophy, Political Science and Sociology.

A *long course* means an amount of work equivalent to not less than six hours per week in one department for one year.

The degree analytical chemist will be conferred upon the completion of the fifth year of the course.

Courses of Study

Analytical Chemistry

FRESHMAN YEAR.

FIRST SEMESTER.

Mathematics [3]
Chemistry (qualitative) 3]
Mineralogy [3]
Drawing [4]
Rhetoric [3]
Military drill [3]
Gymnasium [1]

SECOND SEMESTER.

Mathematics [3]
Chemistry (qualitative) [3]
Assaying [3]
Laboratory [4]
Drawing [4]
Rhetoric [3]
Military drill [3]
Gymnasium [1]

SOPHOMORE YEAR.

Chemistry (organic) [3]
Chemistry (quantitative) [3]
German, French or Spanish [3 or 5]
Botany [3]
Inorganic preparations [2]
Rhetorical work [1]
Military drill [3]

Chemistry (organic) [3]
Chemistry (quantitative) [3]
German, French or Spanish [3 or 5]
Botany [3]
Military drill [3]
Rhetorical work [1]

JUNIOR YEAR.

FIRST SEMESTER.

Physical chemistry [3]
Special problems [2]
Geology [3]
Physics [6]
Metallurgy [3]

SECOND SEMESTER.

History of chemistry [2]
Theoretical chemistry [2]
Iron and steel analysis [3]
Physics [6]
Metallurgy [3]
Mineral analysis [2]

SENIOR YEAR.

Chemistry of carbohydrates [2]
Gas analysis [2]
Colloquium [2]
Metallurgy [4]
Water analysis [2]
Wine and beer analysis [2]
Crystallography [3]
Thesis

Photographic chemistry [2]
Industrial chemistry [2]
Colloquium [2]
Electro chemistry [2]
Metallurgy [4]
Food adulterations [2]
Micro chemistry [2]
Thesis

Applied Chemistry

FRESHMAN YEAR.

FIRST SEMESTER.

Chemistry (qualitative) [3]
Mathematics [3]
German, French or Spanish [3 or 5]
Drawing [4]
Shop work [4½]
Rhetoric [3]
Military drill [3]

SECOND SEMESTER.

Chemistry (qualitative) [3]
Mathematics [3]
German, French or Spanish [3 or 5]
Drawing [4]
Shop work [4½]
Rhetoric [3]
Military drill [3]

SOPHOMORE YEAR.

Chemistry (quantitative) [3]
Mathematics [5]
Physics [6]
Drawing [3]
Rhetorical work [1]
Military drill [3]

Chemistry (quantitative) [3]
Mathematics [5]
Physics [6]
Drawing [2]
Rhetorical work [1]
Military drill [3]

JUNIOR YEAR.

Chemistry (organic) [3]
Mechanics [5]
Physics [3]
Mechanical laboratory [4]
Machine design [2]
Industrial electricity [3]

Chemistry (organic) [3]
Mechanics [5]
Electrical laboratory [3]
Mechanical laboratory [4]
Machine design [2]
Dynamos and motors [3]

SENIOR YEAR.

Chemistry (industrial) [4]
Gas analysis [2]
Water analysis [2]
Metallurgy [3]
Political science [2]
Electives [4]
Thesis

Chemistry (industrial) [4]
Chemistry (applied) [4]
Metallurgy [3]
Political science [2]
Electives [4]
Thesis

Five Year Course in Arts and Chemistry

FIRST YEAR.

FIRST SEMESTER.

Mathematics [3]
Chemistry (qualitative) [3]
Mineralogy [3]
Drawing [4]
Rhetoric [3]
Drill [2]
Gymnasium [1]

SECOND SEMESTER.

Mathematics [3]
Chemistry (qualitative) [3]
Assaying [3]
Laboratory [4]
Drawing [4]
Rhetoric [3]
Drill [2]
Gymnasium [1]

SECOND YEAR.

Chemistry (organic) [3]
Chemistry (quantitative) [3]
German, French or Spanish [3 or 5]
Botany [3]
Drill [3]
Rhetorical work [1]

Chemistry (organic) [3]
Chemistry (quantitative) [3]
German, French or Spanish [3 or 5]
Botany [3]
Drill [3]
Rhetorical work [1]

THIRD YEAR.

FIRST SEMESTER.

Theoretical chemistry [3]
Physics [6]
Electives in College of Science, Literature and the Arts [8 or 9]

SECOND SEMESTER.

History of chemistry [3]
Physics [6]
Electives in college of Science, Literature and the Arts [8 or 9]

FOURTH YEAR.

Physical chemistry [3]
Special problems [2]
Geology [2]
Metallurgy [3]
Electives in College of Science, Literature and Arts [8 or 9]

Iron and steel analysis [3]
Optical mineralogy [3]
Metallurgy [3]
Mineral analysis [2]
Electives in College of Science, Literature and Arts [8 or 9]

FIFTH YEAR.

Chemistry of carbohydrates [2]
Gas analysis [2]
Colloquium [2]
Metallurgy [4]
Water analysis [2]
Wine and beer analysis [2]
Crystallography [3]
Thesis

Photographic chemistry [2]
Industrial chemistry [2]
Colloquium [2]
Electro chemistry [2]
Metallurgy [4]
Food adulterations [2]
Micro chemistry [2]
Thesis

Courses in Chemistry

FOR UNDERGRADUATES.

I. General Chemistry. [1 : 2.] Freshman I, II. *Miss Cohen.*
Recitations and laboratory work. The course includes a study of the chemical properties of the metallic and non-metallic elements, with a brief introduction to organic chemistry. No prerequisite.

II. Advanced general chemistry. [2 : 1.] Freshman I, II. *Professor Frankforter and Assistants.*
The course includes besides descriptive and metallurgical chemistry, an introduction to physical and organic chemistry. Open to those who have had elementary chemistry.

III. Qualitative analysis. Freshman I, II. *Assistant Professor Nicholson.*
Lectures and laboratory work. The course includes the general reactions of the metals and acids with their qualitative separation. Besides this mechanical work, the Ionic Theory and the Law of Mass Action are discussed with special reference to common qualitative reactions.

IV. Quantitative analysis. Sophomore I. *Professor Sidener.*
Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis.

V. Volumetric analysis. Sophomore II. *Professor Sidener.*
Lectures and laboratory work. The course includes an introduction to volumetric analysis with a discussion of standard solutions and the necessary stœchiometric calculations.

VI. Organic chemistry. Junior I. *Professor Frankforter.*
Lectures and laboratory work. This course includes the aliphatic series with a preparation of the more important compounds supplemented by Levy's Anleitung zur Darstellung Organischer Praparate.

VII. Organic chemistry. Junior II. *Professor Frankforter.*
Lectures and laboratory work. The course includes the aromatic series with a preparation of some of the more important compounds supplemented by Fischer's Organischer Praparate.

VIII. Theoretical chemistry. [2] Junior I. *Assistant Professor Harding.*
Lectures and readings. The course includes a study of Lothar Meyer's Moderne Theorien der Chemie, Oswald's Grundriss der Allgemeinen Chemie and Remsen's Theoretical Chemistry.

IX. History of chemistry. [2] Junior II. *Professor Frankforter.*
Lectures and reading. This course includes a full historical discussion of alchemy and chemistry.

X. Water analysis. [2] Senior I. *Professor Frankforter.*
Lectures and laboratory work. The course includes an exhaustive discussion of the chemical and sanitary properties of water.

XI. Gas analysis. [2] Senior I. *Assistant Professor Harding.*
Lectures and laboratory work. The work includes an exhaustive chemical examination of the common gases, with a determination of light and heat efficiency of combustible gases.

XII. The chemistry of carbohydrates. [2] Senior I. *Assistant Professor Nicholson.*
Lectures and laboratory work. The course includes a discussion of the carbohydrate group with the important methods of analysis.

XIII. Industrial chemistry. [2] Senior II. *Professor Sidener.*
Laboratory work and reading. The course includes the analysis of various commercial products.

XIV. Wine and beer analysis. Senior. ASSISTANT PROFESSOR HARDING
Lectures and laboratory work. The course includes the determination of alcohol and other constituents in wine and beer, with a special study of fermentation.

XV. Special problems. Junior I. PROFESSOR SIDENER
Laboratory work. The course includes the working out of various mineralogical, technological and metallurgical problems.

XVI. Photographic chemistry. Senior II. PROFESSOR FRANKFORTER
Lectures and laboratory work. The course includes a study of the compounds affected by the chemical rays of light, and a discussion of developers and fixers, photo-engraving, photo-reliefs and color photography.

XVI. Electro-chemistry. Senior II. PROFESSOR FRANKFORTER
Lectures and laboratory work. The course includes the qualitative and quantitative separations of the metals by electrolysis.

XVIII. Micro-chemical analysis.
Senior II. ASSISTANT PROFESSOR HARDING
Lectures and laboratory work. The course includes the methods for the determination of minute quantities of substance by means of the microscope.

XIX. Food adulterations. Senior II.. ASSISTANT PROFESSOR HARDING
An examination of common food products for adulterants.

XX. Iron and steel analysis. Junior II. PROFESSOR SIDENER
Lectures and laboratory work. The course includes the rapid determination of iron by the various methods as well as the determination of the associated elements, sulphur, phosphorus, silicon, manganese and carbon.

XXI. Mineral analysis. [2] Junior II. *Professor Sidener.*
The course includes the analysis of building stones and some of the most important minerals.

XXII. Inorganic preparations, [2] Sophomore I. *Assistant Professor Harding.*
The preparation of inorganic salts, supplemented by Bender's Anorganische Praparatkunde.

XXIII. Colloquium. [2] Senior I. *Professor Sidener.*
A thorough quiz in general inorganic chemistry.

XXIV. Colloquium. Senior II. *Professor Frankforter.*
A thorough quiz in general organic chemistry.

XXV. Special problems. [2] Junior I. *Professor Sidener.*
This course includes work on ores of base metals, limestones, slags, etc.

XXVI. Physical chemistry. Junior I. *Professor Frankforter.*
Lectures and laboratory work. The laboratory work will include that laid down by Jones and Walker with such references as Nernst and Ostwald.

XXVII. Teachers' course. [2] Senior II. *Professor Frankforter.*
The course is offered to those who are interested in the teaching of chemistry. No regular laboratory work will be offered, but certain experiments illustrating the difference between good and poor work may be given. Open to those who have taken course I, II and III.

COURSES FOR GRADUATE STUDENTS.

1. *Special inorganic chemistry.* 2. *Electro-chemistry.* 3. *Organic chemistry.* 4. *The alkaloids.* 5. *Analytical chemistry.*

COURSES IN GEOLOGY AND MINERALOGY.

MINERALOGY.

I. Elements of mineralogy. Sophomore I. *Professor Hall and Mr. Parsons.*
The physical and chemical characters of minerals; a study of the native elements and the ores of the common metals; the occurrence and association of economic minerals.
Descriptive mineralogy and classification; rock-forming minerals; genetic relationships and distribution.
Laboratory work consists of tests illustrating the range of minerals and the application of chemical and blowpipe analyses to the determination of species; an introduction to the methods of quantitative blowpipe analyses; special topics; reference reading and discussions. Six hours a week.

IV. Optical mineralogy. Junior II. *Mr. Parsons.*
A study of the structure of crystals and crystal grains. An application of the methods of determination by optical properties; the use of the petrographer's microscope, embracing the elements of lithology. Lectures and laboratory work. Three times a week.

V. *The morphology of minerals.* Junior or senior I. *Mr. Parsons.*
A study of crystallography, embracing projection and the geometric relations of crystal planes. The identification of minerals from crystal measurement and mathematical calculation. Crystal nomenclature.

VI. *Physico-chemical methods with their applications.* Senior II. *Mr. Parsons.*
The method of micro-chemical analysis described and demonstrated; the leading elements found in minerals are determined through the aid of crystalline precipitates of known compounds. Special attention is given to the study and determination of the rock-making minerals.

GEOLOGY.

I. *General geology.* Junior I. *Professor Hall.*
1. Geodynamics, discussing the atmosphere, water, terrestrial heat, plants and animals, as geological agents. 2. Structural geology explaining stratification, displacements, dislocations, fractures, induced rock-structures and mineral veins in their relation to the arrangement of materials in the earth. 3. Physiographic geology, pointing out the more prominent earth features and discussing their origin, significance and the agencies affecting them. Field excursions are required. Scott's Introduction. Twice a week.

IX. *Elements of Rock Study.* Junior I. *Mr. Parsons.*
General consideration of the origin and occurrence of rocks, i. e., Petrogenesis. The structure and texture of rocks. Preliminary studies of the mineral, physical and chemical constitution of the crystalline rocks with a view to their general description. Kemp's Handbook of Rocks. Reference reading and demonstrations. Twice a week.

X. *Petrography.* Junior II. *Mr. Parsons.*
An investigation of the megascopic and microscopic characters of crystalline rocks; a discussion of their crystalline habit, mineral composition and genetic relations. The course extends into an examination of some Minnesota groups of crystalline rocks. Practically a continuance of course III of mineralogy. Laboratory, with lectures and reference reading. Elective with optical mineralogy.

COURSES IN BOTANY.

I. *General botany.* I, II. *Mr. Lyon.*
This course comprises a general survey of the plant kingdom with laboratory work on the cell, on algæ, lichens, fungi, mosses and ferns, gymnosperms and flowering plants. Lectures and laboratory.

II. *General plant morphology.* First year. *Miss Tilden.*
This course comprises a thorough laboratory discipline in algæ, fungi and lichens and is the introductory course for students specializing in botany. Lectures, laboratory work and collateral reading throughout the year.

COURSES IN MECHANICAL ENGINEERING.

I. *Carpentry and pattern making.* Freshman I.
Wood working, use of tools; lathe and bench work. Patterns for moulding, core boxes. Lectures and practice.

II. *Foundry practice and pattern making.* Freshman II.
Patterns and practice. Moulding, casting, mixing metals, brass work and core making. Shop practice, recitations and lectures.

XI. *Machine design.* Junior I and II.
Calculation and design of such machine parts as fastenings, bearings, rotating pieces, belt and tooth gearing. Recitations, lectures and drawing-room practice. Preparation, course V, mathematics, and course I physics.

XXV. *Strength of materials.* Junior I, 72 hours.
Laboratory work investigating the strength and physical qualities of iron, steel, brass, copper, belting, chains, beams. Open only to students pursuing course I in mechanics.

XXVI. Mechanical laboratory. Junior II. 72 hours.
Continuation of course XXV; also exercises in valve setting, indicator practice, calibration of steam gauges, calorimetry, efficiency of screws and hoists. Preparation: course XVIII.

XVIII. Steam engine. Junior II. 72 hours.
Mechanics of the steam engine. Work in the cylinder: effect of reciprocating parts: steam distribution. Mechanism of the steam engine. A study of the details of modern steam engines. Valves and valve gears. A study of the slide valve, link motions and other reversing gear; automatic cut-off gears and the Zeuner diagram. The steam engine indicator. Principles and operation of the instrument, indicator rigging; indicator cards; compounding. Preparation, course I, in applied mechanics.

COURSES IN METALLURGY.

I. Assaying. Sophomore II.
Determination of values of the ores. Lectures, recitations and laboratory work. Open to those who take courses I, II, III, chemistry, and have completed course I, mineralogy.

III. General metallurgy and metallurgy of iron. Sophomore I.
Including the subjects of combustion, fuels, refractory material and furnaces. Lectures and recitations on metallurgy of iron. Open to those who have completed course I.

IV. Metallurgy of wrought iron and steel. Sophomore II.
Lectures and recitations. Open to those who have completed course II.

V. Metallurgy of the precious metals. Senior I.
Gold, silver and platinum. Lectures and recitations. Open to those who have completed course VI.

VI. Metallurgy of the base metals. Senior II.
Associated with precious metals, including lead, copper, etc. Lectures and recitations. Open to those who have completed course V.

COURSES IN GERMAN.

FOR UNDERGRADUATES.

I. *German, beginning.* [5]
Professor Schlenker, Assistant Professor Wilkin, Mr. Juergensen, Mr. Burkhard and Mr. Williams.
Pronunciation, grammar, selections in prose and verse. German conversation and composition (Bernhardt); short stories.

III. *Scientific Prose, intermediate.* I, II. *Mr. Juergensen.*
First semester.—Hodge's German Science Reader, (or equivalent). Second semester.—Brandt and Day's German Scientific Reading. This course aims to give the student a reading knowledge of German for use in scientific studies. Open to students who have completed course I.

IV. *Classic Prose and Poetry.* I, II.
Professor Moore, Assistant Professor Wilkin, Mr. Burkhard and Mr. Williams.
First semester.—Meissner's Aus deutschen Landen; Goethe's Gedichte. Review of German grammar. (Etymology.) Second semester.—Heine's Prosa; Buch der Lieder. Review of German grammar (Syntax). Open to students who have presented German for admission.

VII. *Advanced Scientific Reading.* I, II. *Mr. Juergensen.*
Reading of monographs and periodicals. Open to students who have completed courses III or IV.

MATHEMATICS.

III. *Second Part Higher Algebra.* Freshman and Sophomore I.
Assistant Professor Bauer, Dr. Manchester, Dr. Dunkel, Mr. Shumway.
For those having a credit in course I. Variation, quadratic equations, special higher equations, simultaneous equations of the second degree, maxima and minima of algebraic functions, differentiation of algebraic functions, development of functions, logarithms, theory of equations and solution of numerical higher equations.

IV. *Trignometry.* Freshman and Sophomore II.
Assistant Professor Bauer, Dr. Manchester, Dr. Dunkel, Mr. Shumway.

For those having credits in courses I and II. Text, fables, and numerous applications.

COURSES IN PHYSICS.

I. *Mechanics, Properties of Matter, Heat, Sound.* [6] Sophomore I.
Professor Jones and Assistants.

Experimental Lectures, Recitations and Laboratory Work.
Open to those who have completed Algebra and Trigonometry of Courses III and IV.

II. *Light, Electricity and Magnetism.* [6] Sophomore II.
Professor Jones and Assistants.

Experimental Lectures, Recitations and Laboratory Work.
Open to those who have completed Course I.

III. *Electrical Measurements.* [3] Junior and senior I.
Assistant Professor A. Zeleny.

Lectures and Laboratory Work.
Open to those who have completed Course II.

IV. *Physical Manipulations and Laboratory Technique.* [3] Junior and senior II.
Professor J. Zeleny.

Open to those who have completed Courses I and II.

COURSES IN DRAWING.

I. Freshman I, II.

(a) *Freehand.*
Lettering, geometric forms and engineering details in outline, including working sketches, translations and the elements of perspective.

(b) *Mechanical.*
Conventional methods, lettering, machine and structural details and standard sizes and shapes.

(c) *Descriptive geometry.*
Problems relating to points, lines, planes, solids, interpenetrations, surface of revolution, tangents and developments, including the constructive geometry involved. Recitations and lectures.

II. Sophomore I, II.

(a) *Descriptive geometry.*
Othographic, isometric, horizontal, topographic, oblique, and perspective projections, shades and shadows, line shading and brush tinting. Open to students who have completed course I.

(b) *Working drawings.*
Engineering details, assembly drawings, mechanical movements, tracing and blue printing. Study of shop methods and drafting room systems. Details are obtained from actual machines and structures as far as possible.

COURSES IN ELECTRICAL ENGINEERING.

I. Industrial electricity. 3 hours per week, first half first semester.
Outline of industrial uses of electricity: application of Ohm's law: methods and calculation of wiring. Preparation required: physics, course I.

II. (a) *Dynamos and motors.*
3 hours per week, second half first semester and through second semester.
Theory of electro-magnet and direct current dynamo and motor; methods of regulation, construction and operation of dynamos and motors; methods of testing. Preparation required: electrical engineering, course I; physics, courses I and II (a); differential and integral calculus.

V. *Analytical Geometry.* [3 and 2] Sophomore I.
Professor Downey and Dr. Dunkel.

The conic sections, both by rectilinear and polar co-ordinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of co-ordinates, properties of loci by means of their equations.

VI. *Differential Calculus.* [3 and 2] Sophomore II.
Professor Downey and Dr. Dunkel.

Differentiation of algebraic and transcendental functions, development of functions, indeterminate forms, maxima and minima, treatment of tangents, subtangents, normals, subnormals, asympotes, direction and rate of curvature, evolutes, envelopes and singular points.

COURSES IN POLITICAL SCIENCE.

VI. Introduction to political science. Senior I. *Dr. Schaper.*

A study of the state, its growth, forms and people. Lectures and reading.

IX. Transportation. Senior. *Professor Folwell.*

The evolution of transportation in the United States, and by railroads in particular.

Economic aspect and public policy of railroads.

SOCIOLOGY.

For Undergraduates and Graduates.

