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THE UNIVERSITY OF MINNESOTA

BULLETIN

Vol. V.

JUNE 1, 1902.

No. 7

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MINNEAPOLIS, MINN.

The University Bulletins are published by authority of the Board of Regents, six times a year,—every six weeks during the University year. 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. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minn

THE UNIVERSITY OF MINNESOTA

CATALOGUE

FOR THE YEAR

1901-1902

AND

ANNOUNCEMENTS

FOR THE YEAR

1902-1903



BY THE UNIVERSITY

MINNEAPOLIS

1902

The University

THE UNIVERSITY OF MINNESOTA comprises the following named colleges, schools and departments:

THE GRADUATE DEPARTMENT.

THE COLLEGE OF SCIENCE LITERATURE AND THE ARTS, including
the School of Technical and Applied Chemistry.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS.

THE SCHOOL OF MINES.

THE DEPARTMENT OF AGRICULTURE, including:

the College of Agriculture.

the School of Agriculture.

the Dairy School.

THE COLLEGE OF LAW.

THE DEPARTMENT OF MEDICINE, including—

the College of Medicine and Surgery.

the College of Homeopathic Medicine and Surgery.

the College of Dentistry.

the College of Pharmacy.

The Regents of the University have also entrusted to their charge

THE EXPERIMENT STATION, including—

the Main Station at St. Anthony Park.

the Sub-Station at Crookston.

the Sub-Station at Grand Rapids.

THE GEOLOGICAL AND NATURAL HISTORY SURVEY.

THE GRADUATE DEPARTMENT. In each of the colleges, except that of medicine, there are advanced courses of study leading to second degrees. These courses are open to graduates of any reputable college upon presentation of diploma.

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 two years is elective with certain limitations as to the range of subjects from which the electives are to be chosen. The work of the last two years is entirely elective. The course is so elastic that it permits the student to make the general scope of the course, classical, scientific or literary, to suit the individual purpose.

The School of Technical and Applied Chemistry, leading to the degree of bachelor of arts, is also organized as a part of this college.

A Summer School for Teachers. A six weeks' course of instruction is offered, in various University subjects, for those whose school duties prevent them from taking the regular University courses.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical and electrical engineering leading to the degrees of civil, mechanical and electrical engineer. This college offers a four years' 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 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 a four years' course of study in mining and metallurgy upon completion of which the degrees engineer of mines and metallurgical engineer are conferred.

THE COLLEGE OF AGRICULTURE offers a regular course in agriculture of four years college work. The degree of bachelor of agriculture is conferred on completion of the course.

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.

The Dairy School offers practical instruction in dairying to those who have had some experience in conducting a dairy.

THE COLLEGE OF LAW offers a three years' course of instruction leading to the degree of bachelor of laws. There is an evening class in this college leading to the same degree. This college offers graduate work leading to the degrees, master of laws, and doctor of civil law.

THE COLLEGE OF MEDICINE AND SURGERY and THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four years' courses of study of eight and one-half months each. Upon completion of either of the prescribed courses the degree doctor of medicine is conferred.

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 medicine is conferred.

THE COLLEGE OF PHARMACY offers a two and 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.

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

Bulletins of any department sent free to any address upon application. The full catalogue will be sent only upon receipt of ten cents to cover postage. Address,

THE REGISTRAR,

The University of Minnesota,
Minneapolis, Minn.

Organization.

The University was originally organized in 1851; it was re-organized in 1860, 1864 and 1868, and dates its actual beginning from the last named year.

The University is organized under the following act:

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 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 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 exercises 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

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

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, building 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 and 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 purpose 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 of 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 University 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

*The HON. JOHN S. PILLSBURY, MINNEAPOLIS,	-	-	<i>Regent for Life</i>
CYRUS NORTHROP, LL. D., MINNEAPOLIS, The President of the University.	-	-	<i>Ex-Officio</i>
The HON. SAMUEL R. VAN SANT, WINONA, The Governor of the State.	-	-	<i>Ex-Officio</i>
The HON. JOHN W. OLSEN, ALBERT LEA, The State Superintendent of Public Instruction.	-	-	<i>Ex-Officio</i>
The HON. ELMER E. ADAMS, B. A., FERGUS FALLS,	-	-	1902
The HON. THOMAS WILSON, ST. PAUL,	-	-	1903
The HON. WILLIAM M. LIGGETT, BENSON,	-	-	1903
The HON. A. E. RICE, WILLMAR,	-	-	1903
The HON. GREENLEAF CLARK, M. A., ST. PAUL, President of the Board.	-	-	1904
The HON. THEODORE L. SCHURMEIER, ST. PAUL,	-	-	1904
The HON. STEPHEN MAHONEY, B. A., MINNEAPOLIS, Secretary of the Board	-	-	1907
The HON. O. C. STRICKLER, M. D., NEW ULM,	-	-	1907
The HON. JAMES T. WYMAN, MINNEAPOLIS,	-	-	1907

*Died October 18th, 1901.

Executive Officers.

THE UNIVERSITY.

CYRUS NORTHROP, LL. D., *President.*
E. BIRD JOHNSON, B. S., *Registrar.*
D. W. SPRAGUE, *Accountant.*

THE COLLEGES.

WILLIAM M. LIGGETT, *Dean of Department of Agriculture.*
WILLIAM S. PATTEE, LL. D., *Dean of the College of Law.*
PARKS RITCHIE, M. D., *Dean of the College of Medicine and Surgery.*
ALONZO P. WILLIAMSON, LL. B., M. D., *Dean of the College of Homeopathic
Medicine and Surgery.*
WILLIAM P. DICKINSON, D. D. S., *Dean of the College of Dentistry.*
FREDERICK J. WULLING, PHM. D., *Dean of the College of Pharmacy.*
WILLIAM R. APPLEBY, M. A., *Dean of the School of Mines.*
FREDERICK D. TUCKER, B. A., *Principal of the School of Agriculture.*

LIBRARIES AND MUSEUMS.

WILLIAM WATTS FOLWELL, LL. D., *Librarian.*
LETTIE M. CRAFTS, B. L., *Assistant Librarian.*
INA FIRKINS, B. L., *Library Assistant.*
ANNA L. GUTHRIE, B. A., *Library Assistant.*
MARY S. MCINTYRE, B. S., *Librarian of School of Agriculture.*
THOMAS G. LEE, M. D., *Librarian of Department of Medicine.*
WILLIAM FURST, B. S., *Librarian of the College of Law.*
CHRISTOPHER W. HALL, M. A., *Assistant Curator, Geological Museum.*
HENRY F. NACHTRIEB, B. A., *Curator of the Zoological Museum.*

ALLEN W. GUILD, *Superintendent of Buildings.*

CALENDAR FOR 1902-1903.

1902.

1903.

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
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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
..

JANUARY.						
S.	M.	T.	W.	T.	F.	S.
..	1	2	3
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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.
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1	2	3	4	5	6	7
8	9	10	11	12	13	14
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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	..	..	..	..
..

The year 1903-1904 will begin September 1, 1903.

University Calendar, 1902-1903.

FIRST SEMESTER.

SEPTEMBER	2	T	Entrance examinations and registration.	
	3	W	" " " "	
	4	T	" " " "	
	5	F	" " " "	
	6	S	" " " "	
	8	M	Examinations end and registration completed.	I W
	9	T	Classes called for regular work.	
	13	S	.....	2 W
	15	M	(First College classes organized, 1869.)	
	20	S	.....	3 W
	27	S	.....	4 W
OCTOBER	4	S	.....	5 W
	11	S	.....	6 W
	18	S	.....	7 W
	25	S	.....	8 W
NOVEMBER	1	S	.....	9 W
	8	S	.....	10 W
	15	S	.....	11 W
	22	S	.....	12 W
	27	T	THANKSGIVING DAY. Holiday.	
	29	S	.....	13 W
DECEMBER	6	S	.....	14 W
	9	T	Annual Meeting of the Board of Regents.	
	13	S	.....	15 W
	20	S	Holiday Recess begins (no classes).....	16 W
	25	T	CHRISTMAS DAY.	
JANUARY	1	T	NEW YEAR'S DAY.	
	6	T	Work resumed in all departments.	
	10	S	.....	17 W
	17	S	.....	18 W
	19	M	Semester Examinations. I and II hour work.	
	20	T	" " " " III and IV hour work.	
	21	W	" " " " V and VI hour work.	
	22	T	" " " " VII and VIII hour work.	
	24	S	.....	19 W

SECOND SEMESTER.

JANUARY	27	T	Second Semester begins—Classes called for regular work.	
	31	S	.....	1 w
FEBRUARY	7	S	.....	2 w
	12	T	LINCOLN'S BIRTHDAY—Holiday.	
	14	S	.....	3 w
	18	W	University Charter, 1868. General Sibley died, 1891.	
	21	S	.....	4 w
	22	S	WASHINGTON'S BIRTHDAY.	
	28	S	.....	5 w
MARCH	7	S	.....	6 w
	14	S	.....	7 w
	21	S	.....	8 w
	28	S	.....	9 w
APRIL	4	S	.....	10 w
	11	S	.....	11 w
	18	S	.....	12 w
	25	S	.....	13 w
MAY	2	S	.....	14 w
	9	S	.....	15 w
	16	S	.....	16 w
	23	S	.....	17 w
	25	M	Semester examinations, I and II hour work.	
	26	T	" " III and IV hour work.	
	27	W	" " V and VI hour work.	
	28	T	" " VII and VIII hour work.	
	30	S	MEMORIAL DAY.....	18 w

COMMENCEMENT WEEK.

SUNDAY	MAY 31	BACCALAUREATE SERVICE,	- - -	3:00 P. M.
MONDAY	JUNE 1	SENIOR CLASS EXERCISES—Announcement by the class.		
TUESDAY	JUNE 2	SENIOR PROMENADE—Announcement by the class.		
WEDNESDAY	JUNE 3	ALUMNI DAY—Meeting of Alumni,	- - -	7:30 P. M.
THURSDAY	JUNE 4	COMMENCEMENT DAY—The Thirty-first Annual Com- mencement, Graduating Exercises,	- - - -	10:00 A. M.
		Alumni Banquet and President's Reception,		1:00 P. M.
FRIDAY	JUNE 5	SUMMER VACATION BEGINS,	- - -	19 w
		The year 1903-1904 will begin September 1, 1903.		

PROGRAM OF EXAMINATIONS, SEPTEMBER, 1902.

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 COLLEGE OF DENTISTRY.

The number placed after the subjects, when given, indicates the room in which the examinations will be held.

DAY	HOUR	Subjects for admission to the freshman class.
TUESDAY, September 2,	8:00-10:30	†English Classics.....13
	10:45- 1:15	*English Composition..... 1
	2:30- 5:00	*Elementary Algebra.....22
WEDNESDAY, September 3,	8:00-10:30	*Higher Algebra.....22
	10:45- 1:15	*Plane Geometry.....22
	2:30- 5:00	*Solid Geometry.....22
THURSDAY, September 4,	8:00-10:30	†All History Subjects.....17
		†Civics.....16
		†Political Economy.....16
	10:45- 1:15	*German.....21
	2:30- 5:00	*French.....28
FRIDAY, September 5,	8:00-10:30	*Latin Grammar..... 4
		*Greek.....25
		*Cæsar..... 4
	10:45- 1:15	†English Literature.....13
		*Cicero..... 4
	2:30- 5:00	*Vergil..... 4
SATURDAY, September 6,	8:00-10:30	‡Botany.....29
		‡Zoology.....35
		*Astronomy.....3
	10:45- 1:15	‡Geology.....18
	2:30- 5:00	‡Physiography.....18
	††Drawing.....24	
	††Shop Work.....24	

* Main Building; † Library Building; ‡ Pillsbury Hall; § Chemical Laboratory;
 ** Armory; †† Mechanic Arts Building.

Faculty and Instructors.

- ✓ **CYRUS NORTHROP, LL. D.**, President, 519 Tenth Avenue S. E.
- FRANK MALOY ANDERSON, M. A.**, 1629 University Avenue S. E.
Assistant Professor of History.
- WILLIAM R. APPLEBY, M. A.**, 911 Fifth Street S. E.
Dean of the School of Mines and Professor of Metallurgy.
- CHARLES W. BENTON, M. A., Litt. D.**, 516 Ninth Avenue S. E.
Professor of the French Language and Literature.
- JABEZ BROOKS, D. D.**, 1708 Laurel Avenue
Senior Professor of the Greek Language and Literature.
- ✓ **RICHARD BURTON, Ph. D.**, Hampshire Arms.
Professor of the English Language and Literature. (Absent on leave.)
- JOHN S. CARLSON, Ph. D.**, 827 Seventh Street S. E.
Professor of the Scandinavian Languages and Literatures.
- JOHN S. CLARK, B. A.**, 729 Tenth Avenue S. E.
Professor of the Latin Language and Literature.
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Surgery.
- JUANIATA L. SHEPPERD, M. A., St. Anthony Park
Instructor in Cooking and Laundering, School of Agriculture.
- HALDOR SNEVE, M. D., Minneapolis
Lecturer on Mechano-Therapy, College of Medicine and Surgery.
- H. L. SONDEGAARD, St. Anthony Park
Assistant in Butter Making, Dairy School.
- DAVID F. SWENSON, B. S., Minneapolis
Instructor in Philosophy.
- JAMES M. TATE, Minneapolis
Instructor in Wood Work.
- JOSEPHINE TILDEN, M. S., Minneapolis
Instructor in Cryptogamic Botany.
- NELLIE STINSON TRUFANT, 2614 Clinton Avenue
Instructor in Drawing and Design.

J. A. VYE, Instructor in Penmanship and Accounts, School of Agriculture, and Secretary of the Experiment Station.	St. Anthony Park
CLAIRE C. WATERS, Instructor in French.	Minneapolis
JAMES O. WELLS, D. M. D., Instructor in Crown and Bridge Work and Operative Technics, Col- lege of Dentistry.	9 Syndicate Block
WILLIAM A. WHEELER, B. Agr., Instructor in Botany, School of Agriculture.	Minneapolis
GRACE L. WHITTREDGE, Assistant in Physical Culture for Women, School of Agriculture.	St. Anthony Park
M. RUSSEL WILCOX, M. D., Demonstrator of Physiology, Department of Medicine.	Minneapolis
ELEANOR WILKINSON, Instructor in Physiology and Dietetics, College of Medicine and Surgery.	Minneapolis
L. B. WILSON, M. D., Senior Demonstrator of Pathology, College of Medicine and Surgery.	Minneapolis
N. H. WILSON, Instructor in Pharmacy.	Minneapolis
F. P. WRIGHT, M. D., Assistant in Surgery and Dermatology, College of Medicine and Surgery.	Minneapolis
FRANK R. WRIGHT, D. D. S., M. D., Lecturer on Anæsthesia and Chief of the Anæsthetic Clinic; Col- lege of Dentistry.	Minneapolis
ANTHONY ZELENY, M. S., Instructor in Physics.	Minneapolis

UNIVERSITY SCHOLARS.

GIVING INSTRUCTION AND ASSISTING IN LABORATORIES.

- Anatomy*—J. A. Cameron, M. Field, E. W. Alger, W. B. McCreery.
Animal Biology—Hal Downey.
Bacteriology and Pathology—Chelsea Pratt, H. C. Arey, E. S. Judd, Ellen Fullerton, B. S.,
A. G. Liedloff, W. M. Brown.
Botany—Charles J. Brand, Herman Schrader.
Chemistry—Raymond C. Benner, Frank F. Grout, Max N. Lando, Anton R. Rose.
Civil Engineering—Frederick H. Bass, C. E.
Dispensary Assistant—Carl Lester Hall.
Histology and Embryology—F. J. Bomberger, J. W. George, Herbert Coulter, E. E. Olander.
History—Helen E. Camp.
Mathematics—Hans H. Dalaker.
Pedagogy—Arne O. Aaberg.
Rhetoric—Ella C. Ruscoe, Jessie L. Schulen.
Surgical Pathology—I. C. McDonald.

Equipment.

GROUNDS AND BUILDINGS.

The University grounds comprise about forty-five acres lying between University avenue and the River and between Eleventh and Eighteenth avenues southeast. The grounds command a fine view of the Falls and the city but are sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number eighteen, and are valued at over \$700,000. A special clinical building for the use of the department of medicine, located in the southern part of the city where there is an abundance of clinical material, is within easy reach of the University. The campus is valued at about \$350,000 and the equipment of the buildings at about \$275,000.

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 \$300,000, 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 \$300,000.

LIBRARIES.

The following is a list of the libraries easily accessible to the University students:

Minneapolis—The University Libraries, 84,000 volumes; the Public Library, 125,000 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 restrictions to law students; the Minnesota Academy of Natural Sciences, 7,000 titles.

St. Paul—The State Historical Library, 70,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The Libraries of the University contain about eighty-four thousand bound volumes, besides about twenty-six thousand volumes of pamphlets, magazines and reports. About one hundred twenty periodicals are received regularly by the library, not inclusive of technical magazines and newspapers.

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.

Besides the general library of the University, there are a number of special libraries consisting mainly of books of reference and current periodicals relating to technical subjects in connection with the several departments in engineering, botany, animal biology, law and medicine.

The Law Library has been greatly increased during the past year. It now 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 turning over to the University all the Briefs and Paper-Books in the causes 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 suits 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 4,500 entries and more than 30,000 specimens; a series of 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.

(b) *In Zoology*: All the material collected by the State Zoologist; 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 Zoological Survey.

(c) *In Botany*: The general herbarium numbering about 250,000 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) *The Museum of 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, dye-woods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) *The Classical Museum*: Some material illustrating classical geography, topography, chronology, mythology, archæology and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, fac-similies of manuscripts and inscriptions.

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

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

(h) *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 forgings 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) *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.

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 measuring machine by Repsold; a spectrometer by Brashear; a three inch transit circle and chronograph by Fauth; a Howard astronomical 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, 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.

General Information.

THE UNIVERSITY YEAR.

The University year covers a period of thirty-eight weeks beginning on the Tuesday before the first Thursday in September, and is divided into nineteen-week semesters. Commencement day comes on the first Thursday in June.

THE ONE MILE LIQUOR LAW,

A special act of the legislature 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."

STUDENTS' SOCIETIES.

RELIGIOUS.

THE STUDENTS' CHRISTIAN ASSOCIATION was organized by the students and faculty of the University in 1869; its object being, as stated in the constitution, 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 and is meant to be the rallying point of all the Christians in college. 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." The association rents the S. C. A. building and keeps it open, with a general secretary in charge, at all times. This building is maintained as the social and religious headquarters of all young men in the University.

The association provides an employment bureau whose services are free to students in all departments of the institution and a committee to help students to find comfortable rooms and boarding places. The association also maintains an educational department in which students can make up their entrance conditions without any charge for instruction.

The general secretary will be pleased to correspond with any young man intending to come to the University. Address the General Secretary of the Y. M. C. A., University of Minnesota, Minneapolis, Minn.

THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION is the center of Christian life among the young women of the University, and its object is the development of Christian character in its members and the prosecution of active Christian work among the young women of the University. The association has a room in the Library building which they have furnished and which is always open to members and their friends. Regular weekly prayer meetings are held; also Sunday afternoon meetings. One-third of the members belong to Bible classes which meet each week for one hour. Any young woman wishing information in regard to the University is invited to correspond with the president of the association.

THE UNIVERSITY CATHOLIC ASSOCIATION.

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 of the Young Women's Christian Association, through the courtesy of those organizations.

Aside from the religious objects, the association tends to promote good fellowship among its members. In the fall 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.

LITERARY, SCIENTIFIC AND PHILOSOPHICAL.

Literary Societies—These societies are mainly debating clubs. Every one is cordially invited to attend the literary sessions, but the business sessions are usually held behind closed doors. Any one wishing to join should make early application to some member of the society he prefers, as the membership is limited.

Federated Literary Societies—A federation including the Blackstone, Shakopean, Law Literary, Forum, Castalian, Kent, Minerva and Hermean literary societies. Organized for the promotion of general literary and rhetorical work and for management and support of the interstate and intersociety debates.

Blackstone—Membership limit, 25; men: *Shakopean*—Membership limit, 35; men: *Forum*—Membership limit, 30; men: *Minerva*—Membership limit, 30; women: *Law Literary*—Unlimited; law students: *Castalian*—Membership limit, 35; men: *Kent*—Membership limit, 30; law students: *Hermean*—Membership limit, 30; men: *Theta Epsilon*—Membership limit, 30; women.

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

Greek Club—Is a society organized by professors and students of the department of Greek.

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 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 Dramatic Club is organized for the study and practice of dramatic art.

The Engineers' Club meets once a week to listen to addresses by prominent engineers and for the discussion of various engineering topics.

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

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

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

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

The Pedagogical Society is organized for the purpose of the investigation and discussion of pedagogical problems.

The Art Club is an organization of instructors and students interested in art work. The club meets once a month for lectures and discussion of art topics.

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

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

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 Zoological Journal Club includes advanced students who meet for the discussion of current zoological literature.

The Zoological Reading Club is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoology.

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

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

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.

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: they pass upon the eligibility of players, investigate charges of misconduct and arrange the schedule of games. It is the purpose of this board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about three and one-half acres immediately adjoining the armory.

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.

PRIZES.

THE PILLSBURY PRIZES.

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

The above mentioned prizes offered by the late John S. Pillsbury, are to be continued through the courtesy of his daughter, Mrs. Sarah Pillsbury Gale, and his son Alfred F. Pillsbury.

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 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.

PAIGE LAW PRIZE.

Professor James Paige of the College of Law offers an annual prize of forty dollars for the best thesis presented by any member of the graduating class.

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.

THE C. A. SMITH PRIZE.

Mr. C. A. Smith, of the C. A. Smith Lumber Company offers an annual prize of fifty dollars (\$50) to students winning a place on the team for the central debating league.

THE C. S. BUCK PRIZE.

Mr. C. S. Buck, of University News Store offers this year, a prize of twenty-five dollars (\$25) to students winning a place on the central debating league team.

THE SCHURMEIER PRIZE.

Hon. T. L. Schurmeier, of St. Paul, offers through the department of Sociology, a prize of twenty dollars for the best essay presented by an undergraduate student on the subject of "The Negro Problem in America." The essay must consist of three thousand words and should be handed to the professor of sociology on or before May 10. Judges may reject any or all essays at their pleasure.

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of \$250.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay.

The competition is open to all students of the college of science, literature and the arts.

The essays must contain not less than 2000 nor more than 3000 words neatly type written, and must be handed to the professor of political science on or before May 10, 1903. The usual devices for securing impersonality must be adopted. The judges will be appointed by the president of the University.

THE MINNEAPOLIS TIMES "GOOD ROADS" PRIZES.

The Times Newspaper Company offers, for competition, to the sophomores of the department of civil engineering, three gold medals for the best "essays" or "studies" in good roads.

First prize—A fifteen dollar gold medal.

Second prize—A ten dollar gold medal.

Third prize—A five dollar gold medal.

The conditions for competition are as follows:

The essays are to be on some phase of the "good road" question, to be approved by the department. Papers to contain about two thousand words. The good roads "studies" must be of some actual condition of roads in the State of Minnesota.

THE BRIGG'S PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, President of the Twin City Iron Works, 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.

Essays should contain about 3000 words, and must be submitted to the professor of rhetoric on or before May first.

THE DUNWOODY PRIZE.

Mr. Wm. H. Dunwoody, president of the St. Anthony and Dakota Elevator Co., offers \$100 to that student who shall earn the right to represent Minnesota in the Northern Oratorical League. This league is composed of the seven largest universities of the central states, viz: Minnesota, Iowa, Wisconsin and Michigan State Universities, and Oberlin, Chicago and Northwestern.

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.

THE PEAVEY PRIZE.

Mr. Frank H. Peavey has provided for a cash prize 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 classes writing and delivering the best oration.

THE COLLEGE COURT PRIZE.

This prize consists of twenty-five dollars worth of law books on the subjects of pleading and evidence, and is offered by Professor A. C. Hickman, of the Law college.

THE WYMAN PRIZE.

A prize of twenty dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three thousand words by an undergraduate student, on the subject of "The Small Producer and the Trust "

CLASS OF '90 FELLOWSHIP, 1902-1903.

The class of 1890 offers a fellowship of \$200 for the year 1902-1903, to be awarded at commencement, 1902, subject to the following conditions:

The fellowship will be awarded only to a graduate of at least one year's standing, who has already been engaged in graduate work either in residence or *in absentia*.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents six times a year—every six 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 *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.

The *Year Book of the Society of Engineers*. The book is published yearly by the students of the engineers' society. It is devoted to the publication of articles upon engineering subjects by professors and students in the college of engineering and the mechanic arts.

EXPENSES OF YOUNG MEN.

At the request of University officials, in past years a considerable number of students have kept strict account of their expenses, and the following statement shows fairly the possibilities as to expenses for a year's work at the University.

Class and society dues.....	\$ 6.00	8.25	
Room rent (9 months).....	36.25	203.75	175.00
Board (39 weeks).....	85.05		
Laundry.....	9.95		
Books and stationery.....	13.95	32.51	30.00
Street car fare.....	3.80	4.95	
Clothing.....	20.80	74.25	50.00
Benevolence, including amusements.....	17.35	24.90	
Miscellaneous.....	24.35	27.23	30.00
Railroad fare.....		16.25	
Total expenses.....	\$ 217.50	397.09	285.00
Saved during summer.....	\$ 35.00		
Earned during the year ..	237.75	272.09	265.00
Expenses.....	272.75		
	217.50		
Balance, over expense.....	\$ 55.25	\$125.00	\$20.00

This table does not represent the fees to be paid by students, and students who are planning to attend the University should take that into account.

The students represented in the above statements are fairly representative; they were neither extravagant nor did they deny themselves unduly to get along. Board could have been obtained at a rate cheaper than any of them paid.

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.

EXPENSES OF YOUNG WOMEN.

Rent.....		\$40.75	\$55.00
Board, light, laundry.....	\$75.21.....	52.42	138.00
Fuel.....		7.25	
Railroad fare and cartage.....		27.80	30.22
Street car fare.....	9.32.....	5.85	0.00
Stationery.....	2.16	8.07	
Amusements and membership dues.....	7.50	10.56	20.19
Personals and clothing.....	32.03	72.51	67.59
Books, fees and incidentals.....	23.20	18.94	15.60
Totals.....	\$150.08	\$240.05	\$355.60

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 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 ELLIOT SCHOLARSHIP LOAN FUND.

To fulfil 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 be repaid, without interest, at the earliest convenience of the recipients.

THE
GRADUATE DEPARTMENT

The Graduate Department.

This department affords an extension of the work of the college of science, literature and arts, the college of engineering, and the mechanic arts, the school of mines, the college of law, and the college of agriculture. It meets the threefold purpose of extending general culture, for which master's degrees are offered; of encouraging the mastery of a specialty for which the degree of doctor of philosophy is given, of providing for those who desire a more thorough acquaintance with particular subjects than is offered in undergraduate work, but are not candidates for degrees.

FEES.

All students doing work in this department are required to pay a fee of ten dollars. Those doing laboratory work must pay the usual laboratory fees in addition to the regular fee.

THE MASTER'S DEGREE.

COLLEGE OF SCIENCE LITERATURE AND THE ARTS.

I. The degree of master of arts will be conferred on a bachelor of this or any reputable college or university who, not sooner than one year after graduation, if in residence at this University, and not sooner than two years after graduation, if not in residence, shall pass an examination on certain prescribed lines of study, and present a satisfactory thesis.

II. A candidate for a degree is required to present his application on the proper blank, stating the several subjects selected in which to be examined, and the title of thesis. Graduates of other colleges or universities must present their diplomas or other credentials on filing their applications. After the approval of the application by the faculty of the college, no changes or departures will be permitted.

Applicants for graduate work must present their applications with the necessary credentials, to the committee on graduate studies and degrees, who shall examine said applicant and report accordingly to the general faculty. Provided always that the committee on graduate studies and degrees may prescribe for the candidate such preliminary studies as they may deem necessary for entrance on his work. Professors shall report to

the faculty early in second semester of each year, the names and work of the graduate students actively at work in their departments.

The professors in charge of the subjects pursued by the candidate for the master's degree, shall be the examining committee of said candidate, of which the professor in charge of the major subject selected, shall be the chairman, and shall make its report to the committee on graduate studies and degrees.