I. Elements of sociology. I. *Professor Smith.*

Giving field, methods, and important results of social science, the attempt being to prepare the student for any special investigations he may wish to make.

II. Social pathology. I. *Professor Smith.*

Dealing with problems of poverty, crime, insanity, social degeneration, and a discussion of the child problem and methods of social amelioration.

III. Social theory. I. *Professor Smith.*

This course includes a study of the leading American, English, French and German writers to discover their methods of approach to the science, and the leading results they have secured. Open to those who have completed course I.

IV. Anthropology. I. *Professor Smith.*

The work in anthropology will include researches in primitive culture, the problem of races, and the results of anthropometrics in pathological inquiries. Open to those who have completed course I.

V. Social groups. I. *Professor Smith.*

An examination of the clan and the village in primitive life, a study of demography to discover the effect of environment upon social organization, and a comparison with the nature of the reasons for the modern city.

VI. The study of institutions. I. *Professor Smith.*

The genesis of custom and the beginnings of law with the geographical and race influences in the growth of states, will be studied, as well as the various forms of the family and their relation to forms of civilization.

Students

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FRESHMEN — 21

Baas, R. S.
Bacon, Charles
Bills, Eugene
Browne, Caro
Castor, Paul B.
Chesnut, Edward T.
Dahlberg, Henry W.
Gray, Robert P.
Jemne, Magnus
Lowdahl, Arthur
Merrill, A. Reba
Merritt, Abbie L.
Morey, George W.
Pratt, Robert A.
Robinson, I. D.
Roehrich, Victor
Selvig, W. A.
Sprague, Clyde H.
Sterling, Faith
Thompson, Ward
Weeks, Arthur

SOPHOMORES—7

Badger, Walter L.
Barnaby, William E.
Kueffner, Otto K.
McBride, R. S.
Richards, John C.
Thomson, H. Britton
Wallace Lulu

JUNIORS—17

Anderson, Edward
Cressy, Charles R.
Davies, Edwin T.
Doran, James M.
Frazier, W. H.
Fuller, Harry B.
Gray, Carl W.
Haggard, Mildreth
Hawley, Neal C.
Kennedy, William W.
Lowe, John M.
Manuel, Earle V.
Neumann John X.
Newton, H. M.
Porter, A. Harold
Von Kuster, Edith
West, Rodney M.

SENIORS—2

Bernhagen, Lewis O.
Whited, Oric O.

Volume IX. No. 14 October 30, 1906

The University of Minnesota
Bulletin

The College of Homeopathic Medicine and Surgery

Announcement, 1906-1907

Entered at the Postoffice
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The University Catalogues are published by authority of the Board of Regents, as a regular series of bulletins. The number issued each year varies from ten to twelve. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,
The University of Minnesota,
Minneapolis, Minnesota.

The University

The University of Minnesota comprises the following named colleges, schools, and departments:

THE GRADUATE SCHOOL

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE UNIVERSITY SUMMER SCHOOL

THE DEPARTMENT OF AGRICULTURE
- The College of Agriculture
- The School of Agriculture
- Short Course for Farmers
- The Dairy School
- The Crookston School of Agriculture
- The Experiment Stations:
  - The Main Station at St. Anthony Park
  - The Sub-Station at Crookston
  - The Sub-Station at Grand Rapids

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE SIX-YEAR MEDICAL COURSE

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially de-

signed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the goverment and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

*By the later act the President has been given a vote.

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act

relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The said Board of Regents shall succeed to and have control of the books, records, buildings, and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for. Provided, that all contracts made at that time, binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress, above mentioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the Uni-

versity during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the nature and results of all important experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS The President of the University	*Ex-Officio*
The HON. JAMES T. WYMAN, MINNEAPOLIS The President of the Board	1907
The HON. JOHN A. JOHNSON, ST. PETER The Governor of the State	*Ex-Officio*
The HON. JOHN W. OLSEN, ALBERT LEA The State Superintendent of Public Instruction	*Ex-Officio*
The HON. STEPHEN MAHONEY, MINNEAPOLIS	1907
The HON O. C. STRICKLER, NEW ULM	1907
The HON. S. G. COMSTOCK, MOORHEAD	1909
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910

C. D. DECKER, AUSTIN
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*
ERNEST B. PIERCE, B.A., *Registrar*
C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*
FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*
WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*
GEORGE B. FRANKFORTER, PH.D., *Dean of the School of Chemistry*
GEORGE F. JAMES, Ph.D., *Dean of the College of Education*
HENRY T. EDDY, C.E., Ph.D., L.L.D. *Dean of the Graduate School*
WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*
WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Dean of the College of Medicine and Surgery*
EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*
ALFRED OWRE, D.M.D., M. D., *Dean of the College of Dentistry*
FREDERICK J. WULLING, PHM.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

JAMES T. GEROULD, B. A., *Librarian*
LETTIE M. CRAFTS, B.L., *Assistant Librarian*
INA FIRKINS, B.L., *Library Assistant*
MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*
THOMAS G. LEE, B.S., M.D., *Librarian of Department of Medicine*
HUGH E. WILLIS, LL.M., *Librarian of the College of Law*
CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*
HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*
EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee
The University press committee
The committee on athletics
The committee on University relations to other institutions of higher learning
The committee on health and sanitation
The committee on commencement and other University functions
The committee on catalogue, programs and courses of study
The committee on student entertainments and social affairs

and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

Representatives to the Council

The College of Science, Literature and Arts

DEAN JOHN F. DOWNEY
PROFESSOR F. L. MCVEY
PROFESSOR WILLIS M. WEST
PROFESSOR H. F. NACHTRIEB

The College of Engineering

DEAN F. S. JONES
PROFESSOR GEORGE D. SHEPARDSON

The School of Mines

DEAN WM. R. APPLEBY

The School of Chemistry

DEAN GEO. B. FRANKFORTER

The College of Education

DEAN GEO. F. JAMES

The Graduate School

DEAN H. T. EDDY

The College of the School of Agriculture

DEAN WM. M. LIGGETT
PROFESSOR HARRY SNYLER

The College of Law

DEAN WM. S. PATTEE
JUDGE A. C. HICKMAN

The College of Medicine and Surgery

DEAN F. F. WESBROOK
PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

General Alumni Association

MAYOR DAVID P. JONES

University Council Committees

The University Auditing Committee
Professors Anderson, Sigerfoos, Springer, Fletcher, Owre.

The Committee on Athletics
Professors Wesbrook, Paige, Brooke, West, Harding.

The Committee on Grounds and Sanitation
Professors Wesbrook, Reynolds, Bass, Flather, Sidener.

The Committee on Catalogue, Programs and Courses of Study
Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee
Professors Schaper, Erdmann, Constant, Snyder, James.

The Committee on Commencement and other University Functions
Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker.

The Committee on Student Entertainments and Social Affairs
Professors Frankforter, Pike, White (S. M.), Bass, Willis.

The Committee on University Relations to other Institutions of Higher Learning
Professors Downey, Folwell, Green, Lee, MacMillan.

The Committee on University Extension and University Lectures
Professors James, MacMillan, Mann, Hecker, McVey.

The Committee on the Library
Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher.

CALENDAR FOR 1906-1907

1906

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

S.	M.	T.	W.	T.	F.	S.
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

S.	M.	T.	W.	T.	F.	S.
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28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

S.	M.	T.	W.	T.	F.	S.
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18	19	20	21	22	23	24
25	26	27	28	29	30	..
..	..	..	..	..	..	..

DECEMBER

S.	M.	T.	W.	T.	F.	S.
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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

1907

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

FEBRUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
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17	18	19	20	21	22	23
24	25	26	27	28	..	..
..	..	..	..	..	..	..

MARCH

S.	M.	T.	W.	T.	F.	S.
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24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

S.	M.	T.	W.	T.	F.	S.
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

MAY

S.	M.	T.	W.	T.	F.	S.
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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

JUNE

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
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23	24	25	26	27	28	29
30	..	..	..	..	..	..

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over $800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about $450,000 and the equipment of the buildings at about $300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at $400,000, and the sub-stations located at Crookston and Grand Rapids, at $30,000 more. The buildings and equipment of the department of agriculture are valued at over $400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated $350,000 for the erection of a "Main Building," of which $200,000 is available in 1906, and $150,000 will be available in 1907: this amount will be supplemented by $60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of $410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

The Legislature of 1903 appropriated the sum of $100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100 feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least $125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medical Department of the University.

The Hon. Thomas H. Shevlin has donated to the University $60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this

building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to $1,400,000. The annual interest on these bonds is at present about $53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of $15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of $25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts	$53,000.00	
U. S. Government, Hatch Bill appropriation	15,000.00	
U. S. Government, Morrill Bill appropriation	25,000.00	
Total from the Government		$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of $846,000,000, which will give about	$194,000.00	
A flat appropriation called a deficiency appro. of	60,000.00	
An appropriation for support of School of Mines	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		$263,500.00

Amount received from Student's fees	$126,000.00	
Dental Infirmary receipts	12,000.00	
Station & School, sales and fees	14,000.00	
Miscellaneous Receipts, University	2,000.00	
Total from University		$154,000.00
Total estimated current expense receipts for 1906		$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*

2 *College Libraries,* including those in Law, Medicine, Engineering, Agriculture.

3. *Departmental Libraries,* including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, Histology and Embryology, History, Mathematics, Military Science, Pathology and Bacteriology, Pedagogy, Physics, Physiology, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 15,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D, who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy:* All the material collected by the State Zoölogist, a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English:* A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design..

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum*: This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics*: This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3840 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean,* 35, men; *Forum,* 30, men; *Minerva,* 30, women; *Law Literary,* unlimited, law students; *Castalian,* 35, men; *Theta Epsilon,* 30, women; *Thalian,* 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of the board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, $4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of $5,000, amounting to $250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of $100, $50 and $25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of $25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of $75 for the members of

the team winning the inter-sophomore debate, and another prize of $25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE

Mrs. Heffelfinger continues the prize of $100, established by her father, the late Frank H. Peavey. This prize consists of $75 for the members of the team winning the freshman-sophomore debate, and another prize of $25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of fifty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of $200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers $75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of $3,000, which will yield an annual income of about $175. A prize of $100 will be given

to the winner of the first place, $50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of $500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

General Information

THE ONE-MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

MILITARY DRILL.

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in Military Science and Tactics at all institutions that are its beneficiaries. The Armory is located on the University campus and has all the facilities usually provided in a modern Armory. The United States Government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

EXPENSES OF STUDENTS.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from $217.00 to $397.00. The same students earning sums varying from $237.00 to $272.00. The young women reported expenses varying from $150.00 to $355.00. These figures do not include fees, and, as the cost of living has increased decidedly, probably 25 per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortablly nor to have as many privileges as these students had.

Board can be had at prices ranging from $2.10 to as high as the student

can afford to pay. In private families board ranges from $3.00 to $5.00.

Furnished rooms vary in price from $8 to $20 per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the young men's or young women's Christian association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their own way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

The College of Homeopathic Medicine and Surgery sets forth as its peculiar advantages:

First—That it is an integral part of a great university, fully equipped for carrying out of its work by the munificence of the state.

Second—That its students partake of all the privileges accruing from living in a university atmosphere which draws to itself the leaders of thought in all branches of science and literature.

Third—That the libraries not only of the Medical Department but of the entire university and the cities of Minneapolis and St. Paul are open to those investigating any line of thought.

Fourth—That the arrangement of work and division of classes is such as to give each student the greatest amount of individual practical work under trained instructors.

Fifth—The state of Minnesota shows its loyalty to the university by a constant demand for the graduates and the dean has each year requests for physicians to locate in various parts of the state.

The Department of Medicine

The Department of Medicine includes the following named colleges:
The College of Medicine and Surgery.
The College of Homeopathic Medicine and Surgery.
The College of Dentistry.
The College of Pharmacy.

Each college is distinct in the government of its internal affairs, has its own faculty and an independent curriculum, save in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in the various courses, are pursued by all students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in six buildings, five of which are situated upon the University Campus, viz: Medical hall, the Medical Science building, the Laboratory of Chemistry, the Laboratory of Anatomy and the Institute of Public Health and Pathology. In addition, two more buildings, a University Hospital and a building for Operative Surgery, are provided for and will be erected.

Medical hall contains the offices of the dean and secretary of the college of medicine and surgery, and of the deans of the college of homeopathic medicine and surgery and of the college of dentistry; a large amphitheatre and lecture rooms for the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

The Medical Science building is a large three-story and basement building, 75 x 150 ft., especially designed for laboratory uses. The south wing of the building is occupied by the college of pharmacy and the department of physiology. It contains the office and private laboratory of the dean of the college of pharmacy, the pharmaceutical and botanical larboratories, the laboratory of organic chemistry, with preparation and stock rooms. A large lecture amphitheatre, especially arranged for demonstrative work in physiology, the laboratories of experimental physiology and of physiologic chemistry, the offices, library and recitation rooms of this department are also situated in this wing. Upon the basement floor are laboratory stock

rooms, work shop, and the animal rooms devoted to physiologic purposes.

The north wing and center are occupied by the department of Histology and Embryology. Each of these branches has its large, well-lighted laboratories, preparation rooms and private study rooms for research. In addition there are lecture and recitation rooms, smaller laboratories for micro-technique and neurology; animal rooms and operating rooms for experimental work; rooms for photography and photomicrography, for reconstruction work and the making of models and charts; chemical laboratory, departmental library, a vault for the storage of the very valuable collection of series of embryos and sets of histological slides; store rooms and the offices of the professors and assistants.

The Laboratory of Medical Chemistry is a one-story brick building, devoted entirely to the use of this department. It is equipped with amphitheatre, laboratories, preparation rooms, store rooms, and private offices of the professor and assistants.

The Laboratory of Anatomy is a new two-story and basement building, 35 x 60 feet. In the basement are the morgue, injecting room, cold storage vaults, and engine and apparatus for the carbon dioxide freezing plant. On the first floor there is an amphitheatre seating one hundred and seventy-five students, the privates offices of the professors and instructors, a private dissecting room and a smalll laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

The Institute of Public Health and Pathology, now almost completed, will be ready for occupancy for the year 1906-07.

The building, which is 213 feet over all and 100 feet deep in the central portion, consists of a central main portion 60 by 100 feet, with north and south wings each 56 by 75 feet.

In the south wing are housed the State Board of Health laboratories, which are connected by an underground passage with the adjacent Laboratory of Animal Research of the Minnesota State Board of Health. This wing also contains a suite of rooms for a Pasteur Institute in which the special treatment of and research in rabies will be carried on. Diagnostic laboratories are provided for the bacteriological, chemical and pathological work of the State Board of Health, workshops for the repair and making of special apparatus, unpacking, storage, shipping, washing and media rooms are also available. Research laboratories and the offices and special laboratories of the professional members of the staff are here provided together with vaults for records and offices for the clerical staff.

The central portion and north wing provide for teaching and research work in the University Departments of Pathology, Bacteriology and Public Health. The central portion of the building is 100 by 60 feet, being three stories in front and four stories in the rear, where three of the stor-

ies are devoted to museum and library purposes. Here special books and periodicals are provided and interesting pathological and bacteriological specimens and materials, apparatus, methods of construction and other illustrative features of public health are on exhibition. On the first floor is a preparation room for the museum and lecture room, beneath the museum and adjacent to the lecture and autopsy room. Six special laboratories and offices are provided for the Professor of Surgical Pathology, Assistant Professor of Pathology, Demonstrator of Pathology and Bacteriology and the Assistant Director of the State Board of Health Laboratory. The remainder of the central portion is occupied by the lecture and autopsy amphitheatre, special research laboratories, photographic laboratories and a cold storage plant.

In the north wing the main teaching laboratory occupies the full floor space of 75 by 56 feet. It is lighted on three sides and by a skylight and is divided by low partitions into twelve loges, each intended for the use of a group of students. Each loge is fully equipped with all apparatus and supplies which the students may need in the practical work of pathology, bacteriology or public health, so as to render each group independent. A coat room and a room for the distribution of supplies open off the main laboratory. Beneath this is a similar students' research laboratory containing six loges which are to be used for the teaching of such special courses as Pathology of Tumors, Neuro-Pathology, practical Public Health laboratory work, etc. Opening off this is a special laboratory for the teacher in charge, for the issuing of supplies and also a coat room. Other special laboratories, including rooms for the preparation and storage of media and the storage of stock cultures of bacteria, and living quarters for the janitor are also in this wing.

A University Hospital upon the Campus has been provided for through a bequest by the widow of the late Dr. A. F. Elliott; this money, amounting to over $125,000.00 will be used in the construction of a large, thoroughly equipped hospital designed with especial reference to teaching purposes.

The last Legislature provided for a building adjacent to the Medical quadrangle which when completed will give fine accommodation for operative surgery, pharmacology, an animal hospital and for the storage and breeding of animals.

The University Clinical Building is situated in a part of the city most favorable to the development of an out-door service and, at the same time, accessible to the students. It is of two stories and covers 40x150 feet. It affords ample floor space for amphitheatres, waiting rooms, dispensary and class rooms for each of the clinical branches. Wards and laboratories, in which section work in medical and surgical diagnosis can be conducted, have been equipped.

The Department of Medicine is in intimate relationship, through its sev-

eral faculties, with the numerous hospitals, infirmaries and dispensaries of the cities of Minneapolis and St. Paul. Through these agencies it utilizes, for the benefit of its students, the clinical material of these two large cities with a population of 500,000 people. The location of the University between two interurban car lines enhances the value and convenience of these clinical opportunities.

A medical library, containing 4,000 volumes and supplied with current periodicals, is open to all the students of the department. The collection has been chosen with special regard to the need for reference work and collateral reading. The general library of the University and the public and medical libraries of Minneapolis and St. Paul are also open to the students of this department.

Calendar, College of Homeopathic Medicine and Surgery

FIRST SEMESTER.

SEPTEMBER	13	Th.	Entrance and condition examinations. Registration.	
	14	F.	Entrance and condition examinations. Registration.	
	15	S.	Entrance and condition examinations. Registration.	
	17	M.	Registration and classification of students. Opening lecture, 8:00 P. M.	
	18	T.	Classes called for regular work.	
	22	S.	.....	1 wk.
	29	S.	.....	2 wk.
OCTOBER	6	S.	.....	3 wk.
	13	S.	.....	4 wk.
	20	S.	.....	5 wk.
	27	S.	.....	6 wk.
NOVEMBER	3	S.	.....	7 wk.
	10	S.	.....	8 wk.
	17	S.	First half semester ends.	9 wk.
	19	M.	Second half semester begins.	
	24	S.	.....	10 wk.
	29	Th.	Thanksgiving Day. Recess three days.	
DECEMBER	1	S.	.....	11 wk.
	8	S.	.....	12 wk.
	15	S.	.....	13 wk.
	22	S.	Holiday recess begins. No classes.	14 wk.
JANUARY	8	T.	Work resumed in all classes.	
	12	S.	.....	15 wk.
	19	S.	.....	16 wk.
	26	S.	.....	17 wk.
FEBRUARY	2	S.	End of first semester.	18 wk.

SECOND SEMESTER.

FEBRUARY	5	T.	Second semester begins. Work resumed in all classes.	
	9	S.	.....	1 wk.
	12	T.	Lincoln's Birthday—Holiday.	
	16	S.	.....	2 wk.
	22	F.	Washington's Birthday—Holiday.	
	23	S.	.....	3 wk.
MARCH	2	S.	.....	4 wk.
	9	S.	.....	5 wk.
	16	S.	.....	6 wk.
	23	S.	.....	7 wk.
	30	S.	.....	8 wk.
APRIL	6	S.	First half semester ends.	9 wk.
	13	S.	.....	10 wk.
	20	S.	.....	11 wk.
	27	S.	.....	12 wk.
MAY	4	S.	.....	13 wk.
	11	S.	.....	14 wk.
	18	S.	.....	15 wk.
	25	S.	.....	16 wk.
JUNE	1	S.	.....	17 wk.
	7	F.	Annual Faculty meeting.	
	8	S.	End of second semester.	18 wk.

COMMENCEMENT WEEK, 1907.

Sunday,	June 9	Baccalaureate Service.
Monday,	June 10	Senior Class Exercises.
Tuesday,	June 11	Senior Promenade.
Wednesday,	June 12	Alumni Day.
Thursday,	June 13	Commencement Day—The Eighteenth Annual Commencement.
Friday,	June 14	Summer Vacation begins.

SCHEDULE OF EXAMINATIONS FOR ADVANCED STANDING AND TO REMOVE CONDITIONS.

September 13-15, 1906.

	9:00 a. m.	2:00 p. m.
Thursday, Sept. 13,	I. Year Chemistry II. Year Chemistry	I. Year Histology and Embryology, practical and didactic II. Year Histology and Embryology, practical and didactic.
Friday, Sept. 14,	I. Year Physiology II. Year Physiology	I. Year II. Year General Pathology and Bacteriology, practical and didactic
Saturday, Sept. 15,	I. Year Anatomy II. Year Anatomy	I. Year II. Year Materia Medica

Faculty

CYRUS NORTHROP, LL. D., *President of the University.*

EUGENE L. MANN, A. B., M. D., *Dean of the College.*
694 Endicott Arcade, St. Paul.

MATERIA MEDICA AND THERAPEUTICS.

W. E. LEONARD, A. B., M. D., *Senior Professor.*
Andrus Building, Minneapolis.

ADOLPH W. JOHNSON, *Lecturer on Pharmacy.*

PRACTICE OF MEDICINE.

ASA S. WILCOX, A. B., M. D., *Senior Professor.*
Masonic Temple, Minneapolis.

O. H. HALL, M. D., *Associate Professor, Renal Diseases.*
Pittsburg Building, St. Paul.

D. W. HORNING, A. B., M. D., *Associate Professor, Diseases of Heart and Lungs.*
Pillsbury Building, Minneapolis.

ANNA H. HURD, Phm. D., M. D., *Lecturer, Diseases of Blood and Ductless Glands.*
Pillsbury Building, Minneapolis.

CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS.

H. M. LUFKIN, M. D., *Senior Professor.*
Germania Life Ins. Bldg., St. Paul.

D. W. HORNING, A. B., M. D., *Associate Professor*
Pillsbury Building, Minneapolis.

A. G. PHELPS, M. D., NORMAN M. SMITH, H. O. SKINNER, M. D, *Assistants.*

SURGERY.

R. D. MATCHAN, M. D., *Senior Professor.*
Masonic Temple, Minneapolis.

W. S. BRIGGS, M. D., *Senior Professor, (Clinical.)*
Pittsburg Building, St. Paul.

A. E. COMSTOCK, M. Sc., M. D., *Professor, Regional Surgery.*
N. Y. Life Building, St. Paul.

A. E. BOOTH, M. D., *Professor of Orthopaedia.*
Andrus Building, Minneapolis.

W. B. ROBERTS, A. B., M. D., *Professor of General Surgery.*
Pillsbury Building, Minneapolis.

A. E. AHRENS, M. D., *Assistant.*

OBSTETRICS.

B. H. OGDEN, A. B., M. D., *Senior Professor.*
Ernst Building, St. Paul.

HUGH J. TUNSTEAD, M. D., *Associate Professor.*
829 16th Ave. N., Minneapolis.

GYNAECOLOGY.

R. R. ROME, M. D., *Senior Professor.*
Andrus Building, Minneapolis.

E. E. AUSTIN, M. D., *Professor.*
Andrus Building, Minneapolis.

F. G. COBB, M. D., *Assistant.*

MENTAL AND NERVOUS DISEASES AND MEDICAL JURISPRUDENCE.

OPHTHALMOLOGY.

H. H. LEAVITT, M. D., *Professor.*
Pillsbury Building, Minneapolis.

OTOLOGY-RHINOLOGY AND LARYNGOLOGY.

EUGENE L. MANN, A. B., M. D., *Professor.*
Endicott Arcade, St. Paul.

L. D. SHIPMAN, M. D., *Clinical Professor.*
Medical Building, Minneapolis.

SKIN AND GENITO-URINARY DISEASES.

C. H. NEILL, M. D., *Professor.*
Medical Building, Minneapolis.

PAEDOLOGY.

GEO. B. HAMLIN, M. D., *Professor.*
506 Masonic Temple, Minneapolis.

ELECTRO-THERAPEUTICS.

ETHEL S. HURD, M. D., *Lecturer.*
Pillsbury Building, Minneapolis.

ANATOMY.

C. A. ERDMANN, M. D., *Professor.*
Pillsbury Building, Minneapolis.

PHYSIOLOGY.

R. O. BEARD, M. D., *Professor.*
Pillsbury Building, Minneapolis.

HISTOLOGY AND EMBRYOLOGY.

T. G. LEE, B. S., M. D., *Professor.*
The University.

PATHOLOGY AND BACTERIOLOGY.

F. F. WESBROOK, M. A., M. D., C. M., *Professor.*
The University.

CHEMISTRY.

H. C. CAREL, B. S., *Professor.*
The University.

Announcement

The College of Homeopathic Medicine and Surgery offers special advantages to students seeking a medical education. Through the generosity of the state, an equipment of buildings, laboratories and apparatus is provided, equal to that of the best medical schools in this country or Europe. With this equipment it is possible to lay that broad foundation for a medical education without which no physician can hope for the highest success. An institution deficient in the requirements for teaching the fundamental branches of medical practice cannot long maintain the confidence of the medical profession. Homeopathy, as an expanding science, draws toward itself as a part of its rightful possession, every addition to medical knowledge that can be of any service in the cure of the sick. The homeopathic physician should feel that he is "heir of all ages" in medical learning, having that catholicity of training which places at his command every known resource, including as his especial advantage, the added power of coping with disease, that comes from his knowledge of the science of homeopathy.

The breadth of view of this result is provided in the college of homeopathic medicine and surgery in a real university course, botany, chemistry (organic and inorganic), histology, embryology, bacteriology, pathology, anatomy, physiology, hygiene and sanitary science, with all the accessories of laboratory work; second, in building upon this foundation a comprehensive knowledge of therapeutics, practice and surgery. The student has daily training in both the practical and theoretical aspects of medicine. In the first two years the practical training is provided in constant individual work in the laboratories of dissecting rooms; in the last two is a broad field of clinical study and observation, in both medical and surgical cases, which the nearly one-half million population of the Twin Cities abundantly supplies. The theoretical work is carried on in daily didactic lectures and text-book study throughout the entire course.

Special emphasis is placed upon the clinical instruction in both dispensary and hospital practice. Senior students have the opportunity to attend out-door patients, assist in special and general operations, and to attend obstetrical cases during the last course of lectures.

The college alumni now in practice are evidence of the character of its work. The loyal support of the profession throughout the northwest has encouraged and upheld the faculty in giving form to this new phase of the work.

The college proposes to stand for a broad, catholic, scientific and therefore, homeopathic education in medicine and surgery.

Rules and Regulations of the College

COLLEGE YEAR.

The nineteenth annual course of study in this college will begin on September 13, 1906, and will continue nine months, closing upon Saturday, June 8, 1907.

The college year is divided into semesters; the first semester ending February 3, 1907. The last week is devoted mainly to mid-year examinations, which will be conducted in many of the departments. The second semester will begin February 5, 1907, and will close June 8, 1907. Many of the courses of study occupy the half semesters which terminate on November 17th, and April 6th. Commencement exercises will occur in common with the other departments of the University, during the week ending June 14, 1907.

ENROLLMENT.

Students are urged to matriculate on or before September 13, 1906. Entrance and condition examinations will be held September 13 to 15. Opening lecture, September 17. Classes called for regular work, September 18.

Students will be assigned seats in order of and at the time of their matriculation. Such matriculation and assignment of seats will be had in the office of the registrar of the University.

Students, having matriculated, will present tuition receipts and entrance credentials to the dean and secretary of the college of homeopathic medicine and surgery, who will pass upon their preliminary qualifications. If such credentials prove unsatisfactory they will be required to take the necessary entrance examinations before a committee of the college of science, literature and the arts.

Students wishing to take advanced standing will apply to the secretary. Upon admission and classification, students will report to the professors in charge of their respective studies.

REQUIREMENTS FOR ADMISSION.

Candidates for admission to the College of Homeopathic Medicine and surgery for the College year 1906-'07 must present evidence of the following:

I. That the candidate has satisfactorily completed at least one year's college work in Arts or Science that is recognized by this University as equivalent to its own requirements.

II. That in addition to the above each candidate must have satisfied all of the requirements for entrance to the College of Science, Literature and the Arts of this University. See under General Regulations pp. 88-96

Candidates for admission to College of Homeopathic Medicine and Surgery may be allowed, under certain circumstances, to enter with a condition in their first year's college work, but such condition must be satisfactorily removed before the beginning of the second year.

Beginning with the College year 1907-'08, all candidates for entrance to the College of Homeopathic Medicine and Surgery *must have completed two years' work in the College of Scihnce, Literature and the Aris, or its equivelent.*

EXAMINATIONS—FINAL STANDINGS.

No student with an entrance condition will be allowed to register for any second-year subject, nor will any student with any first-year condition or failure be allowed to register for a third-year subject; nor will any student having a second-year condition or failure be allowed to register for any fourth-year subject.

No student will be allowed to omit any freshman work in order to make up entrance conditions, except by special permission of Department affected.

Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension.

Students will not be permitted to substitute private work in any branch for the regular college course work, excepting in the case of actual laboratory exercises done under the direct supervision of an instructor appointed by the chair and approved by the faculty. Examinations in such private laboratory work will be conducted by the chair. This rule does not apply to conditioned students.

Final examination in every required subject is held at the close of the work at the end of the semester or half semester, according to the extent of the course given. Opportunity is offered to remove conditions at the opening of the school year in September. The examinations at the end of

semester or half semester are only for those who are taking the courses, while the September examinations are only for those who are attempting to remove conditions or are applicants for advanced standing.

The final standing of any student in a given subject shall be determined as the result of his (a) practical work (laboratory or clinical) (b) recitations and (c) oral or (d) written examinations.

All of these factors shall be taken into consideration in making up the final grading in any subject.

Students' standings shall be determined at the end of the year by a conference of the heads of the departments in which the work is pursued during that year.

All standings shall be reported officially to and from the Dean's office at the end of the year.

Students shall be reported as Passed, Incomplete, Conditioned or Failed.

Conditions must be removed at the beginning of the school year in September. No student who has any conditions unremoved at the close of this examination is allowed to continue with his class without the express permission of the Dean on the recommendation of the Departments concerned.

A condition not made up before the subject is offered again becomes a failure subject to the rule governing failures.

Failures must be taken over again in class.

A student taking work over again (by reason of having "failed") must pay the fees connected with that course.

A student who is conditioned in the majority of the subjects given in any year will become a failed student and must repeat the work of that year.

Students who carry conditions into a succeeding year may find a resultant conflict of study hours. In that event they will give preference to the unfinished studies of the lower conflicting course.

ADVANCED STANDING.

All persons applying for advanced standing must present satisfactory evidence of time spent in medical studies, must pass examinations in the branches already taken by the class they seek to enter and satisfy all other admission requirements, but any student who has satisfactorily completed the requirements of any department of this College in any other school of recognized standing may be excused from repeating such examinations if the instruction which he has received is considered satisfactory by the head of the corresponding department in this College.

No condition of advanced standing will entitle the student to take the two years of any graded study coincidently.

Seniors in the college of science, literature and the arts, or in other

recognized colleges, who contemplate entering the department of medicine, are permitted to elect courses in anatomy, histology and embryology, physiology and chemistry in this department in lieu of similar science courses in the college of science, literature and the arts or in the other colleges.

No student may be advanced with his class or given advanced standing unless he has passed the majority of the required examinations in the studies of the previous year; nor shall any student be admitted to the second semester's work of the fourth year who has any unremoved conditions of any of the preceding years, but an opportunity to remove such conditions shall be given to fourth-year students at the close of the first semester.

TERMS OF TUITION.

The annual fee in the College of Homeopathic Medicine and Surgery is $100. This includes all charges for matriculation, lecture and laboratory courses, dissections and graduation, excepting a $3.00 Hospital fee to Juniors and Seniors and a rental fee for microscopes;* payable by all students who do not own their own instrument.

One-half of the annual fee will be payable when the student matriculates. The accountant's receipt for this portion of the fee will entitle the holder to take the entrance examinations and to classify. The second half will be payable at the opening of the second semester, February 5, 1907. Failure to register within the dates assigned for registration will subject the delinquent to an increase in the registration fee, amounting to twenty-five cents for each day of such delinquency. If the applicant fails to pass the entrance examination, his fees will be returned by the accountant. Absence or failure to continue study will not entitle the student to return of fees, excepting in cases of special hardship, when application may be made to the executive committee of the Board of Regents.

A student who takes advanced standing will not receive any credit therefor upon his annual fees.

Students who are conditioned and fail to remove their conditions within one year shall be charged an extra examination fee.

Senior conditioned students who re-enter for work in any succeeding year will be charged a matriculation fee of ten dollars.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

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*In each semester a fee of $1.00 to $5.00 will be charged for the rental of a microscope in the courses in which its use is required, provided the student is not supplied with a satisfactory instrument of his own. It is an advantage for the student to possess a microscope.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

A deposit of five dollars will be made with the accountant each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, which are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

SPECIAL STUDENTS.

Special students will pay to the accountant a fee of twenty dollars per year for each study they elect to pursue. They will be charged additional fees, varying from five to twenty dollars, for each laboratory course they may enter.

Graduate students will pay an admission fee of ten dollars which will entitle them to attend any lectures they may desire in regular courses.

CURRICULUM.

The course in the college of homeopathic medicine and surgery leads to the degree of doctor of medicine. It covers a four years course of collegiate study, each year representing nine months in actual residence.

The studies are graded, so far as practicable, throughout the four years and this grading is arranged with careful reference to the relation which the subjects naturally bear to each other.

The work of the first two years deals with the so-called scientific or laboratory branches; while that of the last two years includes the principles and practice of medicine and surgery, their associated specialities and the application of scientific or laboratory methods to clinical experience.

Course of Study

FIRST YEAR.

History and methodology of medicine.
Medical terminology.
Medical botany.
Inorganic chemistry—laboratory.
Anatomy—bones, muscles and joints.
Physiology.
Homeopathic pharmacy.

SECOND YEAR.

Materia medica—experimental.
Organic chemistry—toxicology and urinalysis.
Histology and embryology—laboratory.
Anatomy, dissection.
Physiology—chemical and experimental.
Surgical emergencies and bandaging.
Bacteriology.
General pathology.

THIRD YEAR.

Surgical anatomy.
Materia medica and therapeutics.
Practice of medicine, organan and institutes of medicine.
Clinical medicine and physical diagnosis.
Obstetrics.
Principles and practice of surgery.
Diseases of women.
Ophthalmology.
Nose, throat and ear.
Medical jurisprudence.
Clinics, medical and surgical.
Special pathology.

FOURTH YEAR.

Surgical pathology.
Materia medica and therapeutics.
Practice of medicine.
Clinical medicine.
Mental and nervous diseases.
Dermatology and genito-urinary diseases.
Obstetrics.
Clinical obstetrics.
Principles and practice of surgery.
Ophthalmology.
Diseases of women—didactic and practical.
Orthopædic clinical surgery.
Pædology.
Electro therapeutics.
Life insurance examination.
Clinics, medical and surgical.

SIX YEARS' COURSE.

In the year 1903-4, the University established a six years' course of study, arranged especially for students of medicine. This course is conducted in the colleges of science, literature and the arts, and of homeopathic medicine and surgery. It leads to the degree of bachelor of science at the end of the first four years and to the degree of doctor of medicine at the end of the six years' course. The work of the first two years is adapted to the needs of the student of medicine and all who expect to take the professional degree are urged to enter this course.

FIRST YEAR.

1. **German.*
2. *Botany.*
3. *Chemistry.*
4. *Zoology.*
5. *Higher Algebra and Plane Trigonometry.*

SECOND YEAR.

1. *Rhetoric.*
2. *German or French.*
3. *Chemistry.*
4. *Comparative Anatomy of Vertebrates.*
5. *Physics,* (special course.)

THIRD YEAR.

1. *Human Anatomy,* as outlined in Courses I, II, III and IV, department of anatomy, college of homeopathic medicine and surgery.
2. *Histology and Embryology,* as outlined in Courses IV and V, department of histology and embryology, college of homeopathic medicine and surgery.
3. *Medical Chemistry,* including organic chemistry, toxicology, urinalysis and sanitary chemistry, etc.
4. *Physiology,* as outlined in Courses I and II, department of physiology, college of homeopathic medicine and surgery.
5. *Materia Medica,* as outlined in present courses in the college of homeopathic medicine and surgery.
6. *Pharmacy.*
7. *History and Methodology of Medicine.*

FOURTH YEAR.

1. *Human Anatomy,* as outlined in Courses V and VI, department of anatomy, college of homeopathic medicine and surgery.
2. *Histology and Embryology,* as outlined in Courses III and IV, department of histology and embroyology, college of homeopathic medicine and surgery.
3. *Medical Chemistry,* courses continued as outlined in third year.
4. *Physiology,* as outlined in Courses III, IV and V, department of physiology, college of homeopathic medicine and surgery.
5. *Therapeutics,* as outlined in present courses in the college of homeopathic medicine and surgery.
6. *Bacteriology, and General Pathology,* as outlined in Courses I and II, department of pathology and bacteriology, college of homeopathic medicine and surgery.
7. *Materia Medica.*
8. *Surgery and Bandaging.*

FIFTH AND SIXTH YEARS.

The work of the fifth and sixth years will be essentially the same as is given in the third and fourth years in the college of homeopathic medicine and surgery.

*Note—Students who enter with two years of German may elect French in its stead in the first or second years.

Courses of Instruction-Six-Year Medical Course

ANIMAL BIOLOGY.

Course I. General Zoology. [3] First year, both semesters. *Professors Sigerfoos and Oestlund and Assistants.*

Lectures, quizzes and laboratory work. Text-book required,—Hertwig's Manual of Zoology.

This course is a comprehensive study of the principles of structure, physiology and development in animals. In the laboratory a brief study of insects and the dissection of the frog are used as a practical introduction to the course. Then follow a study of cell structure and cell division; a systematic study of representatives of the chief phyla or branches of the animal kingdom; and a study of the elements of embryology as illustrated by the development of the starfish and chick.

Course VI. Comparative Anatomy of Vertebrates. [3] Second year, both semesters. *Mr. Brown.*

Lectures, quizzes and laboratory work. The first semester's work is based upon a study of the chordates, cartilaginous and bony fishes and all classes up to the Mammalia.

Laboratory and reference books:

Parker's Zootomy; Parker's and Haswell's Zoology, Vol. 2; Wiedersheim's Comparative Anatomy; Willey's Amphioxus and the Ancestry of the Vertebrates; Gagenbaur—Bell's Comparative Anatomy of Vertebrates.

The second semester is given to a detailed study of the Cat and comparative studies of the Rabbit, Sheep and Man. The laboratory and reference books for the second semester are Davison's Mammalian Anatomy; Jayne's Mammalian Anatomy; Reighard and Jennings' Anatomy of the Cat.

BOTANY.

Course I. General Botany. [3] First year, both semesters. *Dr. Lyon.*

This course comprises a general survey of the plant kingdom with laboratory work on the cell, on algae, lichens, fungi, mosses, ferns, gymno-sperms and flowering plants. Lectures and laboratory. Open to all.

CHEMISTRY.

Course I. Inorganic Chemistry. [3]. First year, first semester. *Professor Frankforter, Mr. West and Mr. Badger.*

This course is arranged for those who have already had an elementary course in chemistry. The course includes an introduction to physical chemistry with special reference to solutions and the electrolytic dissociation theory. This work is followed by a systematic study of the non-metals from the general standpoint of the Periodic law. Special attention is given to the relationship between the different elements and their analogous compounds.

Note:—A course is offered in the College of Science, Literature and the Arts to those who have not had the elementary course.

Course II. Inorganic chemistry. (Continuation of course I.) [3]

First year, second semester. *Professor Frankforter, Mr. West and Mr. Badger.*

This course consists of lectures, recitations and laboratory work on the metals.

Course III. Qualitative Analysis. [3] Second year, first semester.
Asst. Prof. Nicholson, Mr. Anderson and Mr. Wilhoit.

Lectures, recitations and laboratory work. The course includes the general reactions of the metals and the qualitative separation and identification.

Course IV. Qualitative Analysis. [3]. Second year, second semester.
Asst. Prof. Nicholson, Mr. Anderson and Mr. Wilhoit.

Lectures, recitations and laboratory work. Reactions, separations and identification of the acids.

Course V. Organic chemistry. [3] Third year, second semester.
Professor Frankforter and Mr. Newton.

This course includes a study of the different groups of carbon compounds with special reference to those groups which are closely associated with biological processes and Bio-chemistry, bacteriological, pathological chemistry, physiology and materia medica. The course consists of lectures with frequent recitations and laboratory work. The laboratory preparation work included the making and studying of one or more compounds in each important organic group. Some time is devoted to practical organic analysis, including the analytical side of the alcohols and the sugar group.

Course VI. Toxicology and Hygiene. [3] Third year, second semester.
Professors Frankforter and Harding and Mr. Newton.

Toxicology.—This course includes the general methods for the separation and identification of the poisons both organic and inorganic. Attention will be given to the identification of poisons associated with medicines and with vegetable and animal matter. Besides this qualitative and quantitative work, attention is given to the structure of those organic groups of compounds which have poisonous properties.