III. Table of the departments of study offered to candidates :

- A. Classical philology:
 1. Greek.
 2. Latin.
 3. Sanskrit.
 4. Semitic languages.
- B. Modern philology:
 1. English.
 2. French (Spanish and Italian.)
 3. German.
 4. Scandinavian languages.
- C. Comparative philology:
- D. Biological sciences:
 1. Botany.
 2. Zoology.
 3. Paleontology.
- E. Physical sciences:
 1. Geology—lithological.
 2. Chemistry.
 3. Physics.
 4. Mineralogy.
- F. Mathematics sciences:
 1. Mathematics.
 2. Astronomy.
- G. Philosophical sciences:
 1. History.
 2. Economics.
 3. Politics.
 4. Philosophy.
 5. Pedagogy.
 6. Social science.
 7. Archæology.

IV. THE AMOUNT OF WORK done by the candidate shall be equivalent to that done by the senior class, viz: two semesters of four subjects each term, with thesis in addition.

NOTE—It will be observed that this is equivalent to 8 semesters of work on one subject. Hence, estimates of the time are stated in eighths of a year.

V. METHOD OF SELECTING WORK:

1. The candidate shall select work in three distinct departments from the table of studies in number III.

2. One of the subjects he shall indicate as a major, the other two as minors.

3. The candidate shall devote not less than four-eighths of his work to the major, and not less than one-eighth to each minor.

4. The thesis shall be on some theme connected with the major subject.

VI. The proficiency of candidates shall be determined by examination only.

VII. All examinations shall be held at the University, at which the professors in charge of the subjects pursued by the candidate for the master's degree shall be present as the examining committee of said candidate, the professor in charge of the major subject being chairman. The examination must be completed by the second Thursday preceding commencement, and the examining committee shall make its report to the committee on graduate studies and degrees.

THE COLLEGE OF ENGINEERING, AND THE MECHANIC
ARTS AND THE SCHOOL OF MINES.

All regulations governing candidates for the master's degree apply to the candidate for second degrees in the college of engineering and the mechanic arts and the school of mines, particularly as to the amount of work done, the method of selecting work, degree of proficiency expected and the time and manner of conducting the examination.

The courses offered are a continuation of the lines of undergraduate work in that department which has conferred upon the student his first degree. Upon the completion of a full year of work and passing a satisfactory examination, with a technical thesis, the student is entitled to the degree of master of science.

THE COLLEGE OF AGRICULTURE.

The college of agriculture provides graduate work, under the same general plan as the college of science, literature and the arts. Work leading to the master's degree is open to bachelors of this or any reputable agricultural college. Applicants for graduate work in this college are referred to the dean and committee on graduate work.

COLLEGE OF LAW.

For the benefit of students who wish to pursue legal studies more advanced than they are able to secure as undergraduates, graduate courses are offered, leading to the degrees of master of laws and doctor of civil laws.

The graduate courses required for the degree of master of laws, are as follows:

- Philosophic basis of jurisprudence.
- Roman Law.
- Political science.
- Constitutional jurisprudence and history.
- Theories of taxation.

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 requiring 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. Any person who possesses the requisite legal learning may, however, enter this course as a special student and pursue any and all of the studies offered.

Students who have received the degree of bachelor of laws, from this or some other law college requiring three years' course of study for said degree, and who have also received the degree of master of laws, from this or some other college 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 entrance 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.

Neither of the aforementioned degrees will be conferred until a satisfactory thesis is presented to the faculty by the student. The thesis for the doctor's degree must be one evincing original investigation and special excellence.

DEGREE OF DOCTOR OF PHILOSOPHY.

The degree of doctor of philosophy is conferred on bachelors of this, or any reputable college or university, under the following rules:

Applicants for the degree are referred with the necessary credentials, to the committee on graduate studies and degrees, who determine upon the fitness of said applicant for the work proposed and report accordingly to the faculty.

The candidate must elect his work in three departments, a major subject in one department, and two minor subjects in other departments. In special cases the faculty may, upon the recommendation of the committee on graduate studies and degrees, allow the work to be elected in two departments.

Candidates for this degree must devote at least three years of graduate study to the subjects approved. One of these three years, namely, that in which the final examination is held, must be spent in residence at the University. In lieu of the other years the candidate may offer an equivalent term of resident graduate work at some other university.

The candidate must pass satisfactory examinations on his major and minor subjects. In these examinations he must evince an exhaustive knowledge of the special field selected and must show such acquaintance with the minors and the entire field of his major as the committee of examination may require. The candidate must also have a reading knowledge of German and French.

The examination on the major subject is held on or before the second Tuesday in May of the year in which the candidate expects to receive the degree. The examination on the minor subjects is held at any time one year prior to the examination on the major. All examinations must be reported to the committee on graduate studies and degrees.

The candidate must present a thesis to the committee of examination on or before the first day of May of the year in which he expects to receive the degree. The thesis must give evidence of original and independent research, and must be a contribution to knowledge.

The committee of examination shall consist of five professors appointed by the committee on graduate studies and degrees, which number shall include, if practicable, the professors in charge of the candidate's work.

After the above examinations have been satisfactorily passed and the thesis approved by the committee of examination, the candidate is presented to the faculty by the professor in charge of his major subject for final examination. The presenter submits a written statement of the academic life of the candidate, of the character and scope of the examinations, and of the scope and value of the thesis. Any member of the faculty is then at liberty to ask of the candidate or of the presenter any questions he may desire. Upon the evidence before them the faculty then decide by a vote whether the student shall be recommended for the degree.

In the event of the doctor's degree being sought by members of the University faculty, the thesis shall be passed upon by a committee of three, composed of officers of other institutions, who shall individually report in writing to the president. This committee shall be named by the president.

THE COLLEGE OF

SCIENCE,
LITERATURE AND
THE ARTS.

The College of Science, Literature and the Arts.

THE FACULTY.

- CYRUS NORTHROP, LL. D., *President.*
WILLIAM W. FOLWELL, LL. D., *Professor of Political Science.*
JABEZ BROOKS, D. D., *Senior Professor of Greek.*
CHARLES N. HEWETT, M. D., *Professor of Sanitary Science.*
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.*
JOHN S. CLARK, B. A., *Professor of Latin.*
JOHN F. DOWNEY, M. A., C. E., *Professor of Mathematics.*
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.*
CONWAY MACMILLAN, M. A., *Professor of Botany.*
FREDERICK J. E. WOODBRIDGE, M. A., *Professor of Philosophy.*
WILLIS M. WEST, M. A., *Professor of History.*
DAVID L. KIEHLE, LL. D., *Professor of Pedagogy.*
GEORGE B. FRANKFORTER, M. A., Ph. D., *Professor of Chemistry.*
JAMES RICHARD JEWETT, Ph. D., *Weyerhaeuser Professor of Semitic Languages and History.*
FRANCIS P. LEAVENWORTH, M. A., *Professor of Astronomy and Director of the Observatory.*
RICHARD BURTON, Ph. D., *Professor of English.*
FREDERICK KLAEBER, Ph. D., *Professor of Comparative and English Philology.*
JOSEPH BROWN PIKE, M. A., *Professor of Latin.*
JOHN S. CARLSON, Ph. D., *Professor of Scandinavian Languages and Literature.*
CHARLES P. SIGERFOOS, Ph. D., *Professor of Zoology.*
FRANK L. MCVEY, Ph. D., *Professor of Private Economics.*
JOHN ZELENY, B. S., B. A., *Associate Professor of Physics.*
SAMUEL G. SMITH, Ph. D., LL. D., *Professor of Sociology.*
HENRY L. WILLIAMS, M. D., *Director of Athletics.*
MATILDA J. WILKIN, M. L., *Assistant Professor of German.*
CHARLES F. SIDENER, B. S., *Assistant Professor of Chemistry.*
EDWARD EUGENE McDERMOTT, M. S., *Assistant Professor of Rhetoric and Elocution.*
WILLIAM H. KIRCHNER, B. S., *Assistant Professor of Drawing.*
CHARLES F. McCLUMPHA, Ph. D., *Assistant Professor of English Literature.*
EDWARD E. NICHOLSON, M. A., *Assistant Professor of Chemistry.*
LOUIS J. COOKE, M. D., *Director of Gymnasium.*
FRANK M. ANDERSON, M. A., *Assistant Professor of History.*
NORMAN WILDE, Ph. D., *Assistant Professor of Philosophy.*
CARL SCHLENKER, B. A., *Assistant Professor of German.*
ALBERT B. WHITE, Ph. D., *Assistant Professor of History.*
HAYDN S. COLE, 1st Lieutenant U. S. A., *Military Science and Tactics.*

INSTRUCTORS.

- GEORGE N. BAUER, Ph. D., *Mathematics*.
 FREDERICK E. BECKMAN, Ph. D., *Spanish and French*.
 CHARLES P. BERKEY, Ph. D., *Mineralogy*.
 JOHN F. BERNHAGEN, B. S., *Military Science*.
 GILBERT AMES BLISS, Ph. D., *Mathematics*.
 ANNA M. BUTNER, *Physical Culture*.
 HENRIETTA CLOFATH, *Drawing*.
 ADA L. COMSTOCK, M. A., *Rhetoric*.
 HENRY A. ERIKSON, B. E. E., *Physics*.
 OSCAR W. FIRKINS, M. A., *Rhetoric*.
 HARLOW S. GALE, B. A., *Psychology*.
 JOHN E. GRANRUD, Ph. D., *Latin*.
 EVERHART P. HARDING, Ph. D., *Chemistry*.
 JANE KENNEDY, M. D., *Medical Examiner for Women*.
 MARCO F. LIBERMA, B. A., *French*.
 JENNINGS C. LITZENBERG, B. S., M. D., *Gymnastics*.
 HAROLD L. LYON, B. S., *Botany*.
 HOPE McDONALD, M. S., *History*.
 ELIZABETH MAY NORRIS, *Drawing*.
 OSCAR W. OESTLUND, M. A., *Animal Biology*.
 LEVI B. PEASE, M. S., *Chemistry*.
 MARY G. PECK, M. A., *English*.
 FRANCES B. POTTER, M. A., *English*.
 C. OTTO ROSENDAHL, B. S., *Botany*.
 EDWARD P. SANFORD, B. A., *Rhetoric*.
 FREDERICK W. SARDESON, Ph. D., *Paleontology*.
 CHARLES A. SAVAGE, B. A., *Latin*.
 WILLIAM A. SCHAPER, Ph. D., *Political Science*.
 WALDEMAR SCHULZ, Ph. D., *German*.
 JOSEPHINE E. TILDEN, M. S., *Cryptogamic Botany*.
 CLAIRE C. WATERS, *French*.
 ANTHONY ZELENY, M. S., *Physics*.