Hygiene.—Chemistry lectures and laboratory work. This course includes the chemical analysis of air, water and some of the common foods, as milk, sugar and the fruit products. Special at-

FRENCH.

Students who enter with two years of German may elect French instead in the first or second year.

Course I. French beginning. [5] First year, both semesters.
Mr. Frelin, Mme. Bertin, Mr. Melom.

Fraser and Squair's French Grammar and Reader; *modern texts.*

Course II. French, intermediate. [3] Second year, both semesters.
Professor Benton, Mme. Bertin.

Grammar and composition continued; modern texts will be read including selections from Merimee, Daudet and Scribe.

Course III. French conversation. [2] Second year, both semesters.
Professor Benton, Mme. Bertin.

[Note: May be taken with course II.]

GERMAN LANGUAGE AND LITERATURE.

Course I. German, beginning. [5], First year, both semesters.
Professor Schlenker, Assistant Professor Wilkin, Mr. Juergensen and Mr. Burkhard.

Pronunciation, grammar, selections in prose and verse. German conversation and composition (Bernhardt); short stories.

Course II. German, intermediate. [3] Second year, both semesters.
Assistant Professor Wilkin, Mr. Juergensen, Mr. Burkhard and Mr. Williams.

First semester,—Selections from modern prose, narrative and descriptive; German lyrics and ballads. Second semester, A drama of Lessing, Goethe or Schiller. Open to students who have completed course I.

Course III. Scientific prose, intermediate. [3] Second year, both semesters.
Mr. Juergensen.

First semester,—Hodge's German Science Reader (or equivalent).
Second semester,—Brandt and Day's German Scientific Reading.
This course aims to give the student a reading knowledge of German for the use of the language in his scientific studies. Open to students who have completed course I.
[Note: students must take either II. or III.]

Course IV. Classic prose and poetry. [3] First year, both semesters.
Professor Moore, Assistant Professor Wilkin, Mr. Burkhard and Mr. Williams.

First semester,—Schiller's Historische Skizzen or Heine's Harzreise; Spanhoofd's Deutsche Grammatik.
Second semester,—Goethe's Prosa and Gedichte; Deutsche Grammatik completed.
[Note: open to those who have had two years High School German].

Course V. Conversation and composition. [2] Second year, both semesters.
Assistant Professor Wilkin, Mr. Juergensen and Mr. Williams.

Translation into German of short English selections: conversation on topics of every day life; narrative and descriptive essays, and letters in German.
[Note: this course may be taken with either II. or III.]

Course VI. The drama. [3] Second year, both semesters.
Professor Schlenker, Assistant Professor Wilkin, Mr. Juergensen and Mr. Burkhard.

First semester,—Modern drama. Sudermann's Johannes, and Hebbel's Herodes und Mariamne. Study of the present day drama in Germany. Assigned readings and reports; occasional lectures on related subjects.
Second semester,—Classic drama. Lessing's Nathan der Weise and Goethe's Egmont. Study of dramatic structure; history of the drama in the 18th century. Open to students who have completed either course II., III. or IV.

Course VII. Advanced scientific reading. [3] Second year, both semesters.
Mr. Juergensen.

Reading of monographs and periodicals.
[Note: students must take course VI. or VII. during second year].

Course VIII. Advanced composition and conversation. [2]
Second year, both semesters.
Professor Schlenker and Assistant Professor Wilkin.

Translation into German of longer selections from good English authors; original essays in German on assigned themes; oral debates; oral reports in German on collateral readings in German and English authors.
[Note: this course may be taken with either VI. or VII.]

MATHEMATICS.

Course III. Higher algebra. [3] First year, first semester.
Assistant Professor Bauer, Dr. Manchester, Mr. Dalaker and Mr. Shumway.

Variation, quadratic equations, special higher equations, simultaneous equations of the second degree, maxima and minima of algebraic functions, differentiation of algebraic functions, development of functions, logarithms, theory of equations and solution of numerical higher equations.

Course IV. Trigonometry. [3] First year, second semester.
Assistant Professor Bauer, Dr. Manchester, Mr. Dalaker and Mr. Shumway.

Text, tables and numerous applications.

PHYSICS.

Course I. Physics. [6] Second year, both semesters.
Professor Jones and Assistants.

Mechanics, properties of matter, heat, sound, experimental lec-

tures, recitations and laboratory work. Open to those who have completed the higher algebra and trigonometry courses III. and IV. in mathematics.

RHETORIC.

Course I. Rhetoric. [3] *Professor Sanford.* Second year, both semesters. This course includes the study of formal rhetoric, the writing of compositions, and the study and analysis of masterpieces of prose. Specially adapted to the need of medical students.

PHYSICAL CULTURE.

DRS. COOKE AND LITZENBERG.

A well equipped gymnasium in charge of a professional medical director is open for the young men. The training and exercise is under the immediate oversight and authority of the medical director and is wholly with a view to the healthful physical development of the whole student body.

All young men are required to be examined by the medical director of physical culture upon registration and during the course as often as the indications of the physical condition may require.

The decision of the director will be either:

1. Advisory, indicating what course of hygiene and exercise will best sustain and improve the health of the student, or
2. Mandatory, requiring the students to pursue the course of hygiene and physical exercise necessary for the proper care of health and the discharge of their duties as students.

Gymnasium work is required of all men in the freshman class, one hour per week (in two half-hour periods if the director so decides) throughout the year. The required work includes a course of lectures on personal hygiene, during the first term.

MILITARY SCIENCE AND TACTICS.

CAPTAIN EDWARD SIGERFOOS Ph. B., 5th U. S. INFANTRY.

For the instruction in military drill and administration the students are organized into a corps of cadets, consisting of three battalions of infantry, and a platoon of artillery.

A uniform of prescribed pattern is worn by all cadets during drill.

The uniform consists of blouse, trousers, vest and cap, modelled after the U. S. Military Academy cadet uniform, and costs in Minneapolis about $15, and is as neat and economical dress as the student can obtain.

Drill is required of all men in the freshman and sophomore classes.

In view of the fact that, beginning with September, 1907, the College of homoeopathic Medicine and Surgery will require two years' College work for entrance, it becomes very desirable that students intending to take up Medicine should matriculate in the six-year course upon entering the University and thus secure both degrees.

Students who wish to enter this combined course will receive equivalent credit for College work done elsewhere.

Seven-Years' Course Leading to the Degrees of A. B. and M. D.

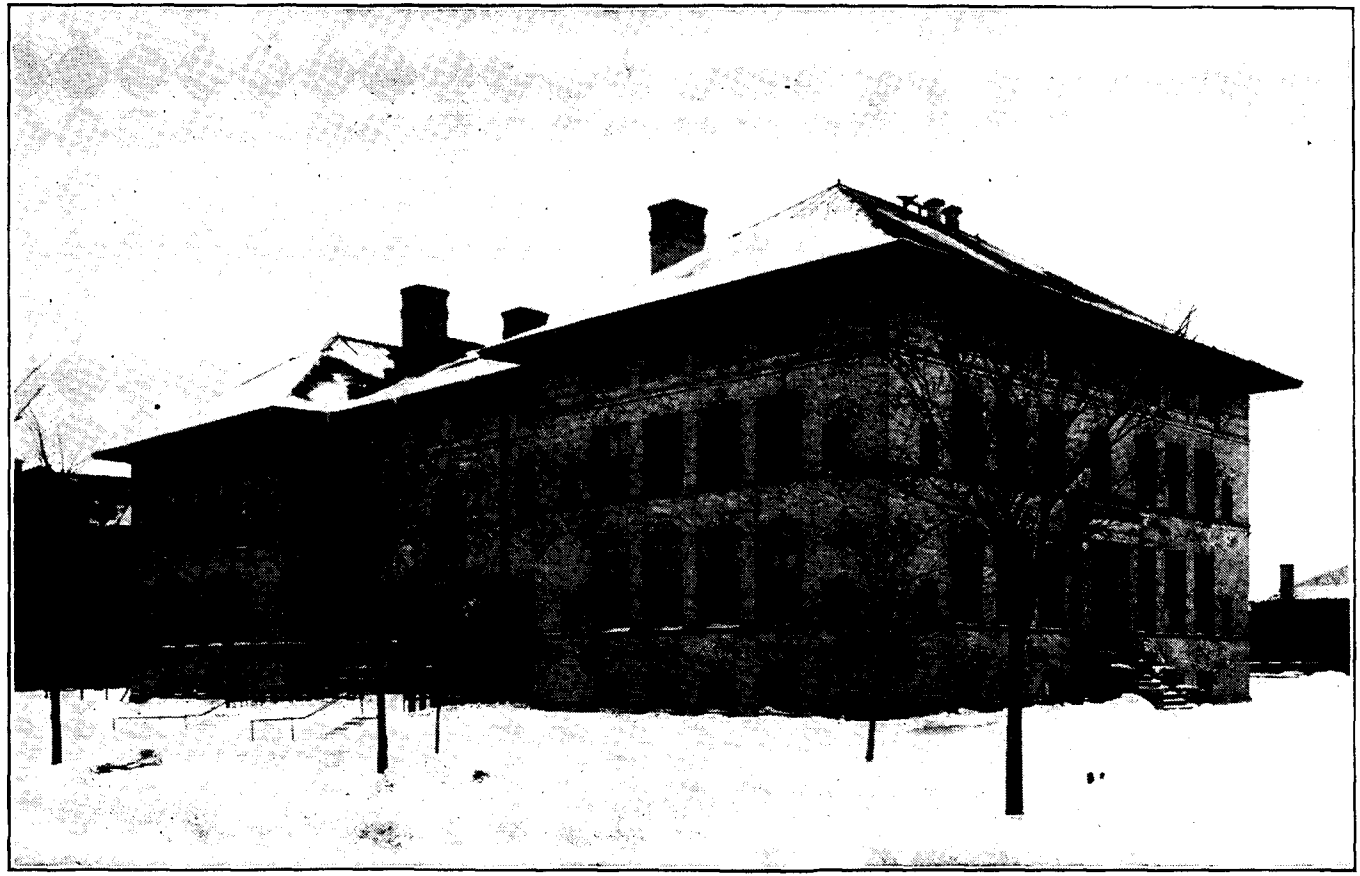
Seniors in the College of Science, Literature and the Arts and in other colleges, who contemplate entering the College of Medicine and Surgery, are permitted to elect courses in Anatomy, Histology and Embryology, Physiology and Chemistry in this college in lieu of similar science courses in the College of Science, Literature and the Arts or in other colleges. Since the medical practice act of this state requires full four years of medical study, these students must elect this work in the College of Medicine and Surgery, in order that it may be contributive toward the two degrees given in both colleges.

AFFILIATION WITH OTHER COLLEGES.

Carleton College has entered into an arrangement with the University of Minnesota whereby students from Carleton who have completed three full years' work without conditions and who have also met all the requirements for admission to the College of Medicine and Surgery may elect as the work of their Senior year the first year's work in the College of Medicine and Surgery, upon the satisfactory completion of which they will receive a bachelor's degree from Carleton College.

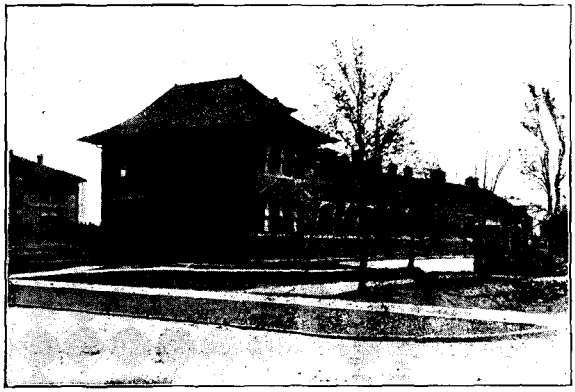
By this arrangement students from this college, having satisfactorily completed their four years' work in the College of Medicine and Surgery, will have received both degrees in a period of seven years.

Opportunity is offered to other colleges meeting the University requirements to enter into similar relations of affiliation for the purpose of shortening the time whereby a student can secure both degrees.



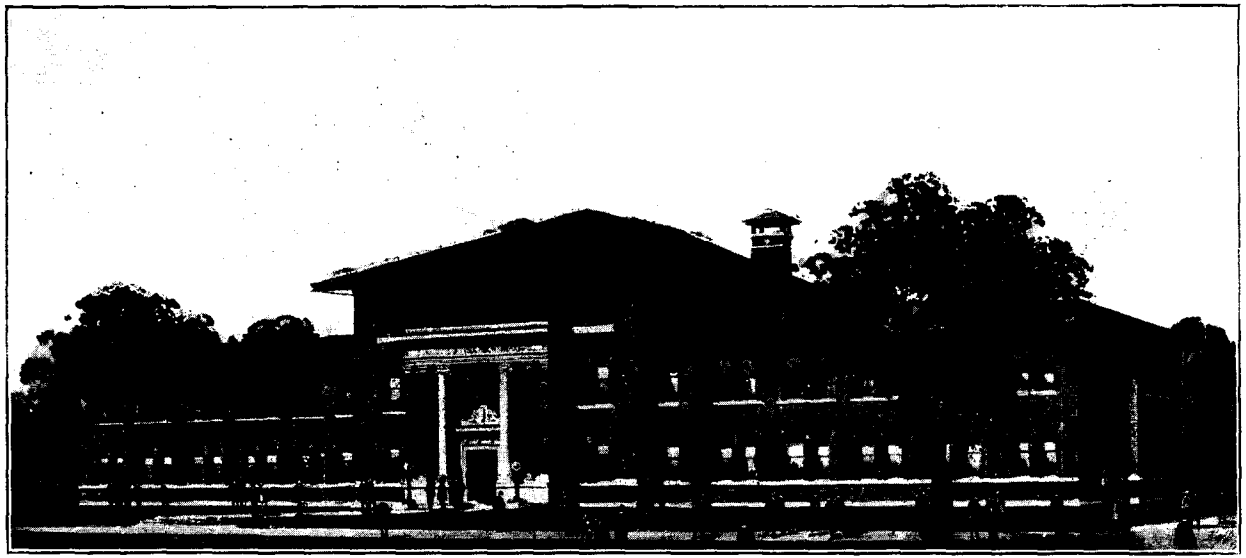
Laboratory of Histology and Embryology — MEDICAL SCIENCE BUILDING — Laboratory of Physiology

ANATOMY BUILDING



CHEMICAL LABORATORY

BOARD OF HEALTH BUILDING



INSTITUTE OF PUBLIC HEALTH AND PATHOLOGY

Courses of Instruction

DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY.

OFFICERS OF INSTRUCTION.

THOMAS GEORGE LEE, B. S., M. D., *Professor Histology and Embryology.*
WINFIELD S. NICKERSON, Sc. D., M. D., *Assistant Professor of Histology.*
MARGARET L. NICKERSON, A. M., M. D., *Instructor in Histology.*
ERNEST V. SMITH, *Assistant in Histology.*
JARL FERDINAND LEMSTROM, Ph. K., *Assistant in Micro-Technique.*
AMOS S. WELLS, A. B., D. D. S., *Assistant in Dental Histology.*
FREDERICK HAROLD POPPE, B. A., *Assistant in Dental Histology.*
Departmental Laboratory Assistants: Henry Theodore Foshager, B. S., Martin Oyen, Mathias Sundt, B. A., Charles Stewart Sutton, B. A.

This department occupies the entire north wing and center of the Medical Science Building, and includes two general laboratories, each 44 x 72 feet, which are finely lighted by windows on three sides and part of the fourth. These laboratories provide for the general courses in histology, microscopic anatomy, neurology, embryology, micro-technique. Each student is provided with a sink, gas, electric light, copper heating table, microscope locker and microscope, and a locker for the storage of apparatus and material. Several smaller laboratories are provided for special, elective and other courses; in addition there are preparation rooms, store rooms, animal rooms, rooms for experimental work in histology and embryology, for reconstruction, chemical, photographic and photomicrographic work.

A departmental library which contains a carefully selected collection of reference literature, both standard and periodical. In addition to the laboratory library, the other libraries of the University, together with the Public libraries of Minneapolis and St. Paul, afford the students access to almost all the important literature relating to the work in this department.

These laboratories are equipped with Leitz' microscopes, each fitted with nose-piece and Abbe condenser; various forms of microtomes, such as freezing, Thoma, Minot, Schauze, etc., injection apparatus, aquaria, thermostats, incubators, water baths, chemical hoods, a great variety of technical glassware. Grubler's stains, a set of His' wax models, photomicrographic and reconstruction apparatus, charts, reference cabinets containing carefully selected slides, a large collection of hardened histological and embryological material with an abundant supply of fresh tissues.

The courses are made as practical as possible, beginning with the technique of the microscope, followed by the preparation of permanent specimens. In addition, there is a valuable loan collection of several thousand specially prepared histological slides and a large number of series of mammalian and other embryos, sufficient to provide each student with several complete series of various ages and different planes for study. These collections are being constantly increased and are of sufficient value to have warranted the construction of a fire-proof vault 15x17 feet, for their preservation.

During the two years' course the student will acquire a valuable collection of slides of his own preparation illustrating the structure and development of the human body.

The course is illustrated by charts and lantern-slides of histological and embryological specimens. Demonstrations are given under the microscope of typical sections of tissues and organs, accompanied by camera lucida drawings, or photomicrographs, with explanatory text.

All students are recommended to purchase a microscope at the beginning of their medical course. This instrument is an indispensable part of the outfit of a well-trained physician. Suitable microscopes can be purchased at from $50 to $60, which may be fitted at any time with such other parts as may be desired.

Students not owning microscopes will be furnished with instruments at a rental fee.

Course I. General morphology and histology.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. The course includes the structure and manipulation of the microscope; the structure and properties of the protoplasm; the cell, its structure; cell division and reproduction leading to the consideration of the elements of structure in the vertebrata. A comparative study of the histology of the blood, of the epithelial, connective, muscular and nervous tissues and of the vascular and lymphatic systems of man and the vertebrata. Lectures, etc., 6 hours a week. Laboratory work, 18 hours a week, first half, first semester, first year.

Course II. Elements of vertebrate embryology and histogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. A comparative study of reproduction; the ovum, the spermatozoon, fertilization, cleavage, formation of blastodermic layers, the formation of the embryo, foetal envelopes, etc., with practical work on chick and mammalian frog embryos. The differentiation and histogenesis of the tissues, etc. Lectures, etc., 6 hours a week; laboratory work, 18 hours a week, first semester, first year. Open to those who have completed course I.

Course III. Microscopic anatomy of man and vertebrates.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. Advanced methods of histological technique, with practical laboratory work. The comparative study of the morphology, microscopic anatomy, origin and development of the various organs of the integumentary, alimentary, respiratory and uro-genital systems, etc. Lectures, etc., 6 hours a week; laboratory work, 18 hours a week. First semester, first year. Open to those who have completed course I in histology and embryology.

Course IV. Vertebrate neurology and neurogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
Lectures, recitations, demonstrations and laboratory work. A comparative study of the morphology, microscopic anatomy, origin tention is given to food adulterations, and to food preservations, and development of the central, peripheral and sympathetic nervous systems and the organs of special sense. Lectures, etc., 6 hours a week; laboratory, 18 hours a week. First half, second semester, second year.

Course V. Human embryology and organogenesis.
Professor Lee, Assistant Professor Nickerson and Dr. M. L. Nickerson.
A comparative study of human mammalian embryos, including impregnation, segementation, and implantation of the ovum; the formation, structure and relationships of the placenta and foetal envelopes; the details of organogenesis, etc., studied in a practical manner upon a very large collection of serial sections of human and mammalian embryos, cut in various planes and representing all phases of development. Lectures, etc., 6 hours a week, laboratory, 18 hours a week. First half, second semester, second year.

Course VI. Dental histology and embryology.
Professor Lee, Drs. M. L. Nickerson and A. S. Wells.
A course modified from I., III. *and* V. especially arranged for and open only to Dental students. Lectures, recitations and laboratory work; the structure and histogenesis of the tissues and organs; the structure and development of the teeth and jaws, the mouth cavity and glands. Lectures, etc., 6 hours, laboratory 12 hours per week. Second half, first semester, first year.

ELECTIVE AND GRADUATE COURSES.

The following elective courses are open to a limited number of properly qualified third and fourth-year students, and to graduates. These courses will consist of laboratory work, lectures, demonstrations and prescribed courses of reading, and will be made as practical as possible, being planned with special reference to their application to internal medicine, surgery, obstetrics and the specialities.

For dates see schedule and for details of courses consult Professor Lee.

Course VI. Methods of microscopical technique. *Professor Lee.*
The preparation and use of the various solutions employed in fixing, hardening and staining. Methods of embedding, sectioning, reconstruction, etc.