SCHOLARS AND ASSISTANTS.

- ARNE O. AABERG, B. A., *Pedagogy*.
 MARGUERITE BARBOUR, *Physical Culture*.
 R. C. BENNER, *Chemistry*.
 CHARLES J. BRAND, *Botany*.
 ETHEL C. BRILL, B. L., *Philosophy*.
 OSCAR C. BURKHARDT, B. A., *German*.
 HELEN E. CAMP, *History*.
 HANS H. DALAKER, *Mathematics*.
 HAL DOWNEY, *Animal Biology*.
 ROY Y. FERNER, B. A., *Astronomy and Mathematics*.
 FRANK GROUT, *Chemistry*.
 E. E. HEMENWAY, B. A., *Animal Biology*.
 MAX N. LANDO, *Chemistry*.
 LINDA H. MALEY, B. L., *Rhetoric*.
 ELLA C. RUSCOE, *Rhetoric*.
 ANTON R. ROSE, *Chemistry*.
 HERMAN SCHRADER, *Botany*.
 JESSIE L. SCHULTEN, *Rhetoric*.
 DAVID F. SWENSON, B. S., *Philosophy*.

ADMISSION.

Examinations for admission are held only at the beginning of the year. See calendar and program of examinations.

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.

- I. Students will be admitted to the freshman class on **passing the regular entrance examination.**
- 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, and

(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.

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 or 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.

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.

REQUIREMENTS FOR ADMISSION.

N. B.—Time element, as indicated with each subject, is essential.

A three years' course of reading in English classics.

English Composition, one year.

Algebra, elementary, one year.

Algebra, higher, one-half year.

Geometry, plane, one year.

Geometry, solid, one-half 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 **eight** year-credits, or their equivalent, to be chosen from the following list:

NOTE—It is provided that if any language, other than the English, is offered from the list of elective subjects, at least two years of that language shall be offered.

Latin, (four years.)

- Grammar, one year.
- Cæsar, four books, one year.
- Cicero, six orations, one year.
- Vergil, 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.

English.

- Latin element, one year. Latin grammar will be accepted in lieu of this subject.
- Literature, one year.

History, Greece and Rome, one-half year.

- England, one-half year.
- Modern, one-half year.
- Medieval, one-half year.
- Senior American, one-half year.

Civics, 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.

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 Classics, (three years averaging not less than three hours per week.)

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the requirements in English are outlined below somewhat in detail. Where texts are mentioned, they are merely suggestive and not arbitrary. Equivalents will be accepted in lieu of any of the texts mentioned.

English Classics—(a).

A critical reading, in class, of English masterpieces, with composition work based upon the same. The following lists are suggested as well adapted for such study:

Shakespeare, "Macbeth," Milton, "Paradise Lost," books i and ii; Burke, "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 be familiar with the subject matter of the work; thoroughly at home with the story; and have a clear idea of the form and structure of the work.

The teacher should call for frequent written exercises such as will naturally suggest themselves. For instance, in "The Merchant of Venice," the following are among the topics that might be suggested:

The historical setting of the play; the Jew in Europe, as depicted by the play; Shakespeare's purpose in the character of Shylock—to make him hateful or an object of pity. Portia's judgments; the comparison of certain characters.

English Classics—(b).

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. Somewhat greater latitude is to be allowed here. The following works are noted as indicative of the minimum amount of work expected.

At least two of Shakespeare's plays, besides the one studied critically.

One of Irving's works.

One of Hawthorne's novels.

Stevenson's "The Black Arrow."

One of Webster's orations.

English Composition and Rhetoric, (one year).

Candidates are expected to show a familiarity with the principles and technical terms in ordinary high school 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 the main purpose of this subject is to teach the student to use language correctly and forcibly. To this end students should be given constant exercise in composition writing. A knowledge of the subject matter of the texts used will be considered of less importance than the demonstration of ability to write good English.

A full year of work in the high school, five hours per week, should be devoted to this subject.

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 binomial 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 student 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 exercises 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.

Cæsar, (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 Cæsar 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 Phillipic. The student should be familiar with the life of Cicero and the history of his times.

Vergil, (one year).

Six books of Æneid, or five books of Æneid and one of the Metamorphoses of Ovid, or the Eclogues. The student must be familiar with the life of Vergil, 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.

English, the Latin element, (one year).

Latin grammar will be accepted in lieu of this requirement.

English Literature, (one year).

An acquaintance with the chief writers and events of the whole period covered by English literature is expected to be secured in the study of this subject.

German, (two years).

First year—The pupil should acquire:

- (1) a correct pronunciation, 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 orthography, 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.

History of Greece and Rome, (one-half year).

The history of Greece and Rome should be made a study of the evolution of Greek and Roman institutions. Events should be considered in their bearing on that evolution. Any good outline history will answer as a text-book, but it should be supplemented by other material. It should be noted that a definite portion of the examination will be devoted to geography.

Europe in the Middle Ages, (one-half year).

The topics to which special attention is called are the disintegration of the Empire of the West, Teutonic settlements and organizations, the Empire of the Franks, the Holy Roman Empire, feudalism, the medieval church, the crusades, the free cities, and the rise of national monarchies.

Modern History, (one-half year).

About half the time should be given to the French Revolution and to the nineteenth century.

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.

Civics, (one-half year).

The subject should be approached from the historical side. The best arrangement is to combine the study with the senior American history and to give a year to the two.

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.

Botany, (one year 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 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 features 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, 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 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 sub-divisions 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.

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 blanks of the institution granting the certificate, and should show:

1. The subject 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.

Monday is taken as a holiday. 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.

At the close of each term, examinations are held in the studies of the term. In order to be "passed" the student must obtain seventy-five per cent. In determining the standing of a student in any subject the result of his daily work in that subject is combined with the result of the final examination in the ratio of two to one.

Students who pursue any subject unsuccessfully are reported as "conditioned" or "failed."

A "condition" not made up before the subject is offered again becomes a "failure," subject to rules governing failures.

"Failures" must be taken over again in class.

A student who at any time is deficient in more than four studies of four hours per week, 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 of the freshman class who receives three conditions or failures the first-semester will be dropped from the rolls, and will not be allowed to re-enter the University until further preparation has been secured.

Any student of the freshman class who fails to pass in one-half of the prescribed work of the year will be required, on re-entering the University, to pursue again all the subjects in which he has not attained a grade of 80% or more.

FEEES.

All students in the college are required to pay an incidental fee of seven and one-half dollars per semester. No distinction is made between citizens of the state and non-residents. No reduction is made for late entrance or for leaving before the end of the semester. 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.

GRADUATION.

Students completing the course of study to the satisfaction of the faculty of the college, are entitled to receive the baccalaureate degree. Any person may undergo, at suitable times, examination in any subject, and if such person pass in all the studies and exercises of the course, he is entitled to the appropriate degree; **provided**, however, that at least one full year must 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.

UNCLASSED STUDENTS.

Applicants for admission as unclassified students must present credentials, or pass examinations, entitling them to admission to the freshman class as regular students. It is provided, however, that persons of mature years, who are well prepared for the work they wish to take, may be admitted by a vote of the faculty. Unclassified students who have been previously enrolled must renew their application at the beginning of each year as though applying for the first time. Unclassified students desiring to change

their lines of study at the beginning of the second semester must again present their application to the committee.

The committee on unclassified students will meet daily during examination (the first) week of the first semester in the president's office, to consider applications, and all applications must be presented to the committee and not to individual members. Unclassed students will not be admitted after the third week of the semester. Action upon applications made after that time will be deferred until the beginning of the following semester. Students who are admitted are not allowed to pursue more than two lines of study.

No unclassified student is admitted to the work of the junior or senior year until after a full year's work in the lower classes—but the committee on unclassified students may allow exceptions in case of persons of mature age, upon recommendation of departments concerned.

UNIVERSITY SUMMER SCHOOL.

The school will open Monday, June 23d, and continue in session six weeks, closing Friday, August 1st. This school is organized under the authority of the Department of Public Instruction in the interest of the teachers of the State. Instruction is given in two sections.

I. THE UNIVERSITY SECTION.

This section provides for special and graduate work in University subjects especially for high school teachers. Instruction is given by members of the University faculty or under their supervision, and as the work is completed, credit is allowed upon the books of the University. All the advantages of the laboratories, museums and library of the University are open to the classes of this section.

II. THE ELEMENTARY SECTION.

This section provides for the needs of teachers of the primary and elementary grades. The subjects taught include arithmetic, grammar, history of the United States, physiology, botany, physics, music, penmanship; and special method courses with illustrative lessons.

Circulars of information will be sent free upon application to the registrar of the University.

NOTES ON THE COURSE OF STUDY.

Students will be required to complete for graduation a course of study equivalent to sixteen four-hour courses, each one year long. Of these there shall be four long courses.

NOTE—A long course shall consist of not less than two years in one department.