Course VII. Comparative histology and histogenesis of the tissues of man and vertebrates. ***Professor Lee, Assistant Professor Nickerson, Dr. M. L. Nickerson.***
(a) The cell, spermatogenesis and ovogenesis.
(b) The epithelial, connective and muscular tissues.
(c) The nervous tissues.
(d) Blood and lymph.

Course VIII. Microscopic anatomy and organogenesis of man and vertebrates. ***Professor Lee, Assistant Professor Nickerson, Dr. M. L. Nickerson.***
(a) The digestive system.
(b) The respiratory system.
(c) The cutaneous system.
(d) The uro-genital system.

Course IX. Comparative histology and development of central nervous system and special sense organs. *Professor Lee*

Course X. The animal parasites of man. *Assistant Professor Nickerson.*
The general outlines of the morphology and classification of the different groups which contain members parasitic upon man, with special consideration of each species of medical importance, including its distribution, life history, methods of infection, means for diagnosis, and the chief symptoms produced by it. The course is illustrated by the study of many specimens, charts, lantern slides, etc.
Open to third and fourth year students. Second half, second semester.

Course XI. Comparative embryology of man and vertebrates. *Professor Lee.*
A study of special problems in vertebrate development.

Course XII. Research work in histology and embryology ***Professor Lee.***
Every facility in the way of apparatus, material, literature and private rooms for study will be offered those who desire to take up any original investigation in vertebrate histology and embryology, human or comparative.

The following text and reference books should be consulted:

Histology. Wilson's The Cell; Bohm-Davidoff-Huber's Histology; Stohr's Histology; Bailey's Histology; Piersol's Histology; Ferguson's Histology; Szymonowicz-MacCullum's Histology; Sobotta-Huber's Atlas; Klein's Histology; Mann's Histology; Lee's Vade Mecum; Kolliker's Gewebelehre; Oppel's Microskopishchen Anatomie; Duval's Histologie; Ranvier's Histologie.

Embryology. Minot's Human Embryology; Minot's Laboratory text books; Hertwig-Mark's Embryology; McMurrich's Embryology; Heisler's Embryology; Marshall's Embryology; Kolliker's Embryologie; Schultze's Embryologie; Kollman's Embryologie; Schenk's Embryologie; Reese's Embryology.

Neurology. Barker's Nervous System; Edinger's Vorlesungen; Lectures Nervous System; Gordinier's Nervous System; Van Gehuchten's System Nerveux; Kolliker's Gewebelehre; Obersteiner; Sabin's Atlas.

DEPARTMENT OF ANATOMY.

OFFICERS OF INSTRUCTION.

CHARLES A. ERDMAN, M. D., *Professor of Anatomy.*
HARRY K. READ, M. D., *Demonstrator of Anatomy.*
EARLE H. HARE, M. D., *Prosector of Anatomy.*
C. C. TYRELL, B. A., *Assistant in Anatomy.*
E. E. HEMINWAY, Ph. D., *Assistant in Anatomy.*

ANATOMY.

The department of anatomy occupies a separate building, adapted to its work and equipped with the best modern appliances. It includes two large students' dissecting rooms, the general laboratories of anatomy, a bone laboratory for bone research work, the offices of the professor and demonstrator of anatomy, preparation rooms and morgue. An ample supply of dissecting material is provided.

In the first year the subjects of osteology and syndesmology are pursued by

means of lectures, laboratory demonstrations and recitations from the specimen.

The bones of a human skeleton are loaned to the student for purposes of study and recitation.

Myology, angiology and splanchnology are studied in connection with the dissection and laboratory demonstrations of the thoracic, abdominal and pelvic viscera upon the lower animal. This is followed by the dissection of one-half of the human body.

In the second year the alimentary canal, respiratory tract, genito-urinary system, organs of special sense and the cerebro-spinal nervous system are pursued by means of lectures, recitations and laboratory demonstrations. The dissection of the human body is completed and followed by a series of lectures and demonstrations on descriptive and surgical anatomy.

The student dissects in the first semester of the first year and in the first half of the second semester of the second year, recites upon the subject and observes demonstrations made by a corps of assistants under the direction of the demonstrator of anatomy.

Dissection is supplemented by drawings from dissections, made upon outlines of the human skeleton, which are furnished to the student.

In the third year the student takes up the study of the human body from a topographical and surgical standpoint and is given a thorough review of the surgical regions, emphasizing the practical points in the relations, structure and distribution of the nervous system.

Course I. Osteology.
Lectures and recitations upon the human skeleton and supplementary work on the osteology of domestic mammals; 12 hours each week, for 5 weeks of first semester. Practical study of the skeleton, followed by recitations from the specimen, taken by the class, first semester. Required of all first year students.

Course II. Syndesmology.
Lectures, recitations and laboratory demonstrations, 12 hours each week, for 2 weeks first semester, first year. Open to those who have taken course I.

Course III. Myology and Angiology.
Lectures and recitations, covering the entire muscular and arterial systems of the human body, with a supplementary study of comparative myology. Laboratory work consists in the dissection and identification of the muscles of the human body and the study of their nerve and blood supply, as well as their action.

Course IV. Splanchnology. *Professor Erdmann, Dr. Read and Dr. Hare.*
Lectures and laboratory work in dissecting and demonstrating the thoracic, abdominal and pelvic viscera. First semester of the first year and first half of second semester of the second year.
Recitations upon the subjects of the first year's work, conducted in sections.

Course V. The nervous system. *Professor Erdmann.*
Cerebro-spinal axis and its membranes; the cranial and spinal nerves; the sympathetic nervous system, and the special-sense organs. Lectures, recitations and dissections of the brain, 5 hours each week, for 4 weeks, first half, second semester, second year.

Course VI. Dissections. *Drs. H. K. Read, E. R. Hare and Professor Erdmann.*
This work extends over a period of 9 weeks, in the first semester of the first year, and 9 weeks in the first half of the second semester of the second year, occupying with the lecture course the half days of this period each week. The method of work follows that laid down in Holden's Manual of Dissections.
The second year lecture and dissecting courses are open to those having completed the first year's work in anatomy and histology.
Daily recitations, upon the subjects of the second year's course, conducted in the laboratory.

Course VII. Surgical anatomy. *Professor Erdmann*
The instruction consists of dissections, demonstrating the relations of structures composing the surgical regions of the body; demonstrations, upon the living subject, showing the anatomical and surgical landmarks and their applications; also the location, by surface tracings, of the viscera contained in the various cavities and of the important arteries, veins and nerves; 3 hours a week, second half, second semester. Required of third year students.

Course VIII. Applied anatomy of the nervous system.
Elective.

Opportunity is afforded for advanced work in practical anatomy at any time during the college year.

The following text-books should be consulted:

Anatomy. Cunningham, Morris', Gray, Spalteholtz Atlas, Barker's Laboratory Manual, Holden's Practical Anatomy, Erdmann's Manual of Dissection, Treve's Applied Anatomy, Barker's Anatomy of the Nervous System.

Collateral Readings. Quain's Anatomy, Gerrish's Anatomy. Flower's Osteology of Mammals, Gegenbauer's Elements of Comparative Anatomy; Chauveau's Comparative Anatomy, Wiedersheim's Elements of Comparative Anatomy, McClellan's Regional Anatomy, Deaver's Surgical Anatomy; Edinger's Anatomy of the Nervous System, Hildebrand's Chirurgisch Topographise Anatomie.

DEPARTMENT OF PHYSIOLOGY.

OFFICERS OF INSTRUCTION.

RICHARD OLDING BEARD, M. D., *Professor of Physiology.*

M. RUSSEL WILCOX, M. D., *Demonstrator of Physiology.*

GEORGE D. HAGGARD, M. D., *Instructor in Physiology.*

COURSES OF INSTRUCTION.

The department of physiology occupies rooms in the laboratory of medical sciences, including the laboratory of experimental physiology, the laboratory of physiologic chemistry, a demonstration and recitation room, the laboratory library and the office of the professor in this branch. A large amphitheatre, adapted to the demonstration of major experiments, immediately adjoins the physiologic laboratories and is used, also, for lecture purposes by this and other chairs.

In the basement of the laboratory of medical sciences, the chair maintains large and well-equipped animal rooms, which are furnished with a large aquarium, frog tanks, animal enclosures and breeding cages. From this animal room are furnished supplies of material and animals for the work in experimental physiology, physiologic chemistry, histology, embryology, pathology and bacteriology. The hygienic conditions of the room are studied carefully, with a view to maintaining the physiologic and structural integrity of its animal occupants as perfectly as possible.

The physiologic laboratories are equipped with a full supply of apparatus, instruments, etc., for experimental purposes, and for the work in physiologic chemistry. Their outfit includes vivisection instruments, artificial respiratory machines, batteries, Du Boise-Reymond coils, galvanometers, rheostats, Despretz signals, moist muscle chambers, kymographions, spring myograph, stethometer, stethoscopes, phonendoscopes, Dudgeon's and Marey's sphygmographs, cardiographs, Runne's chronograph, Roy's tonometer, Gaskell's clamp, oncometers, hæmometers, hæmoglobinometers, hæmatocrits, plethysmograph, ergograph, etc., etc. They are furnished with motor power for the operation of recording apparatus and for the manufacture of apparatus in the laboratory workshop.

The laboratory manufactures its own apparatus in almost every line of work.

The course in physiology is graded in the first and second years. In the first year, the student hears lectures, recites and attends demonstrations and practical exercises in general physiology. These embrace the discussion, and, so far as possible, the observation of the physiologic, ingredients of the animal body; the study of the physiology of cell-life, of the fundamental properties of the cell, of the nutritive media, blood, lymph and chyle; of the elementary functions of nervous system; of the muscular tissues, the connective tissues and the epithelial tissues; of the vascular mechanism; of the alimentary canal; of the organs of secretion, respiration, excretion, and metabolism.

In the second year, the work is as practical as possible and includes the study of advanced physiology, dealing in particular, with the subjects of nutrition, the physiology of development, and the functions of the central and peripheral nervous system. Twelve hours each week, during the first half of the first semester, are occupied in laboratory work in physiologic chemistry. This course affords the student a practical knowledge of the tissues and fluids of the body from a chemical standpoint. It embraces studies in the several classes of proteids, in fats, carbohydrates, bone, muscle, blood, milk, the digestive fluids, glycogen, etc.

A similar number of hours during the second half of the first semester are devoted to experimental physiology. For this work the class is divided into sections and the instruction is individualized so far as possible. The student is familiarized with physiologic apparatus and its uses, with forms of electrical stimulation and with methods of experimentation, while his knowledge of

physiologic principles is strengthened by the observation of functional facts. Demonstrative work is combined with the individual experiments performed by the pupil.

A laboratory reference library is accessible to the students for collateral reading.

Course I. General physiology. *Professor Beard.*

Lectures, recitations and demonstrations, dealing with the physiologic chemistry of the human body; the physiologic properties of the cell; the nutritive media; the nervous mechanisms in general; the muscular tissues, the connective tissues and the epithelial tissues, as the structural bases of the animal body. Twelve hours a week, first half second semester, first year.

Course II. Systemic physiology. *Professor Beard.*

Lectures, recitations, demonstrations and practical exercises. This course includes the physiology of the vascular system; the digestive system; the respiratory system; the secretory and excretory systems; and metabolism. Twelve hours a week, second half second semester, first year. Open to those who have completed course I.

Recitations upon the subject of the first year are conducted in sections of the class. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Course III. Advanced physiology. *Professor Beard.*

Lectures, recitations and demonstrations. The course includes the discussion of the subjects of nutrition; of reproduction; of the physiologic changes incident to successive periods of life, and of the functions of the nervous system, six hours a week, first semester, second year. Open to those who have completed the courses in physiology of the first year.

Recitations upon the subjects of this course are conducted in sections of the class. *Professor Beard and Drs. Wilcox and Haggard.*

Course IV. Physiologic chemistry and microscopy. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle and bone; of gastric juice, saliva, pancreatic juice and bile in their respective digestions; of glycogen, and of blood, lymph, chyle and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumeration of the blood cells, in the estimation of hæmoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood, in the determination of blood tests, etc. Twelve hours a week, first half of first semester, second year. Open to those who have completed courses I and II.

Course V. Experimental physiology. *Professor Beard, Drs. M. R. Wilcox and G. D. Haggard.*

Laboratory work and demonstrations. A study of physiologic apparatus, electrical stimuli and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of the sphygmograph, the stethoscope, phonendoscope, etc. Six hours a week, second half of first semester, second year. Open to those who have completed course IV.

Text-Books:

First and second years—

Howell's American Text-Book of Physiology.
Foster's Physiology, sixth edition.
Simon's Physiologic Chemistry.
Waller's Human Physiology.

Collateral Reading—Landois and Stirling's Handbook of Physiology; Chapman's Physiology; Stewart's Practical Physiology; Blyth's Foods; Raymond's Physiology; Kirk's Physiology; Hutchinson's Dietetics.

DEPARTMENT OF CHEMISTRY.

GEORGE B. FRANKFORTER, A. M., Ph. D., *Dean of the School of Chemistry, Professor of Chemistry.*

CHAS. F. SIDENER, B. S., *Professor of Chemistry.*

HERBERT C. CAREL, B. S., *Professor of Chemistry.*

EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry.*

EVERHART P. HARDING, M. S., Ph. D., *Assistant Professor of Chemistry.*

IRA HARRIS DERBY, B. S., *Demonstrator in Chemistry.*

LILLIAN COHEN, M. S., *Instructor in Chemistry.*

ALBERT D. WILHOIT, B. A., *Instructor in Chemistry.*

RODNEY WEST, B. A., *Instructor in Chemistry.*

HAROLD M. NEWTON, *Instructor in Chemistry.*

Chemistry is taught to the medical and all other students of the University in the School of Chemistry under the directorship of Dean Frankforter. The School of Chemistry is housed in two buildings.

The main building formerly known as Science Hall has been completetly remodeled to meet the needs of the department of chemistry. The building is 198 by 78 feet and consists of several large laboratories well equipped for a wide range of chemical work. The general laboratory is located on the first floor and is large enough to accomodate 350 students. The laboratory tables are arranged with cupboards, drawers and locks and supplied with gas and water. Connected with this laboratory by means of sliding windows, is a preparation room which is directly joined to the general store room. The remaining part of this floor is given to cloak rooms, furnace and motor rooms, and a large lecture room with a gallery designed to comfortably seat 350 students. The qualitative laboratory, located on the second floor, is arranged with tables similar to those of the general laboratory and will accomodate 250 students. The library and three technical laboratories are likewise on this floor. The third floor contains the quantitative laboratory large enough to accommodate 120 students. Directly connected with this laboratory are the balance, preparation, evaporation and drying rooms. There are also on this floor, six special laboratories, an organic laboratory, a physical laboratory, a lecture room and a museum. There is a suite of rooms on the fourth floor entirely given to photography.

Library. The chemical library contains complete sets of many of the more important journals. It contains besides these special sets, a well represented list of analytical and technical works, as well as many rare old works of great historical value. Most of the important journals are taken, thus enabling the student to keep abreast of the times. All books are easily accessible, with only the necessary restrictions to guard against injury and loss.

The second building which is one of the units of the medical quadrangle, contains two large laboratories with a combined floor space of 3,800 sq. ft., a smaller laboratory equipped to accomodate students in quantitative analysis, a lecture room, a preparation room, balance room, store rooms and the private laboratories of the instructors.

COURSES IN CHEMISTRY.

Course I. General Chemistry. PROFESSOR FRANKFORTER.

Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals and their more important compounds, with an introduction to organic chemistry.

Course II. Advanced Inorganic Chemistry.

PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.

This course is arranged for those who have already had an elementary course in chemistry. The course includes an introduction to physical chemistry with special reference to the laws of solutions and electrolytic dissociation theory. This work is followed by a systematic study of the non-metals from the general standpoint of the periodic law. Special attention is given to the relationship between the different elements and their analogous compounds.

Course III. Inorganic Chemistry. (Continuation of Course II.)
PROFESSOR FRANKFORTER, MR. WEST AND MR. BADGER.
This course consists of lectures, recitations and laboratory work on the metals.

Course IV. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON, AND MR. WILHOIT.
Lectures, recitations and laboratory work. The course includes the general reactions of the metals and the qualitative separation and identification.

Course V. Qualitative Analysis.
ASSISTANT PROFESSOR NICHOLSON, MR. ANDERSON, AND MR. WILHOIT.
Lectures, recitations and laboratory work. Reactions, separations and identifications of the acids.

Course VI. Organic Chemistry.
PROFESSOR FRANKFORTER AND MR. NEWTON.
This course includes a study of the different groups of carbon compounds with special reference to those groups which are closely associated with biological processes and bio-chemistry, bacteriological, pathological chemistry, physiology and materia medica. The course consists of lectures with frequent recitations and laboratory work. The laboratory preparation work included the making and studying of one or more compounds in each important organic group. Some time is devoted to practical organic analysis, including the analytical side of the alcohols and the sugar group.

Course VII. Toxicology and Hygiene.
PROFESSOR FRANKFORTER, PROFESSOR HARDING AND MR. NEWTON.
Toxicology.—This course includes the general methods for the separation and identification of the poisons both organic and inorganic. Attention will be given to the identification of poisons associated with medicines and with vegetable and animal matter. Besides this qualitative and quantitative work, attention is given to the structure of those organic groups of compounds which have poisonous properties.

Hygiene.—Chemistry lectures and laboratory work. This course includes the chemical analysis of air, water, and some of the common foods, milk sugar and fruit products. Special attention is given to food adulterations and to food preservations.

For work in other special or technical lines of chemistry, numerous courses are offered (see Bulletin of the School of Chemistry). Facilities for research work are also afforded in a large number of lines.

The analysis of the urine is dealt with under physiological chemistry in the department of Physiology, in the pathology of the urinary system in the Department of Pathology and in the clinical laboratories in connection with the microscopy of the urine.

DEPARTMENT OF MATERIA MEDICA AND THERAPEUTICS.

OFFICERS OF INSTRUCTION.

HENRY MARTYN BRACKEN, M. D., L. R. C. S. (Edin.), *Professor of Materia Medica and Therapeutics.*

WILLIAM H. CONDIT, B. S., M. D., *Instructor in Materia Medica.*

The work in materia medica and therapeutics is graded to cover a period of three years. It consists of lectures, recitations and demonstrations, conducted in the laboratory of materia medica. This laboratory is in Medical Hall. Pharmaceutical preparations are placed before the student and he is taught the method of their prepration in their most eligible forms.

Course I. Pharmacology. *Professor Bracken.*
This course includes the study of the general characteristics of drugs and of their physiologic actions. Lectures, recitations and laboratory work. Five hours a week, second semester, second year.

Course II. Therapeutics. *Professor Bracken.*

In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Other remedial measures than those depending upon drugs, are fully considered. Lectures and recitations, four hours a week, first semester, third year.

Course III. Therapeutics. *Professor Bracken.*

In this course the treatment of individual diseases is studied and the application of therapeutic agents to them is discussed. Lectures. Two hours a week, first semester, fourth year.

Text-Books:

Collateral Reading.—The Pharmacopeia of the U. S.; The National Dispensatory; Sayre's Organic Materia Medica and Pharmacognosy; Culbreth's Materia Medica and Pharmacology.

DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY.

OFFICERS OF INSTRUCTION.

F. F. WESBROOK, M. A., M. D., C. M., *Professor of Pathology and Bacteriology.*

S. MARX WHITE, B. S., M. D., *Assistant Professor of Pathology and Bac teriology.*

HIBBERT WINSLOW HILL, M. D., *Assistant Professor of Bacteriology.*

L. B. WILSON, M. D., *Assistant Professor of Clinical Pathology.*

R. H. MULLIN, B. A., M. B., *Senior Demonstrator of Pathology and Bacteriology.*

J. L. ROTHROCK, A. M., M. D., *Clinical Instructor in Pathology.*

A. S. HAMILTON, B. S., M. D., *Instructor in the Pathology of the Nervous System.*

Hospital Laboratory Assistants:—E. L. Tuohy, B. A., M. D.; C. C. Pratt; Geo. N. Freeman, M. D.; Henry Goehrs, M. D.; Oliver M. Porter, M. D.; Nathan C. Bulkley; Lee A. Scace.

Departmental Laboratory Assistants:—John P. Schneider; Harry J. Bartron; Ed. Moren; R. A. Varco, B. A.; Earl H. Current; Thos. R. Martin, B. A., R. H. Labbitt; Carl O. Estrem, B. A.; J. P. Weyrens, B. S.

The Institute of Public Health and Pathology, to which attention has already been directed, provides adequate room and facilities for teaching and research in pathology, bacteriology and public health.

The main laboratory 56x75 feet lighted on three sides and by a skylight, is used for the general or required courses. It is divided into twelve loges, each fully and independently equipped in every detail for the use of six students, who are responsible for all equipment therein contained. Supplies are distributed from a supply room opening off the main laboratory. Books and specimens required in teaching are easily procurable from the museum which is connected by a special or private passageway with the main laboratory. A combined lecture and autopsy room opens both from the main laboratory and from the hall so that autopsies, lantern demonstrations or lectures may be given during the period devoted to the laboratory exercises without interference with the practical work.