French and German shall not be begun later than the beginning of the sophomore year, except by students who pursue both Latin and Greek throughout the freshman and sophomore years.

Students entering the University after the year 1902-03 shall not be allowed to begin both French and German in the institution. But students who elect the long course of physics in the sophomore year shall be allowed to take French B1 or German B1 under number (4).

The freshman class will pursue a course of study as follows:

Course of Study.

N. B.—See “Notes on Course of Study, page 34.”

FRESHMAN YEAR.

All subjects of the freshman and sophomore years, unless otherwise specified, call for four recitation periods per week.

For outline of work covered by the various courses, see department statement as indicated.

1. **English [4]**—
(a) *Chaucer.*
(b) *Spenser.* } or { **Rhetoric [4]**—
Course i. } or { **Latin [4]**
Course i.
Course ii.
2. **Mathematics [4]**
Higher Algebra, Trigonometry, elements of Analytical Geometry.
3. **Botany [4]**—
Long or Short. } or { **Chemistry [4]**—
Long or Short. } or { **Zoology [4]**—
Long or Short.
4. **German [4]**—
Course i. or
Course iii. } **French [4]**
Course i. or
Course ii. } **Greek [4]**—
Courses i, ii or
Courses iii, iv.
5. **Military Drill [2]** } or { **Physical Culture [3]**
Required of men. } Required of women.

SOPHOMORE YEAR.

Students must choose one subject from each of the following groups:

- | | | | |
|---|---|---|--|
| <p>1. English—</p> <p>French—
i year.
ii year.</p> <p>German—
i year.
ii year.</p> <p>Greek—
Courses iii, iv or
Courses v, vi.</p> <p>Latin—
Courses i, ii or
Courses iii, iv.</p> | <p>2. History—
Course i, or
Courses ii, iv or v.</p> <p>Mathematics—
Courses iii, iv.</p> | <p>3. Botany—
i year.
ii year.</p> <p>Zoology—
i year.
ii year.</p> <p>Chemistry—
i year.
ii year.</p> <p>Physics—
<i>Long.</i>
<i>Short.</i></p> | <p>4. Botany—
i year.
ii year.</p> <p>Zoology—
i year.
ii year.</p> <p>Chemistry—
i year.
ii year.</p> <p>Physics—
<i>Long.</i>
<i>Short.</i></p> <p>French—
iv year.</p> <p>German—
iv year.</p> <p>Greek—
Courses iii, iv or
Courses v, vi.</p> <p>Latin—
Courses i, ii or
Courses iii, iv.</p> <p>Scandinavian—
i year.
ii advanced.
language.
literature.</p> |
|---|---|---|--|
- Required subjects.

5. **Rhetorical Work [1]**

6. **Military Drill [2]**
Required of men
only.

JUNIOR AND SENIOR YEARS.

The work of the junior and senior years is entirely elective, and consists of sixteen exercises or recitations per week, selected from the following lists. Junior and senior electives are interchangeable. The only limitations imposed upon the choosing of subjects are as follows:

(a) Subjects cannot be chosen unless the work leading up to, and preparing for, such subjects has been completed.

(b) Not more than six-sixteenths of the work of the two years shall be selected from any one department.

JUNIOR YEAR—FIRST SEMESTER.

Animal Biology [4]—(a) Course ii—Vertebrate morphology and histology.

(b) Course iii—Embryology of vertebrates.

(c) Course iv—Embryology of invertebrates.

(d) Course v—Research in morphology and embryology.

(e) Course vi—Comparative anatomy of vertebrates.

(f) Course vii—Systematic entomology.

(g) Course viii—Physiology.

Arabic [2]—Grammar and reading of selected texts.

Astronomy [4]—General—Course i.

Botany [4]—(a) Plant physiology. (b) Plant morphology. (c) Elements of archegoniate and metaspermic taxonomy. (d) Elements of algology. (e) Elements of mycology.

(f) Plant ecology. (g) Cellular morphology and dynamics.

Chemistry [4]—(a) Quantitative analysis. (b) Organic chemistry.

(c) Water analysis.

Comparative Philology [2]—General introduction to the science of language.

Drawing [4]—(a) Freehand. (b) Antique. (c) Design.

Elocution [4]—The physical side of vocal expression.

English [4]—(a) The Bible as literature. (b) xviii century prose. (c) Chaucer.

French [4]—Aubert's *La Littérature Classique*; translations from English into French; readings from modern authors—Malot, Claretie, Daudet, Hugo.

Geology [4]—(a) Physical geology and geodynamics. (b) [2] Physiography.

German [4]—(a) (Second year of German) Course ii—Modern prose.

(b) Faust.

Greek [4]—(a) Lyric and bucolic poetry. (b) Plato.

Hebrew Accidence [4]—With translations from and into Hebrew.

History [4]—(a) Course ii—Rise of European nations and the Renaissance.

(b) Course iv—Europe—from the French Revolution.

(c) Course v—American constitutional history.

Latin [4]—Cicero's letters with a study of the fall of the republic.

Mathematics [4]—Integral calculus. [2]—Methods of least squares.

Mineralogy [4]—(a) Course i—General mineralogy; crystallography and the physical character of minerals, with a study of the rock-forming species.

(b) Course vi—[1] Outlines of mineralogy.

Pedagogy [4]—History of education.

Philosophy [4]—(a) Course viii—logic. (b) Course ix—history of. (c) Course x—principles of ethics. (d) Course xii [2]—fundamental problems.

Physics [4]—Electricity and magnetism. Open to those who have completed course i.

Political Science [4]—(a) Elements of economics. (b) [2] Advanced economics.

(c) Science of the state. (d) Elements of jurisprudence.

Psychology [4]—(a) Course i—descriptive. (b) Course ii—experimental.

(c) Course iv—research problems. (d) Course v [2]—anthropological.

Rhetoric [4]—Literary criticism.

Scandinavian (a) Language courses for beginners.

(1) [4] Swedish.

(2) [4] Danish-Norwegian.

(b) Scandinavian literature before 1800.

(1) [2] History of literature.

(2) [2] Study of special authors.

(c) [4] Scandinavian history before 1500.

Spanish [4]—Hosfeld's Spanish Method; Montilla's Libro de Lectura iii.

JUNIOR YEAR—SECOND SEMESTER.

Animal Biology [4]—A continuation of all the studies of the first semester except physiology.

Arabic [2]—Grammar and reading of selected texts.

Astronomy (a) [4]—General—Course i, continued. (b) General—Course ii.

Botany [4]—(a) Plant physiology. (b) Plant morphology. (c) Elements of archegoniate and metaspemic taxonomy. (d) Elements of algology. (e) Elements of mycology. (f) Plant ecology. (g) Cellular morphology and dynamics. (h) Physiology of metabolism and irritability.

Chemistry (a) [4]—Quantitative analysis. (b) Organic chemistry. (c) [2] Theoretical chemistry. (d) [4] Gas analysis.

Comparative Philology [4]—Introduction to Teutonic philology.

Drawing [4]—(a) Freehand. (b) Antique. (c) Design. (d) Instrumental.

Elocution [4]—The psychological side of vocal expression.

English [4]—(a) Modern English prose. (b) The Victorian poets.

French [4]—Modern authors—Hugo, Mistral, Theuriet, Topffer; The modern drama.

Geology (a) [2] Historical. (b) [2] Petrographical. (c) [2] Paleontological.

German [4] (a) Course ii continued—Goethe's Egmont or Schiller's Wilhelm Tell.

(b) Lessing's Laocoon and Dramaturgie or Schiller's Wallenstein.

Greek [4]—(a) Archæology of Greek art. (b) Tragedy.

Hebrew Accidence [4]—Grammar and reading of selected texts.

History [4]—(a) Courses ii, iv, v, continued.

Latin [4]—(a) Civil and political life of the early empire. Tacitus, history and annals.

Mathematics—(a) [4] Determinants and solid analytical geometry. (b) Differential equations. Course (a) and (b) throughout the junior and senior years are offered alternately in different years.

Mineralogy [4]—Course i—General mineralogy; ores and economic minerals—continued.

Pedagogy [4]—Philosophy of education.

Philosophy [4]—(a) logic. (b) Course ix—history of—continued. (c) Course xi—philosophy of religion. (d) Course xiii [2]—æsthetics. (e) Course xiv [2]—metaphysics.

Physics [4]—Sound and light. Open to those who have completed course i.

Political Science [4]—(a) Modern Industrialism. (b) The science of government. (c) [2] Commercial history and documents.

Psychology [4]—(a) Course i—descriptive. (b) Course iii—experimental. (c) Course iv—research problems. (d) Course vi [2]—psychical research problems. (e) Course vii [2]—psychology of music.

Rhetoric [4] Literary criticism.

Scandinavian (a) Language courses for beginners.

(1) [4] Swedish.

(2) [4] Danish-Norwegian.

(b) Scandinavian literature before 1800.

(1) [2] History of literature.

(2) [2] Study of special authors.

(c) [4] Scandinavian history before 1500.

Spanish [4]—Continued.

SENIOR YEAR—FIRST SEMESTER.

Animal Biology [4]—See statement under junior year, first semester.

Arabic [1]—advanced.

Astronomy [4]—Practical astronomy. Open to those who have completed the junior astronomy and mathematics.

Botany—For electives in botany, see junior year first semester.

Chemistry (a) [4]—Organic chemistry; lectures and laboratory work. (b) [4]—Chemistry of carbohydrates. (c) [2] Colloquium.

Comparative Philology [2]—Principles of philology and semasiology.

Drawing [4]—(a) Still life and nature. (b) Life. (c) Modeling.

Elocution [4]—American oratory. Not offered in 1902-03.

English [4]—(a) Modern English poetry. (b) Beowulf.

French [4]—DeVigny's Cinq-Mars; lectures and composition on the literature of the xviii century; Howell's farces translated into French.

Geology [4]—(a) As in the junior year. (b) [1]—Outline of general geology. (c) [4]—Paleontology.

German [4]—(a) Faust. (b) Modern authors.

Greek [4]—(a) Tragedy (advanced course).

Hebrew [1]—Advanced.

History—For electives in history (a), (b), (c), see junior year, first semester. In addition:

(d) [2] Course vi—Making of the American constitution.

(e) [2] Course vii—American history as seen in development of constitutional law.

(f) [2] Course ix—American biography.

(g) [2] Course xi—American diplomatic history.

(h) [2] Course xiii—Colonial growth and administration.

History of the Hebrews [4]—

Latin [4]—(a) Roman satire—Juvenal, Perseus. (b) [2] Patristic Latin.

Law [4]—This subject counts as a full elective. Students who enter the law college will receive credit for this work.

Mathematics [4]—(a) Modern analytical geometry. (b) Theory of equations. (c) Descriptive geometry with applications. (d) Mechanics.

Medical Electives—Students who contemplate pursuing a medical course are permitted, in the senior year, to elect the subjects of *anatomy, chemistry, histology* and *physiology*, and pursue the work in the department of medicine.

Mineralogy [4]—Course iii—Physico-chemical methods and applications. Micro-chemical methods and determinations.

Pedagogy [4]—See junior year, first semester.

Philosophy [4]—See statement under junior year, first semester.

Physics [4]—Course iv—Advanced laboratory work. Open to those who have completed course ii.

Political Science [4]—(a) Public finance and taxation. (b) [2] Corporation finances.

(c) [2] Economic geography. (d) Constitution and government of the United States.

Psychology [4]—See statement under junior year, first semester.

Rhetoric [4]—Debate.

Scandinavian. Advanced language courses.

(a) [4] Danish-Norwegian.

(b) [4] Swedish.

(c) [4] Icelandic.

(d) Scandinavian literature of the sixteenth century.

(1) [2] History of literature.

(2) [2] Study of special authors.

(e) [4] Modern Scandinavian history.

Sociology—(a) [3] Elements.

(b) [1] Social pathology.

(c) [2] Social theory.

Spanish [4]—Fiction and drama; Cervantes, Calderon, Lope de Vega and other standard authors.

SENIOR YEAR—SECOND SEMESTER.

- Animal Biology* [4]—Continuation of the work of the first semester, with the exception of physiology.
- Arabic* [1]—Advanced.
- Astronomy* [4]—Practical astronomy—a continuation of the work of the previous semester.
- Botany* [4]—See courses of junior year—open to seniors also.
- Chemistry* (a) [2]—Electro-chemical analysis. (b) [4] Analysis of iron.
- Comparative Philology* [4]—Comparative phonology of English and German.
- Drawing* [4]—(a) Still life and nature. (b) Life. (c) Modeling.
- Elocution* [4]—British oratory. Not offered in 1902-03.
- English* [4]—(a) Fiction. (b) Old English lyrical and didactic poems.
- French* [4]—French literature in the sixteenth century; Romantic period; lectures; texts—Hugo, Dumas, Musset.
- Geology* [4] (a) As in junior year. (b) [4] Economic geology. (c) [4] Paleontology.
- German* [4]—(a) Lessing's *Laocoon* and *Dramaturgie* or Schiller's *Wallenstein*. (b) Modern German authors.
- Greek* [4]—(a) Epic poetry.
- History*—Continuation of the work of the first semester.
- Latin* [4]—Lucretius, Cicero, Ovid, Roman religion and worship.
- Law* [4]—The statement concerning law, see first semester.
- Mathematics* [4]—(a) Curve tracing. (b) Series. (c) Mechanics.
- Medical Electives*—See statement under same heading, first semester.
- Minerology* [4] Course iv—Optical.
- Mohammedan History* [4]—
- Pedagogy* [4]—See junior year, second semester.
- Philosophy* [4]—See statement under junior year, second semester.
- Physics* [4] Course iv—Advanced laboratory work. Open to those who have completed course ii.
- Political Science* [4]—(a) [2] Transportation. (b) money and banking. (c) [2] international law. (d) state constitutions and government. (e) [2] city governments.
- Psychology* [4]—See statement under junior year, second semester.
- Rhetoric* [4]—(a) Debate. (c) Art lectures.
- Scandinavian*—A continuation of the work of the first semester.
- Spanish* [4]—A continuation of the work of the first semester.

NOTE—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.

NOTE—Members of the senior class of this college are permitted to elect as one subject 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 a senior credit, 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.

Courses of Instruction.

ANIMAL BIOLOGY.

Course I. General zoology. "Short course" or first year of the "long course."

i, ii. PROFESSOR SIGERFOOS, MR. OESTLUND AND ASSISTANTS

Text-book, lectures, quizzes and laboratory work.

The course includes the elements of entomology, a general survey of the phyla of the animal kingdom and the elements of embryology. A collection of identified insects (which must be submitted during the first ten weeks of the course) is required of each student. Those intending to pursue the course may obtain directions from Mr. Oestlund during May and make the collection during the summer preceding the course.

Course II. Vertebrate morphology and histology. Second year of the "long course."

i. PROFESSORS NACHTRIEB, SIGERFOOS AND MR. BROWN

Lectures, quizzes and laboratory work.

(a) Vertebrate morphology based on the dissection of the cat or dog, and comparative histology—the characters of properties of the tissues of the Metazoa.

ii. PROFESSOR SIGERFOOS

(b) *Vertebrate organology*—the microscopic anatomy of the organs of the vertebrates.

Reighard and Jennings—Anatomy of the Cat; Gorham and Tower, Dissection of the Cat; Howell, Dissection of the Dog, and Bohm & Davidoff-Huber, Text-book of Histology will be used as laboratory guides.

So far as possible the student will prepare the material himself and thus acquire a practical knowledge of methods and technique.

Course III. Embryology of vertebrates. Junior or senior *i, ii.* PROFESSOR NACHTRIEB

Lectures, reference and laboratory. Open only to those who have satisfactorily completed course *ii.*

In the laboratory the student will prepare series of various stages of several vertebrates, and with these personally prepared series and the laboratory collections he will be taught to work out developmental problems as well as verify the statements of the reference texts.

The text-book and general references of the course are: Hertwig-Mark, Text-book of the Embryology of Man and Mammals; Marshall, Vertebrate Embryology; Minot, Human Embryology, and Roule, L'Embryologie Comparee.

Course IV. Embryology of invertebrates. Junior or senior *i, ii.* PROFESSOR SIGERFOOS

Lectures, laboratory and reference work. Open only to those who have satisfactorily completed course *ii.*

Text references: Haddon, An Introduction to the Study of Embryology; Korschelt and Heider, Text-book of the Embryology of Invertebrates; Roule, L'Embryologie Comparee.

Course V. Research in morphology or embryology. Senior *i, ii.* PROFESSOR NACHTRIEB

Details arranged with the professor. Open only to those who have satisfactorily completed courses *i, ii* and *iii* or *iv*, or their equivalents.

Course VI. Comparative anatomy of vertebrates. Junior or senior. MR. BROWN
Lectures, laboratory and reference work. Days and hours arranged with the instructor. Prerequisite courses i and ii.

Course VII. Taxonomy. (a) Systematic entomology. i, ii. MR. OESTLUND
Eight hours per week. Days and hours arranged with the instructor. This course comprises the general classification of insects and special problems assigned by the instructor. Prerequisite, course i.

(b) *Ichthyology* and (c) *Ornithology* can not be offered during 1902-1903.

Course VIII. Physiology. Junior or senior i. PROFESSOR SIGERFOOS
Lectures, text-books and demonstrations.

Course IX. Philosophical zoology. PROFESSOR NACHTRIEB
Occasional lectures upon special topics. Days and hours determined by the professor. Open to those pursuing advanced courses.

FOR GRADUATES.

For graduates of the department and those of equal preparation from other institutions, whether candidates for a degree in the department or not, any line of research or advanced work that can be carried on profitably.

For less advanced students any regular work of the department for which the student is sufficiently prepared.

JOURNAL CLUB.

This club is composed of the professors, instructors and advanced students of the department. It meets once a week throughout the year. The object is to keep its members informed on the latest investigations carried on in the various branches of zoology through abstracts, reviews and discussions of the articles in the current periodicals. While the attendance is voluntary all advanced students are expected to take an active part.

FRIDAY NIGHT READING CLUB.

This club meets Friday nights during the winter months at the home of one of the professors to read and discuss writings not so technical as those of the Journal Club, such as the biographies and philosophical writings of prominent biologists. Attendance is voluntary.

ASTRONOMY.

FOR UNDERGRADUATES.

Course I. General astronomy. (Long course). Junior i ii. PROFESSOR LEAVENWORTH
A study of the general principles of astronomy, illustrated by observatory work.

Course II. General astronomy. (Short course). Junior ii. PROFESSOR LEAVENWORTH

Course III. Practical astronomy. Senior i, ii. PROFESSOR LEAVENWORTH
The theory of instruments, the use of the ephemeris and nautical almanac; the various methods of determining time, latitude, 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 course i, and courses i to v, of mathematics.

FOR GRADUATES.

Course IV. Extended course in practical astronomy. PROFESSOR LEAVENWORTH

Course V. Orbit work. PROFESSOR LEAVENWORTH

Course VI. Astrophysics. PROFESSOR LEAVENWORTH

Course VII. Astrophotography with photographic measurements. PROFESSOR LEAVENWORTH

BOTANY.

Course 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.

Course 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.

Course III. General plant morphology. Second year.