A smaller laboratory, one-half the size of the main laboratory, is provided for special work in graduate and optional courses in the Diagnosis of Tumors, Pathology of the Nervous System, Practical Public Health, etc. The same loge arrangement obtains as in the main laboratory.

The hospitals of Minneapolis, St. Paul, Duluth, Rochester and St. Peter, Minn., in which members of the staff are working, afford a large supply of material and frequent opportunities for post-mortem examinations. From many institutions and physicians throughout the state, valuable and interesting gross and microscopic materials are received from time to time and are made available in the museum and for macroscopic and microscopic class use.

The State Board of Health laboratories for research and routine investigation are located in the Institute as well as a Pasteur Institute for the study and treatment of rabies. This affords an abundance of illustrative material for Public health, pathology and bacteriology.

A full equipment of microscopes permits of the rental of an instrument to each student, if he is unprovided with one suitable for his purpose.

Course I. General bacteriology.

Professor Wesbrook, Assistant Professor Hill and Dr. Mullin.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Bacterial activities concerned in sewage purification, etc., will receive attention. Twenty hours per week during the last eight weeks of the second semester, second year.

Course II. General pathology.

Professor Wesbrook, Dr. Mullin, Assistant Professor White, and Assistant Professor Hill.

Lectures, demonstrations and laboratory work on the general processes involved in disease, to include the study of inflammation, the degenerations and tumors. Twenty hours per week during the last eight weeks of the second semester, second year.

Course III. Pathology of special diseases (includes bacteriology).

Disease processes will be grouped, so far as practicable, according to their etiology. Instruction will be afforded by means of lectures, demonstrations of museum specimens and preparations, and laboratory work on materials secured from clinical cases and at autopsy.

The course will consist of instruction in

1. Pathology of infectious diseases.

(a) Special bacteriology of the infectious diseases with the cultivation on the various media of all the important pathogenic bacteria, sown and kept under observation by each student. Fluids and tissues from clinical cases and autopsies (human and animal) will be supplied for microscopic and cultural examination and an intimate relationship with clinical pathological work maintained.

(b) Special pathology of the infectious diseases. Concurrently with the bacteriology and parasitology of each of the diseases, the pathology of each infection will be studied.

The important gross and microscopic lessons in all the organs will be illustrated from clinical and autopsy material, fresh and preserved, and supplemented by experimental work. Each student will be required to prepare and examine under the microscope selected fresh and stained specimens of morbid tissues, fluids, etc.

Professor Wesbrook, Assistant Professor White, Dr. Mullin.

2. Pathological diseases of toxic and obscure origin. Under this are included the special degenerations, inflammations and other pathological conditions not already included under infectious diseases.

Assistant Professor White, Dr. Mullin.

Sixteen hours per week throughout the first semester of the third year.

Course IV. *Assistant Professor White, Dr. Rothrock and Dr. Mullin.*

Autopsies and post-mortem technique. Students will have an opportunity of personally taking part in this work, under the direction of the pathologists in charge, in the hospitals of Minneapolis and St. Paul. A knowledge of the technique of post-mortem work and of morbid anatomy will be thus afforded. Throughout the third and fourth years.

Course V. Special pathology of the nervous system. *Dr. A. S. Hamilton.*

An elective course, limited to twenty-five students, in the fourth year.

So far as possible, the clinical history, autopsy notes, gross specimens and sections stained by various special methods will be presented of individual cases representing the principal organic diseases of the nervous system. Twelve hours per week, first four weeks, second semester, fourth year.

Course VI. *Assistant Professor White.*

Laboratory course on the microscopic study and diagnosis of tumors. (Elective for a limited number of students in fourth year.)

This course includes the comprehensive study of tumors, with the view of giving the student a knowledge of the methods employed in the laboratory diagnosis of this class of pathological conditions and familiarizing him with the characters of the commoner as well as the rarer types, special attention, however, being given to the latter. It is intended to supplement the course on the surgical pathology of tumors by Professor Stewart. Twelve hours per week, four weeks, second semester, fourth year.

Course VII. Research work in one of the following lines:

(a) General pathology.
(b) Special pathology and bacteriology and technique.

Second semester of third and throughout the fourth year, hours assigned.

Course VIII. Surgical pathology. *Professor Stewart*

(See principles of surgery.) This course will consist of lectures and laboratory demonstrations and will cover the general subject of the pathological and bacteriological basis of surgery. The lectures will be illustrated by charts and diagrams, by fresh and preserved specimens and, so far as practicable, demonstrations will be given of the various processes of the bacteria concerned. Especial attention will be given to inflammation and its complications, to the infectious diseases of surgical importance and to tumors. Two hours a week, first semester, third year, and two hours per week, second semester, fourth year.

Text-Books:

Pathology—
American Text-Book of Pathology.
Ziegler's General and Special Pathology.
Schmaus-Ewing: Pathology and Pathological Anatomy.
Coplin's Manual of Pathology.
Cattell's Post-Mortem Pathology.
Durck-Hektoen: Special Pathologic Histology.
Jakob: Nervous System.
Coat's Manual of Pathology.
Mallory and Wright's Pathological Technique.

Collateral Reading—Hamilton's Text-Book of Pathology; Delafield and Prudden's Handbook of Pathological Anatomy and Histology; Woodhead's Practical Pathology; von Kahlden's Pathological Histology; Thoma's Text-Book of General Pathology; Lubarsch Ostertag, Ergebnisse der Pathologie u Anatomie; Orth, Pathologische Anatomie; Birch-Hirschfield, Pathologische Anatomie; Clifford Allbutt's System of Medicine; Leukhart's die Thierische Parisiten des Menschen; Bouchard, Traite de Pathologie Generale; Eichorst, Pathologie u Therapie; Gaylord and Aschoff, Pathological Histology; Nothnagel, Encyclopedia of Practical Medicine; Wood, Chemical and Microscopical Diagnosis.

Surgical Pathology—
Bland Sutton, Tumors, Innocent and Malignant.

MATERIA MEDICA AND THERAPEUTICS.

This course upon this subject is graded to cover four years' study. Lectures, daily quizzes and daily demonstrations of materials and methods are held regularly throughout the year.

FIRST YEAR.

Ten lectures in the first half of the year are given upon the methods of homeopathic pharmacy, each student being trained in writing and filling prescriptions and the technique of the more common preparations. Apparatus and material for these purposes are taken from Professor Leonard's laboratory, which is abundantly supplied with the crude and perfected drugs for demonstration throughout the course. Mr. G. A. Babendrier, who has kindly given this instruction so satisfactorily for several years, will continue the same the coming year.

SECOND YEAR.

The toxicological and physiological action of a few typical drugs will be studied in lectures and quizzes twice each week; including the action of both large and small doses as well as the official doses (U. S. P.) of the leading drugs and the alkaloids. Here, in the more detailed study of a few drugs, the ground work will be laid for the comprehension of the symptomatology of the later years.

When practicable, actual experiments on the effects of the drugs upon individual persons in the class will be made, the blanks used and methods being under Professor Leonard's personal supervision and in accordance with the rules of the Provers' Union of the American Institute of Homeopathy.

THIRD YEAR.

Three lectures a week with quizzes, upon the vegetable remedies, about thirty major and seventy-five minor drugs, arranged according to their natural groups and their clinical relationship in diseases, and studied in their origin, history, preparation, physiology and symptomatology, full practical comparison being made with other allied remedies. The endeavor on these studies and those of the following year will be to present only such usage of drugs as is practical and fully corroborated

Three lectures and quizzes each week upon the mineral, animal and nosological remedies of materia medica—about forty major and twenty minor drugs grouped and studied in detail as those of the second year, attention being given to their toxiological and physiological action, where this has a direct bearing upon their homeopathic application to chronic diseases, inasmuch as the drugs of this course are more often applied thereto.

Examination in the form of written review quizzes from time to time or at the end of the term, will be held, the student's final standing being made up of this and his daily quiz markings.

TEXT-BOOKS AND COLLATERAL READING.

Materia Medica and Therapeutics.

First year—
Pharmacopea of the American Institute of Homeopathy.

Second year—
Hugh's Pharmaco-Dynamics.

Third and fourth years—
Materia Medica Manual—Fahnestock.
Farrington's or Cowperwaite's Materia Medica Hahnemann's Organon.
Reference Books—third and fourth years—Allen's Hand-Book, Boericke's Condensed Materia Medica, Dunham's Lectures.

PRACTICE OF MEDICINE

This course of lectures occupies two hours a week throughout the Junior and Senior years; the object aimed at is to acquaint the Student with the Pathological basis of the various diseases, their symptomatic course and the findings derived from the various methods of physical macro-and microscopical examination, so that with the complete picture of its diseased process and its possibilities, he may intelligently apply all known methods of relief, hydro-therapy, electrical deaction, dietetics, physiological and palliative medication, and above all may scientifically select the homeopathic remedy curative of the diseased process as conditioned by the peculiar susceptibility and idiosyncracy of the individual to be treated.

TEXT-BOOKS AND COLLATERAL READING.

Practice of Medicine.
Goodno's Practice.
Raue's Therapeutics.
Lippe's Repertory.
Knerr's Repertory.
Pepper's System of Medicine.
DaCosta's Diagnosis.
Ander's Practice of Medicine.

PHYSICAL DIAGNOSIS.

The course on physical diagnosis consists of a series of twenty-four didactic lectures to the third year class, illustrated upon the healthy human subject, thus familiarizing the student with the normal appearances, feelings and sounds. These lectures are classified as follows: Introduction, general examination, respiratory system, circulatory system, digestive system, urinary system.

CLINICAL MEDICINE.

FOURTH YEAR CLASS.

For this course abundant material is found in the University homeopathic free dispensary, where clinics are held every day, and in the City hospitals of Minneapolis and St. Paul, where clinics are held each Monday morning.

In these clinics particular effort is made to supplement the course in physical diagnosis and to fully illustrate the application of the homeopathic law of therapeutics.

In order that the student may obtain as wide a view as possible in this all important branch, they receive instruction, not only from Professor Lupkin at the bedside in the City Hospital wards, but from the various members of the homeopathic staffs in the Twin Cities, attending the hospitals but not otherwise connected with the University.

In addition the dispensary furnishes many outside cases, which are treated in their own homes, by the members of the fourth year class, under the supervision of Professor Wilcox, thus enabling the student to acquire the self-reliance and confidence so necessary to the beginning practitioner.

Physical Diagnosis, Clinical Medicine.
Lilienthal's Therapeutics.
Lippe's Repertory.
Farrington's Clinical Materia Medica.
Vierodt's Medical Diagnosis.
Abram's Manual of Clinical Diagnosis.
DaCosta's Diagnosis.

SURGERY.

The course in surgery is so graded to extend through Sophomore, Junior and Senior years. It consists of didactic lectures, clinical demonstration and actual work by the students of Senior and Junior classes, as they are given one month's work each or more in dispensary clinics every day under charge of attending professor, and are held responsible by him for all emergencies and dressings. They also give all anæsthetics and attend to the post operative treatment. These advantages given our students cannot be excelled, and gives each member that opportunity of gaining for himself that valued knowledge and confidence which only comes by actual experience.

Two years ago the work in surgery enlarged. It now occupies two full years, the third and fourth, including the labors of four members of the college faculty. The work is divided into clinical and didactic surgery.

EMERGENCIES AND BANDAGING.

(1) A course of lectures on surgical emergencies and bandaging is given the students of the Sophomore year in consideration of the means in administering first aid to the injured, also laboratory instructions of how to apply dressings, bandages, splints and the materials used.

GENERAL AND SPECIAL SURGERY.

(2) The Juniors and Seniors are given two lectures each week on general and special surgery, during the entire two years, covering all the

surgical diseases, and special technique in operative surgery, especial attention being paid to pathology, diagnosis and treatment of each disease from a surgical standpoint in conjunction with the valued homeopathic application of remedies. Besides this the Juniors are given a special course on surgical anatomy and the Seniors one on surgical pathology.

OPERATIVE SURGERY.

(3) During the Senior year the class will be instructed in the surgical laboratory in operations on the cadaver, in which the student is called upon to do the work under the special criticism of the professor in charge, thus perfecting themselves by actual practice with operations they will be called upon to perform in later years.

CLINICAL SURGERY.

(4) The work in clinical surgery consists in operations before the class in connection with clinical lectures given upon the cases presented. These occupy each Monday of the fourth year, which is set apart as the day for clinics. The third year class is required to attend the clinics, unless their regular class work interferes.

At the Clinics which are held at the City and County Hospital, St. Luke's and St. Joseph's Hospitals, of St. Paul, and the City Hospital and Free Dispensary, Minneapolis, are demonstrated the value of antiseptic treatment of wounds, the minute details of the application of surgical appliances and dressings and operative technique. Post-operative care for reaction, shock, etc., are considered.

Senior students are instructed in the practical use of anæstheties and are required to attend a number of surgical patients at their nomes, carrying out post-operative detail under the direction of the professor.

The surgical department aims to give a complete and thorough course on the subject and its collateral branches.

It should be distinctly understood that examinations on the clinical and laboratory work, both sectional and at the end of the term, no matter by whom the teaching is done, are counted with the didactic course, the average of all combined constituting the student's standing in surgery for each year. The marks for the four years go to make up his graduation average.

TEXT-BOOKS.

Park's Surgery.
Trene's Operative Surgery.
Wyeth's General and Operative Surgery.
Surgical Technique, by Von Esmarch and Kowalzig.

DIDACTIC COURSE.

The didactic course covers the entire field of the principles and practice of surgery. The lectures will occupy the third year class two hours and the fourth year class three hours each week. Demonstrations will be made upon the cadaver, aided by models and charts.

The lectures to the third class will include surgical pathology, inflammation, hemorrhage, surgical appliances, surgical emergencies, minor surgical operations, ligation of arteries, burns and scalds, surgical treatment of the anus and rectum, antiseptics, anæsthetics, abscesses, ulcers, gangrene, hernia and the elements of the treatment of wounds, fractures, dislocations and amputation.

The lectures of the fourth year class will include the surgery of the bones, joints, genito-urinary organs, tumors, cysts, fractures, dislocations, amputations, syphilis, together with the operative surgery of the head, face, chest, abdomen, pelvis, skin, nerves and extremities.

All the lectures will aim to be comprehensive, practical, and in keeping with the best standards of advanced surgery.

TEXT-BOOKS, DIDACTIC COURSE.

Parke's Surgery.
Homeopathic Text-Book of Surgery.
Mamline's American Text-Book of Surgery.
Bradford & Lovett's Orthopædic Surgery.
Pye's Surgical Handicraft.

ORTHOPAEDIA.

The course on this subject is both didactic and clinical. It consists of one lecture a week during the fourth year.

The whole subject of deformities, their etiology, pathology, course and treatment is carefully considered in detail. Charts and drawings are used to illustrate the work. The mechanical apparatus used in the treatment of such cases is exhibited and rules laid down for the improvising and applying temporary means and instruments. Recent progress in the knowledge of the underlying causes of bony, muscular and habit deformities, and their serious reflex effects, has led to great changes in the methods pursued to overcome them. The early recognition and treatment of such cases are of the utmost importance, and, hence, as they are usually first presented to the general practitioner, a full knowledge of this branch of surgery becomes exceedingly valuable In the Dispensary Clinics the student sees carried out the teachings of the didactic course.

The subjects discussed include functional and organic diseases of the bony spine, the several forms of club foot, joint inflammations and deformities, both simple and tuberculous and their sequellae, cleft-palate, hare-lip, etc.

OBSTETRICS.

This subject is taught by lectures and recitations, thoroughly illustrated with charts, manikins and specimens. The course will be graded and divided between the third and fourth years.

During the third year subjects covered will embrace the anatomy and physiology of the female generative organs and the pelvis, the development of the embryo, the maternal changes of pregnancy, the diagnosis of pregnancy, the physiology, pathology and hygiene of pregnancy, the physiology and the course of normal labor, the physiology of normal labor and the managment of the puerperium.

During the fourth year the following subjects are taught: the mechanism of labor, diagnosis and management of the various presentations, dystocia, complications of labor, physiology, pathology and the management of the puerperium, and obstetric surgery.

CLINICAL OBSTETRICS.

This department instructs the fourth year students and applies practically the teachings of the department of obstetrics. An abundance of material is supplied by the dispensary and city hospitals of St. Paul and Minneapolis.

The student will be thoroughly educated to locate accurately the position and condition of the internal parts both in health and disease, the obstetric points of the pelvis, as well as the diameters, planes and curves, the presentation and position of the child and the methods of diagnosis, the stages and mechanism of labor, the management of normal and abnormal labors, the application of the forceps and the necessary steps in performing version.

Each member of the class will be assigned at least three cases of pregnancy, which he will be required to attend under the immediate direction of the professor of the chair.

During the last month of pregnancy of a case as assigned, the student in charge will report to the professor the patient's name, address, age, number of previous labors, date of first birth and last labors, date of quickening, condition of uterus, heart, lungs, bowels, kidneys, etc., and a detailed statement regarding the appearance of the patient, location of the foetal heart, position of the child, character and size of the pelvis.

At the time of labor the student will be required to keep a record of the following facts:

Number of the case, date, name, address, condition of the osuteris, height of presenting part, pulse rate and quality (ante and post partum), rapidity of foetal heart beats and where heard most clearly, presentations, position and duration of the first, second and third stage.

Also the sex of the child, the diameters of its head, weight, and length. The post partum condition of the uterus, servix and perineum.

An operative course on the female cadaver will also be given, demonstrating the operative technique in symphisiotomy and Cæsarean section.

TEXT-BOOKS AND COLLATERAL READINGS.

Leavitt.
Lusk's Midwifery.
American Text-Book of Obstetrics.
Hirst's Text-Book of Obstetrics.
Grandin & Jarman's Midwifery.
Playfair's Midwifery.
Boisliniere, Obstetric Accidents.
Davis' Obstetrics.

DISEASES OF WOMEN.

This course will consist of one didactic lecture during the third and fourth years and two clinics a week during the fourth year.

In the third year, both semesters, the anatomy, physiology and pathology of the pelvic contents and perineum are carefully described. The preparation of the patient for surgical operation, together with the necessary steps taken, the various surgical procedures as well as the medical treatment of all pelvic diseases, will receive minute attention both semesters of the fourth year.

The medical and surgical diseases of women will be treated in didactic lectures and recitations. The entire field of gynecology will be covered in the lecture room. As cases present themselves in the city hospitals of St. Paul and Minneapolis, the subject thus described will be demonstrated on the living subjects.

Gynecology.

Wood. Text-Book of Gynecology.

DISEASES OF CHILDREN.

The course on this subject will consist of one lecture each week and three clinics to the fourth year students, and extending over two semesters. The clinics are full and afford an exceptional opportunity to study the common diseases of childhood. In the out door department many cases of exanthematous cases are treated by the members of the class.

The didactic course embraces a description of the normal development of infancy and childhood, natural and artificial infant breeding, signs and symptoms of hereditary syphilis, contagious and infectious diseases, tuberculosis, erysipelas, and the diseases of the respiratory and urinary organs; those of the circulatory, nervous and digestive systems, rhachitis and diseases of the skin.

TEXT-BOOKS AND COLLATERAL READING.

Tooker's Diseases of Children.
Holt's Diseases of Children.
Fisher's American Text-Book of Diseases of Children.
Collateral reading—Cyclopedia of Diseases of Children.

MENTAL AND NERVOUS DISEASES.

This course consists of twenty-eight didactic lectures, in the fourth year, and as many clinical demonstrations as material is presented at the dispensary and the City Hospital, Minneapolis. It is the aim of the chair to qualify the student to detect the earliest symptoms of insanity and diseases of the nervous system. During the session of 1905–6 each senior student spent 2 weeks in practical work among the insane at the Fergus Falls State Insane Asylum.

The anatomy and physiology of the brain and spinal cord are reviewed and particular attention is paid to the causes, development, characteristic symptoms and the pathological conditions of the diseases of the nervous system. The therapeutics, dietetics and direction of the personal care in each disease is especially elaborated.

Talcott's Mental Diseases.
Clouston's Mental Diseases.
Edinger's Anatomy of Central Nervous System.
Martin's Nervous Diseases.
Dana Text-Book Nervous Diseases.
Bigelow's System of Electro-Therapeutics.
Oppenheim's Diseases of the Nervous System.
Collateral reading—Hack Tuke's Dictionary of Psychological Medicine; Bevan Lewis Mental Diseases; Kirchoff's Handbook of Insanity; Ferrier's Localizations of Cerebral Diseases; Strumpell's Text-Book of Medicine; Hirt's Diseases of the Nervous System; Horseley's Brain and Spinal Cord.

EXAMINATIONS

Hygiene.

Copiln and Bevan's Practical Hygiene.

Park's Hygiene.

Collateral reading—Richardson's Preventive Medicine; Buck's Hygiene and Public Health.

ELECTRO-THERAPEUTICS.

This subject will be carefully taught. The physics of electricity will be sufficiently considered to enable the student to understand the construction and manipulation of galvanic faradic, sinusoidal and static batteries. The application of every form of electricity will be practically demonstrated.

MEDICAL JURISPRUDENCE.

The object of this chair is to familiarize the student with his duties, rights and responsibilities from a legal standpoint. The law on each subject discussed is carefully explained and illustrated, as far as possible, with adjudicated cases.

Medical Jurisprudence.

Taylor's Medical Jurisprudence.

Herold's Manual of Legal Medicine.

Collateral reading—Hamilton's American System of Legal Medicine; Withaus' and Becker's Medical Jurisprudence and Toxicology; Wharton and Stille's Jurisprudence.

OPHTHALMOLOGY.

In the department of ophthalmology the endeavor is to give thorough instruction in those parts of the work which will ordinarily come into the hands of the general practitioner.

The course is supplemented by as much practical work as time allows, in the use of the ophthalmoscope for the study of intraocular troubles, whose recognition would aid in the diagnosis of various conditional affections; and following a short didactic course given early in the year on the subject, practical work in the correction of the refraction is carried on at the dispensary during both semesters.

The clinical material provided in the department is very abundant, interesting and instructive cases, embracing all varieties of eye troubles calling for medical and surgical aid being presented to the students bi-weekly throughout the entire year.

The following schedule shows the subjects considered in the present course of lectures:

Anatomy and physiology of the eye; refractions and use of the lenses for the correction of its errors; diseases of the lids; conjunctiva; cornea; sclera; lachrymal apparatus; iris and ciliary body; lens choroid; retina and optic nerve; affections of the muscular apparatus of the eye and the general relationship between eye-strain and reflex and nervous disorders.

The didactic course consists of thirty-two lectures during the fourth year and ten during the third year.

Ophthalmology.

Norton, Buffum, Swanzy, Noyes.

Collateral reading—Fuch's Diseases of the Eye.

DISEASES OF THE NOSE, THROAT AND EAR.

The course will consist of didactic lectures and clinical demonstrations.

One didactic lecture a week will be given to students of the third year. An understanding of the anatomy and physiology of the organs is presupposed, and but little time will be devoted to the review of the more important points in their bearing upon diseases of these organs. The lectures will enter upon the diseased processes in the nose—the various forms of acute and chronic catarrhal inflammation, their courses, developments, symptoms, consequences and treatment, both general and local, abnormal growths, affections of the septum and diseases of the accessory sinuses, finishing the course on the nasal cavities with the neuroses, functional and organic.

The diseases of the noso-pharynx are treated with special reference to their dependence upon nasal conditions and their influence upon the organ of hearing. The course includes acute and chronic catarrhal processes, adenoid vegetations and morbid growth.

Diseases of the pharynx are considered in their dependence upon alimentary disorders, acute and chronic inflammatory conditions, morbid growths and neurosis, together with the pharangeal and tonsilar conditions incident to the exanthamata, diptheria, typhoid fever, etc.

In the laryngeal disorders we become more closely associated with respira-

tory diseases; the various forms of laryngeal inflammation, morbid growths and nervous affections will be discussed—especial stress being put upon the early laryngeal manifestations of tuberculosis and the laryngeal disorders of voice users with the importance of proper vocalization and respiration upon all diseases of this organ

Ear diseases resolve themselves into: Diseases of external canal and pinna, dermoid inflammation; diseases of the middle ear; mucous inflammation; diseases of the internal ear; serious and nerve inflammation.

The course to the fourth year students will be entirely clinical, the class being divided into sections for dispensary work; the aim will be to familiarize the students with the use of the various diagnostic means at their disposal and the appearance of the various abnormal conditions, together with the technique of the numerous operative procedures. The material for clinical demonstrations is abundant

Ear: Barr.

Nose and Throat: Kyle, Bosworth, Ivins, McDonald.

Nose, Throat and Ear: Veshlaget & Hallett; McBride, Burnett.

SKIN AND GENITO-URINARY DISEASES.

This course will consist of one didactic lecture and one clinic each week for students of the fourth year. It will include the diseases of the skin, syphilis and all genito-urinary affections.

The first semester will be devoted to a study of the diseases of the skin, the second to syphilis and venereal surgery. The dispensary clinics will be especially valuable in supplementing the work of the professor in the lecture room by familiarizing students with the appearance of the various forms of skin and venereal diseases. Each student is required to diagnose cases and treat patients under the supervision of the professor, thus giving him actual experience in administering remedies and using instruments. During the course of the year each student has personal charge of about fifty patients in this department.

TEXT AND REFERENCE BOOKS.

Dermatology: Kippax, Stelwagon, Durhring, Dearborn.

Genito-Urinary: Carlton, Hoyne, Franklin, American Text-Book, Bumstead and Taylor.

HISTORY AND METHODOLOGY OF MEDICINE.

The lectures given in this chair are an exposition of the philosophy and art of medicine by the historical method. The student is taught to see how in each age practice of medicine has been the outgrowth of the beliefs current regarding the nature of man. Give to a student the theories held by a people regarding the constitution of matter, the nature of mind and force, and he can accurately foresee the medical science such as people will accept. The unfolding of the world's thought in medicine sets homeopathy in its high place and gives the student an outlook much needed in the profession. The tendency of medicine has always been to over-estimate the material side of man's nature and to make innumerable hypotheses to explain disease. The conflicts in medicine have been the clashing, not of opposite sects, but of antagonistic systems of thought, and reconciliation is possible only on the grounds of higher science than that of mere sense knowledge. This ground is revealed in the history of the philosophy of medicine.

The course includes the medicine of the Egyptians, Persians, Indo-Chinese, Hebrews, Greeks, Arabians and of Europe down to the present.

One lesson each week during the freshman year.

EXAMINATIONS.

Examinations will be conducted at the end of each year, upon subjects taught during the year, according to the schedule printed elsewhere. Attendance upon at least four-fifths of the lectures under each department is required in order that a student may be allowed to enter for final examination, or to receive a certificate of attendance. Ten per cent. of the graduating class will be recommended to receive the degree of doctor of medicine, "cum laude." The selection will be based upon the efficiency of the work of the student during the period of the entire course.

LIBRARY OF MEDICAL DEPARTMENT

Thomas G. Lee, B. S., M. D., Librarian

The Library consists of (a) The General clinical and reference Collection of some 4,000 books and bound periodicals, and thirty-four current periodicals; (b) The College Collections of the College of Homeopathic Medicine and Surgery, the College of Dentistry and the College of Pharmacy; (c) The Departmental Libraries, being special collections of books and current periodicals belonging to the Laboratories of Anatomy, Chemistry, Histology and Embryology, Pathology, Bacteriology and Physiology. In addition, the Libraries of the Hennepin County Medical Society, some 3,800 volumes and 50 Journals, and that of the Ramsey County Medical Society, some 4,500 volumes and 150 Journals, are accessible to the Medical student for reference work and collateral reading.

Other Libraries of value to the Medical student are the General University and other departmental libraries of 110,000 volumes the Minneapolis Public Library, 125,000 volumes; the St. Paul Library, 55,000 volumes.

CLINICS

Every member of the faculty (with two exceptions) is a clinical teacher. Thus each professor demonstrates the application of his didactic work.

DISPENSARY CLINICS

The dispensary, located at 1808 Washington avenue south, offers unusual facilities to the student for individual examination of patients. The location is within easy access of those whose means compel them to ask dispensary assistance, and presents ample opportunity for the study of all forms of disease usually met with in practice. Patients present themselves in large numbers daily (more than six thousand prescriptions having been made during the past year), and are assigned to particular departments, according to the na-

ture of their diseases. The classes are so divided and arranged as to afford every student abundant opportunity to familiarize himself with the best methods of diagnosis and treatment of the various maladies, medical and surgical, with which the clinic abounds. Each student is assigned for a definite period as clinical assistant in each department of the clinic. The college clinics are conducted throughout the entire year. Students and practitioners are invited to attend them at all times.

HOSPITAL CLINICS.

The college has unusual advantages in hospital clinics. In addition to calling upon students to assist the various professors in private cases regular clinics are provided in the city hospitals of both St. Paul and Minneapolis, and in St. Luke's and St. Joseph's Hospitals in St. Paul. Each Monday is devoted to clinics held in one of these hospitals by members of the faculty.

CITY HOSPITAL, MINNEAPOLIS.

The faculty of the college of homeopathic medicine and surgery is largely represented on the staff of this institution, where one-fifth of all the patients admitted are placed under care.

CITY HOSPITAL, ST. PAUL.

This hospital likewise has a full staff of homeopathic physicians and surgeons which includes all the St. Paul members of the college faculty. Each member of the staff has full charge of all cases coming into his department during his term of service and uses suitable cases for clinical purposes.

ST. LUKE'S HOSPITAL, ST. PAUL

This hospital has recently erected a new building thoroughly equipped with all modern facilities for caring for medical and surgical cases. It contains an amphitheatre in which clinical lectures are delivered. A number of the faculty are members of the visiting staff.

ST. JOSEPH'S HOSPITAL, ST. PAUL.

Through the addition to its staff of members of the college faculty, students have access to both surgical and medical cases upon exactly the same footing as the other hospitals.

GENERAL REMARKS.

In all hospital work students are given special bedside instruction in diagnosis, in "taking the case," in prescribing, in surgical dressing, in the after care of patients and all forms of accessory treatment.

DEGREES.

The degree of doctor of medicine is conferred by the Board of Regents upon students who are recommended, by vote of the faculty, for graduation.

Candidates for the degree must possess the following essential qualifications:

(1) Twenty-one years of age and upwards.

(2) Good moral character.

(3) A degree of preliminary education equivalent to that demanded by the examination for entrance to this college

(4) Four full college years spent in the study of medicine; the fourth year, at least, in this university, and the remainder in this or some other recognized college of medicine.

(5) Satisfactory examination passed in all branches in accordance with the foregoing rules.

HOSPITAL APPOINTMENTS.

Graduates of this college are eligible for appointment to the position of interne in the Minneapolis City, St. Paul City and County Hospitals and St. Joseph's Hospital, St. Paul. Also to the staff of the State Hospital for Insane at Fergus Falls.

Dispensary Clinics

MONDAYS; Surgery, Dr. Ahrens; Internal Medicine, Prof. Wilcox.

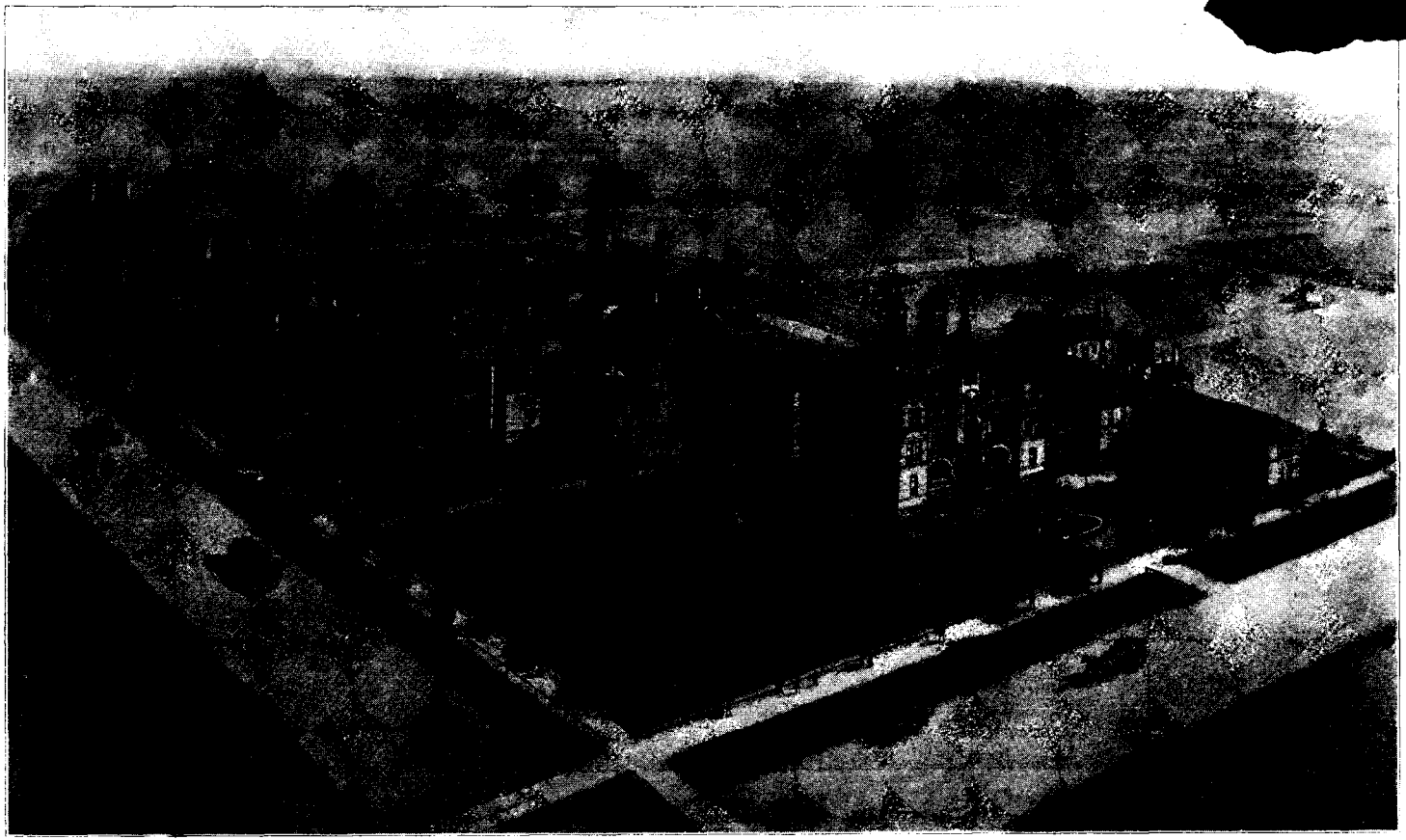
TUESDAYS; Internal Medicine, Dr. Smith; Gynaecology, Dr. Cobb; Eye, Prof. Leavitt. Skin and genito-urinary, Prof. Neill.

WEDNESDAY; Internal Medicine, Prof. Wilcox; Surgery, Prof. Matchen. Ear, Nose and Throat, Prof. Shipman.

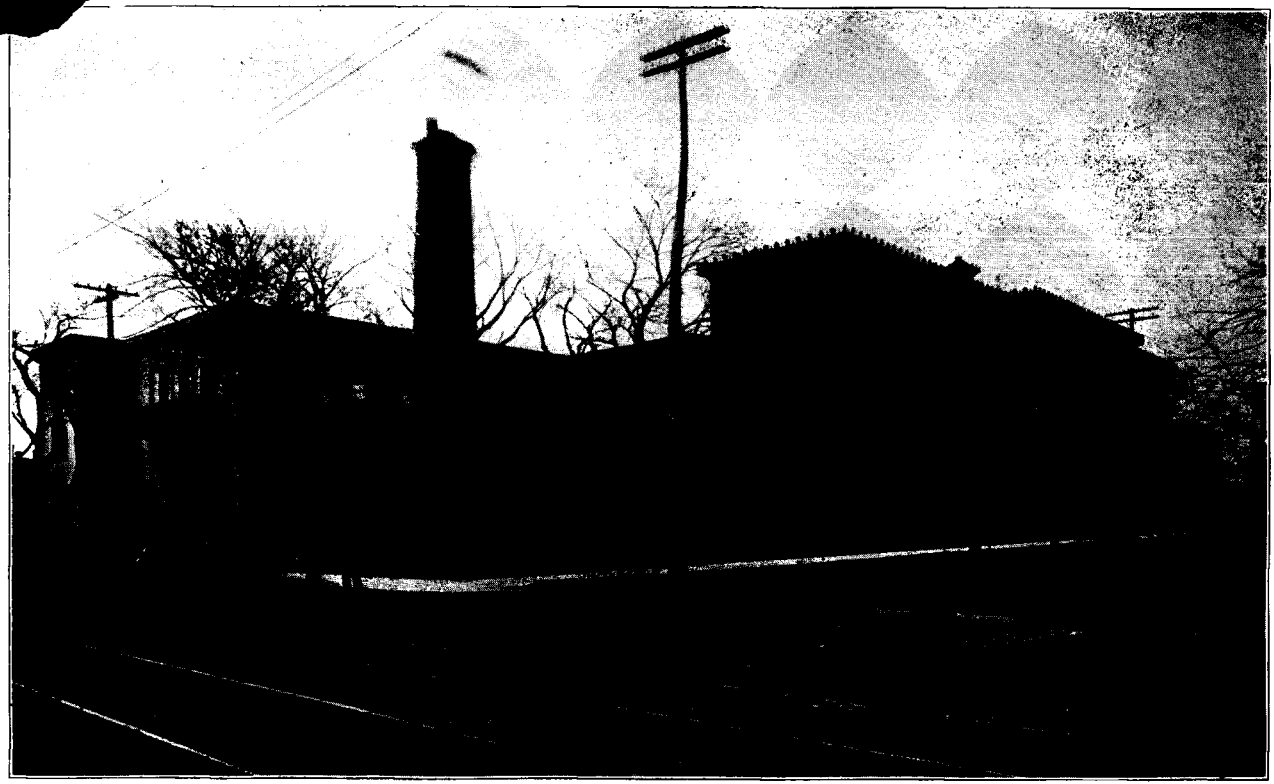
THURSDAY; Internal Medicine, Dr. Skinner. Gynaecology, Prof. Turnstead. Children, Dr. Hamlin.

FRIDAY; Internal Medicine, Prof. Wilcox. Surgery, Prof. Booth. Eye, Prof. Leavitt.

SATURDAY; Internal Medicine, Prof. Horning. Children, Dr. Hamlin. Ear, Nose and Throat, Prof. Shipman. Surgery, Dr. Dawson. Physical Diagnosis, Prof. Lufkin.



St. Paul City and County Hospital



Minneapolis City Hospital

The College hereby acknowledges favors extended by Prof. R. S. Copeland of Ann Arbor, Michigan, for delivering the opening address, and to Dr. G. O. Welsh and his assistants at the Fergus Falls Insane Asylum for practical instruction to the Senior Class in Mental Diseases.

All communications pertaining to the College of Homeopathic Medicine and Surgery should be addressed to the Dean, Eugene L. Mann, A. B., M. D., 694 Endicott Arcade, St. Paul, Minn.

THE ALUMNI ASSOCIATION

The Alumni Association of the College of Homeopathic Medcine and Surgery endeavors to keep in touch with the College work and needs and is ever alert to assist the Faculty in all ways possible. It has been a potent effort for good in the past and its work is appreciated by the Faculty.

Officers for the present year: A. E. Booth, M. D., President, Andrus Bldg., Minneapolis; G. G. Balcom, M. D., Vice President, Lake Wilson, Minn.; Annah Hurd, M. D., Secretary-Treasurer, Pillsbury Bldg., Minneapolis.

University Committee: Ida Mackeen, M. D., Masonic Temple, Minneapolis; J. F. Beck, M. D., 1551 Franklin Ave., Minneapolis; C. Arthur Dawson, M. D., 2½ West Lake St., Minneapolis.

Regulations Governing Admission to the College of Science, Literatuae and the Arts

EXAMINATION IN ENGLISH.

Every applicant for admission to this college must take an examination in Writing, Spelling, and English Composition. An examination will be given in two parts, the second of which is optional.

Part I. Elementary. Those who fail to pass this examination satisfactorily are required to take a special three-hour Preparatory Course in Rhetoric through their first year, or longer if necessary. This work will not receive credit toward a degree. Students pursuing it shall not take more than the maximum of seventeen hours of work a week, including this course. These students must take Freshman Rhetoric, but not until the preparatory work has been completed; but at any time during the first half of the first semester the Department of Rhetoric may transfer promising students from the Preparatory Rhetoric class to the regular Freshman Rhetoric.

Part II. Advanced. This is designed as a test of ability to express thought in a clear and orderly manner and of a fair knowledge of Elementary Rhetoric. This test is not obligatory: it may or may not be taken, as the student prefers. Those who do not take it, and those who fail to pass it with a grade of "Good" or "Excellent," shall be registered for Freshman Rhetoric as a required subject. Those who pass this test with a grade of "Good" or Excellent" are not required to take Freshman Rhetoric.

The entrance examination (both Parts I and II) will be given twice a year at the University in the Chapel in the Library Building, once on the next to the last Saturday in May at 9 a. m., and once on the Wednesday of examination week in September, at the same hour.

This examination will be sent also to the Principals of State High Schools and other accredited schools in the state, to be offered in each case at the option of such Principal, to members of the senior class who expect to enter the University. If, for the convenience of his students, the Principal elect to offer the examination, it must be given on the date assigned and under the rules which govern State High School Board examinations. All papers must be sent, immediately after examination, to the registrar of the University and will be marked by the proper University authority.

examination, without having passed either test in English, may be given a special test, if the Department of Rhetoric thinks fit, or shall be registered for Freshman Rhetoric, with the provision that, if found deficient during the first six weeks, they shall be dropped into the Preparatory Rhetoric class. Such students must be prepared to suffer any other change in registration necessitated by the program and the rules of the college.

PREPARATION REQUIRED.

Graduates of the following courses, providing they present credits for four years of English and one year each of Elementary Algebra and Plane Geometry, are admitted to the freshman class without condition other than that imposed by the above examination in English:

(a) Any four-year course of a Minnesota State High School.

(b) A four-year course of other accredited schools in the state.

(c) A four-year course of schools in any other state accredited to the State University of that state.

(d) The advanced English or Latin Course of the Minnesota Normal Schools.

In all cases the character of the work and the time given to the respective subjects should be according to the following schedule:

I. REQUIRED OF ALL.

English, four years, including

(a) Classics.
(b) Principles of Composition.
(c) Practice in Written Expression.

Mathematics.

(a) Elementary Algebra, one year.
(b) Plane Geometry, one year.

II. ELECTIVE.

Mathematics, one year.

Higher Algebra, one-half year.
Solid Geometry, one-half year.

Latin, two or four years.

* Grammar, one year.
Caesar, four books, one year.
Cicero, six orations, one year.
Virgil, six books, one year.

Greek, two years.

Grammar, one year.
Anabasis, four books, one year.

*Note—All students entering the College of Medicine and Surgery must present evidence of having completed the work in Latin indicated above.

German, two years.

Grammar, one year.
Literature, one year.

French, two years.

Grammar, one year.
Literature, one year.

Spanish, two years.

Grammar, one year.
Literature, one year.

Swedish, Danish-Norwegian, Icelandic, two years.

Grammar, one year.
Literature, one year.

History, three years.

Ancient, to Charlemagne, one year.
Modern, from Charlemagne, one year.
England, one-half year.
Senior American, one-half year.

American Government, one-half year.

Political Economy, one-half year.

Physics, one year.

Chemistry, one year.

Botany, one-half or one year.

Zoology, one-half or one year.

Astronomy, one-half year.

Geology, one half-year.

Physiography, one half-year.

Commercial History and *Commercial Law,* one year.

Freehand Drawing, one year.

Mechanical Drawing, one year.

Commercial Geography.

Senior Arithmetic and *Senior English Grammar,* as parts of a High School Normal course.

SYLLABUS

The following statements indicate, in a general way, the ground expected to be covered in the study of the various subjects accepted for admission.

English (four years).

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four years' course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

(a) English Classics
(b) The Principles of Rhetoric
(c) Practice in Written Expression

(a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespere's "Macbeth," Milton's "Paradise Lost," books one and two; Burke's "Conciliation with America": Carlyle's essay on "Burns." In the study of these works the student should come to know the leading facts connected with the author and his time; he should become familiar with the subject-matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.

A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected: at least two of Shakespere's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.

(b) The work in the Principles of Composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.

(c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

Elementary Algebra (one year)

Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations (with one, two, and several unknown quantities) followed by problems, theory of exponents, involution (including the binominal theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

Higher Algebra, First Part (one-half year)

While this subject does not include any topics not named under Elementary Algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of Higher Algebra

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

Plane Geometry (one year)

Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

Solid Geometry (one half year).

Any of the standard texts on this will furnish the necessary preparation. The excesses requiring solutions and demonstrations should not be omitted.

Latin Grammar (one year).

This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

Caesar (one year).

First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text; more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The pupil should be able to rewrite in oratio recta all the passages of oratio obliqua that occur in the text. The student is expected to be familiar with the life of Caesar and an account of his wars.

Cicero (one year).

Six orations, four against Catiline and any two of the following: "Poet Archias," "Ligarius," "Marcellus," "Manilian Law" (to count as two orations), the Fourteenth Philippic. The student should be familiar with the life of Cicero and the history of his times.

Virgil (one year).

Six books of Aeneid, or five of Aeneid and one of the Metamorphoses of Ovid, or the Ecologues. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

Greek Grammar (one year).

Xenophon's Anabasis (one year)—Four books.

German (two years).

First year the pupil should acquire:

(1) A correct pronounciation, training of the ear, eye and organs of speech.
(2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.
(3) From two to three hundred German idioms.
(4) The essentials of German Grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year—

(1) Read 150 to 200 pages of prose and poetry.
(2) Practice in reading smoothly and with expression.
(3) Carefully translate selected passages of the text into idiomatic English. To translate easy sentences which the student already understands is a waste of time.
(4) Translate sentences from English into German, using words and idioms of the text read.
(5) Study topically German grammar; chief rules of othography, etymology and syntax; illustrate these by words, phrases and sentences selected or composed by the student.

French (two years).

The principles of French grammar, including acquaintance with the verb, regular and irregular; an ability to translate easy English sentences into French and simple French prose into English.

Spanish (two years).

First year—Grammar and Reader.

Second year—Grammar reviewed; reading of some modern writer; composition and conversation.

Ancient History (one year).

(a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.

(b) In the Greek and Roman age emphasis should be put upon the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.

(c) The subject should be carried down to the establishment of Charlemagne's Empire. This will bring together all the chief lines of influence which were afterwards to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an earlier date, and will leave the subject at a period of comparative order and simplicity.

Modern History (one year).

From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the Protestant Reformation, the French Revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

Instead of these two subjects, Ancient and Modern History, the University will, until 1907, continue to accept the following:

History of Greece and Rome (one-half year).

Medieval (one-half year).

Modern History (one-half year).

English History (one-half year).

The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

Senior American History (one-half year).

No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case considerable use should be made of collections or documents and sources.

American Government (one-half year).

This should be a study of our government, national, state and local, as it is organized and actually operated to-day. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, Northwestetaoin shrdlu cmfwyp nup tion of the United States, Constitution of Minnesota, and a local city or village charter.

In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing and appointing men to office; of fram-

ing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law and constitutional law, between equity, civil and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meeting, town meeting, sessions of the county Commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be lead to read about and observe pubilc affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

Political Economy (one-half year).

Some good elementary text book should be mastered. It is desirable that students be encouraged to study local and general economic phenomena and conditions. The time should be wholly devoted to the elements of the science of political economy. The beginner should not be confused with problems of applied economics such as tariff, trusts, bimetallism, etc.

Physics (one year).

It is suggested that the year's work be confined to four of the seven subjects mentioned below.

(1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects but not to be divided).

Chemistry (one or one-half year).

The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

The half year's work should cover the non-metals only, with laboratory experiments similar to the first half of the full year's work.

After the opening of the year 1906-07, the one-half year credit will not be accepted for admission.

Botany (one or one-half year).

Schools which give one-half year of Botany should devote particular attention to plant relations, making the course largely ecologic in bearing. When a whole year is given to the subject, additional work upon plant structures should be offered, and together with fundamental conceptions of ecology a general idea of morphology and taxonomy should be the aim of the course.

Zoology (one or one-half year).

work cannot be laid out along the line indicated above.

The course of Zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment. The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the differences in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be the prominent feature, and as much as possible of this should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature, train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as well as as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable

It will be noticed that such a course of necessity includes so-called laboratory work. The amount and extent of the laboratory work will depend upon conditions, but even under the best conditions it is hardly advisable to go into detailed dissections and embryology. Continued, repeated and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

Astronomy (one-half year).

An elementary course in General Astronomy as presented in any good modern text-book.

Geology (one-half year).

These subdivisions should receive special attention: physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals, modifying the earth; and a brief survey of historical geology.

Physiography (one-half year).

The following topics should be emphasized: Meteorology, to an orderly arrangement of the leading facts relating to the atmosphere, and its phenomena, including some acquaintance with the work of the U. S. Bureau; Land Sculpture, as it treats of the origin, development and decadence of land forms and the influence of these processes on the physical environment of man.

Commercial Geography (one-half or one year).

The work usually provided in high schools will answer this requirement.

An applicant not holding a diploma from one of the courses (a), (b), (c), or (d), indicated above, may be admitted by gaining by examination fifteen year-credits, including four years of English and one year each of Elementary Algebra and Plane Geometry, from the list of subjects given above.

State High School Board certificates will be accepted for the subjects which they represent.

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State High School Board certificates will be accepted for the subjects which they represent.

The following High Schools are accredited:

Ada
Adrian
Aitkin
Akeley
Albert Lea
Alden
Alexandria
Amboy
Annandale
Anoka
Appleton
Argyle
Arlington
Atwater
Austin
Barnesville
Belle Plaine
Bemidji
Benson
Bird Island
Blooming Prairie
Blue Earth City
Brainerd
Breckenridge
Browns Valley
Buffalo
Caledonia
Canby
Cannon Falls
Cass Lake
Chatfield
Cloquet
Cokato
Crookston
Dawson
Delano
Detroit
Dodge Center
Duluth
East Grand Forks
Elbow Lake
Elgin
Elk River
Elmore
Ely
Eveleth
Excelsior
Fairmont
Faribault
Farmington
Fergus Falls
Fertile
Fosston
Fulda
Gaylord
Glencoe
Glenwood
Graceville
Grand Meadow
Grand Rapids
Granite Falls
Hallock
Harmony
Hastings
Hawley
Hector
Henderson
Herman
Heron Lake
Hibbing
Hopkins
Howard Lake
Hutchinson
Jackson
Janesville
Jordan
Kasota
Kasson
Kenyon
Lake Benton
Lake City
Lake Crystal
Lakefield
Lamberton
Lanesboro
Le Roy
Le Sueur
Litchfield
Little Falls
Long Prairie
Luverne
Mabel
Madelia
Madison
Mankato
Mantorville
Mapleton
Marshall
Milaca
Minneapolis
  Central
  East Side
  North Side
  South Side
Minneota
Montevideo
Montgomery
Monticello
Moorhead
Mora
Morris
Morton
New Paynesville
New Prague
New Richland
New Ulm
Northfield
North St. Paul
Olivia
Ortonville
Osakis
Owatonna
Park Rapids
Pelican Rapids
Perham
Pine City
Pine Island
Pipestone
Plainview
Preston
Princeton
Red Lake Falls
Red Wing
Redwood Falls
Renville
Rochester
Royalton
Rush City
Rushford
St. Charles
St. Cloud
St. James
St. Louis Park
St. Paul
  Central
  Cleveland
  Humboldt
  Mechanic Arts
St. Peter
Sandstone
Sauk Center
Shakopee
Sherburne
Slayton
Sleepy Eye
Springfield
Spring Valley
Staples
Stewartville
Stillwater.
Thief River Falls
Tracy
Two Harbors
Virginia
Wabasha
Wadena
Warren
Waseca
Waterville
Wells
West Concord
Wheaton
White Bear
Willmar
Windom
Winnebago
Winona
Winthrop
Worthington
Zumbrota

The following private schools are also accredited to the University:

St. Mary's Hall, Faribault
St. Paul Academy
Shattuck Military Academy, Faribault
Stanley Hall, Minneapolis
Windom Institute, Montevideo
Concordia College, Moorhead
Pillsbury Academy, Owatonna
St. Joseph's Academy, St. Paul
St. Paul's College, St. Paul Park
Holy Angel's Academy, Minneapolis

ADMISSION TO ADVANCED STANDING.

1. From other colleges.

This college accepts records from all reputable colleges for credit to advanced standing. Such records are accepted as far as they are equivalent to the work done in this college. In bringing records from other institutions, the certificate must be upon the official blank of the institution granting the certificate, and should show:

(a) The subject studied; if a language, the books read, etc.

(b) The time spent upon each subject.

(c) Ground covered in laboratory work in case of laboratory subjects

(d) The result. It is sufficient to state that the subject was completed creditably.

Records from institutions whose entrance requirements are not as high as those of this college will not be accepted for equivalent rank. The credits to be allowed in such cases will be determined by the Enrollment Commitee.

2. From Minnesota Normal Schools.

Graduates of the "advanced graduate course" of a Minnesota State Normal School are admitted with advanced standing equivalent to one year's credit, and receive the degree of Bachelor of Arts upon completing in this college the following courses: freshman mathematics, two years of science from the subjects prescribed for the freshman and sophomore years, two years of language (not including English) from those years, sophomore rhetoric, and sufficient additional work to complete three full years of the college course. Such students will not be permitted to elect courses V and VII in Education, and before registering for the freshman mathematics they will be required to make good any deficiencies in their preparatory mathematics, under the regulations that apply to all other candidates for the bachelor's degree.

Individual graduates of the "advanced Latin course" (five-year) or of the "advanced English course" (five-year) of a Minnesota State Normal School, who, on the basis of maturity and ability, present certificates of special fitness from the president of the Normal School, will be admitted with advanced standing under the same regulation and proviso.

ADMISSION AS UNCLASSED STUDENTS.

Whenever in the judgment of the Enrollment Committee an applicant presents satisfactory reasons for not taking the regular course, such applicant may be admitted as an unclassed student. He must take the same examinations or present the same credentials as are required of those

who enter the freshman class. Exceptions can be made only upon vote of the Faculty.

Unclassed students must take the same number of hours as regular students, and, unless advanced standing is obtained through credits from other institutions, four-fifths of the work during the first year must be taken from subjects offered to freshmen. A new application must be made each semester to the Enrollment Committee.

DAILY ROUTINE

The morning session begins at 8:30 o'clock; a general assembly of the faculty and students is held each day at 10:25 o'clock, at which there are brief and simple religious exercises. Work extends through six days of the week.

EXAMINATIONS

At the close of each semester, examinations are held in the studies of that semester.

Students are reported as "excellent," "good," "passed," "incomplete," "conditioned," or "failed."

An "incomplete" must be removed within one month from the opening of the following semester or it becomes a condition.

A "condition" not made up before the subject is offered again becomes a "failure," subject to rules governing failures.

"Failures" must be pursued again in class.

A student who at any time is deficient in more than half a year's work, loses his class rank and is regarded as a member of the next lower class.

Students whose absences in any term exceed four weeks in the aggregate, are not permitted to take the term examinations without special permission of the faculty.

FAILURE TO KEEP UP WITH THE CLASS.

Any student receiving conditions or failures in 60 per cent of the work the first semester shall be dropped from the rolls, and shall not be allowed to re-enter the University until the opening of the following year.

Any student failing to pass in one-half of the work of any year shall not be allowed to register until reinstated by action of the faculty upon recommendation of the committee on students' work.

FEES

All students in the college, who are residents of the state, are charged an incidental fee of ten dollars a semester. Non residents are charged double the fee required of residents of the state, or twenty dollars a semester. No reduction is made for late entrance or leaving before the end of the semester. Save in the case of the first registration, the incidental fee is increased 25 cents for each day's dèlay in registration, beginning with the day set for recitations to begin. In addition to this fee, students who take work in laboratories are charged a sum sufficient to cover the cost of material and breakage. The following is a statement of fees charged per semester for freshmanyear; chemistry, $5; botany, $3; zoology, $3.

The University Summer School

This school begins shortly after Commencement and lasts about six o eight weeks. Courses are given in both Elementary and University work. These courses may be utilized to enable students to make up entrance deficiencies and to remove a portion of their academic work.

Full information concerning these courses may be obtained from the Registrar

Courses of Study

FOUR-YEAR COURSE IN SCIENCE, LITERATURE AND ARTS

LEADING TO THE DEGREE OF BACHELOR OF ARTS.

The degree of Bachelor of Arts will be conferred upon any student who completes, from the courses offered in this college, one hundred and twenty-six credits, in addition to the required exercises in Drill, Gymnasium and Physical Culture. A credit is one hour per week through one semester.

Of the courses selected five or more shall be long courses, and at least one long course shall be chosen from each of the following groups:

(a) English, French, German, Greek, Latin, Rhetoric.
(b) Animal Biology, Astronomy, Botany, Chemistry, Geology and Mineralogy, Physics.
(c) Economics, History, Philosophy, Politics, Sociology.

No student shall receive credit for more than two beginning language courses save by special permission.

A long course means an amount of work equivalent to not less than twelve credits in one department.

A double period in laboratory subjects counts as one credit-hour.

The notation [n] indicates the number of exercises per week, and [n2] indicates the number of double periods per week.

FRESHMAN YEAR.

Mathematics [3]—Required of all during freshman year.

(a) Second Part Higher Algebra and Trigonometry, for those who have entrance credits in First Part Higher Algebra and Solid Geometry.
(b) Solid Geometry and First Part Higher Algebra for those who lack entrance credits in these subjects.
(c) Freshmen who have an entrance credit in First Part Higher Algebra, but not in Solid Geometry, will take Second Part Higher Algebra the first semester and Solid Geometry the second semester.
(d) Freshmen who have an entrance credit in Solid Geometry, but not in the First Part Higher Algebra, will take First Part Higher Algebra the first semester and Trigonometry the second semester.

Note: First Part Higher Algebra and Solid Geometry cannot receive credits both for entrance and for freshman requirements.

Rhetoric [3] *Course* I.—Required of all who do not pass with a grade of "good" or "excellent" Part II. of the examination in Entrance English.

Students who have had special preparation in Debate may, by consent of the Head of the Department, substitute Argumentation for Rhetoric.

Preparatory Rhetoric [3]—Required of all who do not pass Part I. of the examination in Entrance English. This does not give a University credit.

Military Drill [3]—Required of men.

Gymnasium [1, in two periods]—Required of men.

Physical Culture [3]—Required of women.

In addition students shall choose from the following list a sufficient number of subjects to make in the aggregate not less than fourteen nor more than seventeen credits. The subjects chosen must be continued through the year

Animal Biology [32], Course I. General Zoology.

Animal Biology [32] Course II. Representatives of the phyla of the animal kingdom. May be pursued in connection with course I or independently by those with proper preparation.

Botany [32], Course I, Short.

Botany [32], Course II, first year of long course.

Chemistry [32], Course I, General.

Elocution [3], Course VII. To count for two credits.

***English* [3], Course I, and Course II.**

French [5], Course I, Grammar and translation, composition and conversation.

French [3], Course III, Beginnings of French literature and translations from modern authors.

French [5]. Courses III and IV.

German [5], Course I, Grammar, translation, pronunciation, conversation and composition.

German [3], Course IV, Advanced, third year's work.

German [5], Courses IV and V.

Greek [5], Course I, Grammar, Anabasis and composition. Course II may be pursued at the same time to advantage.

Greek [1], Course II, Composition.

Greek [3], Course III, Oratory and history.

History [3], Course I, 31 B. C. to 1500 A. D.—Open to students with less than two years of preparatory history.

History [3], Course II, English Constitutional. Open to students who have completed the equivalent of course I.

Latin [3], Courses I (Livy), II (Cicero), III (Plautus and Terence), IV Selections.

Scandinavian [5], Course I, Grammar and composition; practice, including writing, speaking and translating Swedish.

Scandinavian [5], Course II, Grammar and composition; practice, including writing, speaking and translating Danish—Norwegian.

Scandinavian [3], Course III, History of Scandinavian literature and study of authors.

Spanish [5], Course I, Grammar and composition, conversation and translation.

SOPHOMORE YEAR.

Rhetoric [3]—Required of all who took Preparatory Rhetoric in the freshman year. It counts for freshman and not sophomore credits.

Military Drill [2]—Required of men.

In addition to Military Drill sophomores shall elect not less than fifteen nor more than eighteen credit-hours of work from the subjects open to them. See departmental statements.

JUNIOR AND SENIOR YEARS.

The work of these two years is entirely elective, it being provided that no student shall elect less than fifteen nor more than eighteen hours of work in any semester, save by permission of the Committee on Students' Work.

1. Students who carry Military Drill [3] beyond the required two years will be allowed two semester credits for each year; but no credit will be allowed for such Drill for less than one year.

2. Seniors contemplating entering the Medical Department are permitted to elect the courses in Anatomy, Chemistry, Histology and Physiology (it being understood that no repetition of work is allowed) in the Medical Department. The work completed in any or all of these departments will be applied toward the work required for a degree in this college.

3. Members of the senior class of this college are permitted to elect throughout the senior year, work in the College of Law, including the Elements of Contracts, Domestic Relations, Torts and Criminal Law. The satisfactory completion of the above named courses will give the student twelve senior credits, and will entitle him to admission to the middle class of the College of Law. No student will be permitted to take more than one lecture each day in the College of Law, without special permission of the faculty of this college. The work must be taken with the night class in the College of Law.

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