PROFESSOR MACMILLAN AND MR. ROSENDAHL

Open to students who have completed course ii, of which it is a continuation. A view of mossworts, ferns and flowering plants is given, with lectures, laboratory work and collateral reading throughout the year.

**Course IV. General plant physiology.*

PROFESSOR MACMILLAN

Lectures, reading and laboratory work. The course embraces about seventy-five qualitative experiments dealing with the principal functions of the plant, and one to three lectures per week. Open as an elective to all students who have followed a course in botany or zoology. Throughout the year.

Course V. Elements of archegoniate and metaspERMic taxonomy.

Junior or senior i, ii. PROFESSOR MACMILLAN AND MR. ROSENDAHL

Lectures, reference reading and herbarium work. The course is primarily designed to afford students an opportunity to become proficient in the determination of plant species. Open to those whose preparation is deemed adequate.

Course VI. Elements of algology.

Junior or senior i and ii. MISS TILDEN

Lectures, laboratory and reference work. The course includes one term's work upon the freshwater algæ, one upon the brown algæ and one upon the red algæ. Its bearing is rather toward comparative morphology than toward taxonomy. Open to those who have completed course i.

Course VII. Elements of mycology.

Junior or senior i, ii. MR. BUTTERS

Laboratory and reference work. The course includes a comparative morphological and taxonomic survey of the fungi with collateral reading in Schroeter, DeBary, Ludwig, Zopf and Brefeld. Open to those who have completed course i.

Course VIII. Plant ecology.

Junior or senior ii. PROFESSOR MACMILLAN

Lectures, collateral reading and field observations. The course is designed to cover generally the domain of adaptional 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 and whose preparation is deemed adequate. Open also as a minor to candidates for the degree of master of science.

Course IX. Cellular morphology and dynamics.

Junior or senior i, ii. PROFESSOR MACMILLAN

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, Hennequy, Hertwig, Wilson, Guignard, Beneden and Driesch will be made and methods of cytological research indicated in the laboratory. Open to those whose preparation is deemed adequate. Open also as a major or minor to candidates for the degree of master of science.

*Course X. *Physiology of metabolism and growth.*

Junior or senior i, ii. PROFESSOR MACMILLAN

Lectures, reading and laboratory work. The course embraces a series of exact determinations of the movements of fluids in absorption, metabolism, excretion and physical processes, the principal constituents of the plant, synthesis of foods, respiration, translocation, enzymatic action, growth and its relation to environmental factors. To follow course iv and open to those eligible to that course. Open as a major to candidates for the degree of master of science.

FOR GRADUATES.

Course XI. *Morphology and taxonomy.*

PROFESSOR MACMILLAN

Special problems in structure, life histories, embryology, classification and phylogeny. 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.

*Course XII. *Physiology.*

PROFESSOR MACMILLAN

Problems in nutrition and growth. Particular attention is to be paid to the history of related investigations and the development of efficient methods of research in the subject under consideration. The results of the original work accomplished must be presented in a form suitable for publication. Open as a major to those who have completed course iii, to candidates for master of art or science, and as a major or minor to candidates for doctor of philosophy.

Course XIII. *Palaeobotany.*

DR. SARDESON

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 degrees of master of arts or of science.

*Not offered in 1901-02, on account of inadequate laboratory space.

JOURNAL CLUBS.

Journal clubs are held under the direction of Professor MacMillan, and Miss Tilden, at which the attendance of students is required, as may be indicated to them.

CHEMISTRY.

FOR UNDERGRADUATES.

Course I. (a) *General chemistry.*

Freshman i. PROFESSOR FRANKFORTER

Lectures and laboratory work. The course includes a detailed study of the chemical and physical properties of the non-metals and their more important compounds.

(b)

Freshman ii. PROFESSOR FRANKFORTER

Lectures and laboratory work. A continuation of course (a) with an introduction to organic chemistry.

Course II. *Qualitative analysis.*

Sophomore i. ASSISTANT PROFESSOR NICHOLSON

(a) Lectures and laboratory work. The course includes the general reactions of the metals and their qualitative separation.

Course III. *Identification of the acids.*

Sophomore ii. ASSISTANT PROFESSOR NICHOLSON

Lectures and laboratory work. Open to those who have completed course ii (a).

Course IV. *Quantitative analysis.*

Junior i. ASSISTANT PROFESSOR SIDENER

Lectures and laboratory work. An introduction to gravimetric analysis and a quantitative separation of the metals.

Course V. Volumetric analysis. *Junior ii.* ASSISTANT PROFESSOR SIDENER
Lectures and laboratory work. A continuation of course iv.

Course VI. Organic chemistry. *Junior i, ii.*
Lectures and laboratory work. The course includes the aliphatic series with a preparation of the more important compounds, supplemented by Levy's *Anleitung für Darstellung Organischer Präparate*. Also the aromatic series with a preparation of some of the more important compounds supplemented by Fischer's *Organischer Präparate*.

For further elective courses, open to juniors and seniors, see statement under school of chemistry.

COURSES FOR GRADUATE STUDENTS.

1. *Special inorganic chemistry.*
2. *Electro-chemistry.*
3. *Organic chemistry.*
4. *The alkaloids.*
5. *Analytical chemistry.*

COMPARATIVE PHILOLOGY.

PROFESSOR KLAEBER

This department, besides offering courses in the general principles of linguistic science, affords an opportunity for elementary studies in comparative Indo-Germanic philology. The main starting point for the comparative treatment of the Indo-Germanic languages will be the Germanic family; individual old Germanic dialects also will be investigated in detail.

FOR UNDERGRADUATES.

Course I. General introduction to the science of language. Two hours a week.

Junior and senior i.

The principles of linguistic growth; the psycho-physical and the historical aspect of language; classification of languages; methods of comparative philology. Lectures and exercises; discussion of standard works, such as Whitney's *Language and the Study of Language*; Paul's *Prinzipien der Sprachgeschichte*; Wegener's *Grundfragen des Sprachlebens*; Jespersen's *Progress in Language*.

This course will be sufficiently general in its nature to be of use to all students who wish to obtain an insight into the life of language.

Course II. Principles of etymology and semasiology. Two hours a week.

Junior and senior i.

Growth of vocabulary; change of words in form and meaning. Lectures and exercises, with special reference to English and other Teutonic languages.

Course III. Introduction to Teutonic philology. Two hours a week. *Junior and senior ii.*

Outlines of the historical and comparative study of the Teutonic languages. The external history and the internal development (phonological, morphological, lexical) of the various branches of the Teutonic group.

Course IV. Comparative phonology of English and German.

Junior and senior ii.

Elements of phonetics; history of English and German sounds; orthography. The lectures will be supplemented by practical exercises.

FOR GRADUATES.

Course V. Gothic grammar.

The relation of Gothic to the other Teutonic dialects will be particularly emphasized. Braune's *Gotische Grammatik*; Heyne's *Ulfilas* (9th edition); Uhlenbeck's *Kurzgefasstes etymologisches Wörterbuch der gotischen Sprache*; Paul's *Grundriss der germanischen Philologie*.

Course VI. Old saxon.

Grammar and interpretation of the Héliand.

Course VII. Urgermanische grammatik.

Relation of the Teutonic to the other Indo-European languages. The Germanic portions of Brugmann's Grundriss der vergleichenden Grammatik der indogermanischen Sprachen; Kluge's Vorgeschichte der altgermanischen Dialekte; Noreen's Abriss der urgermanischen Lautlehre; Streitberg's Urgermanische Grammatik; etc.

Course VIII. Old High German.

Braune's Althochdeutsche Grammatik; Braune's Althochdeutsches Lesebuch. See also under "German Department."

Course IX. Comparative grammar of the Greek, Latin and Teutonic languages; with a general survey of the field of Indo-Germanic Philology.

N. B. The undergraduate courses are open to graduate students subject to the rules of the Graduate Department.

Related courses will be found under English.

DRAWING.

Course I. Drawing.

From models, casts and nature. Study of the principles of perspective and light and shade. In charcoal, line and wash.

Course II. Antique.

Junior and senior i, ii.

Studies of the human figure, from casts, in charcoal. Fractions, torsis, masks, busts, statues and groups.

Course III. Design.

Junior or senior i, ii.

The anatomy of pattern and geometrical design, planning of ornament, color harmony, plant analysis and conventionalism, traditional ornament and animate forms.

Course IV. Instrumental.

Junior ii.

Problems, projections, sections, developments and interpretations. With conventional renderings in line and wash.

Course V. Still life and nature.

Senior i, ii.

Studies of groups of still life and plants and flowers. In pen and ink or water color or oil. Open to those who have taken course i or course ii.

Course VI. Life.

Senior i, ii.

Studies in charcoal from the living model (heads and figures with costumes). Sketches in pencil, charcoal, red chalk and pen and ink. Open to those who have taken course i or course ii.

Course VII. Modeling.

Senior i, ii.

In clay, from the antique, and casting in plaster.

ENGLISH LANGUAGE AND LITERATURE.

Course I. (a) Chaucer, (b) Spenser. Freshman i, ii. MRS. POTTER AND MISS PECK

This course is also open as an elective to sophomores, juniors, seniors and graduates who have not already completed the work.

Course II. (a) XVI. Century prose, (b) Milton. Sophomore i, ii. MRS. POTTER

Open as an elective to juniors and seniors.

Course III. (a) The scientific movement. Sophomore i, ii. MRS. POTTER

This course will take up the study of Darwin, Tyndall, Huxley, Spencer and other well known scientists, from a literary point of view.

- (b) *Influence of the scientific movement in the English literature of the sixteenth century.*
Open also as an elective to juniors and seniors.

Course IV. (a) *The English drama before Shakspeare.*

Sophomore i. ASSISTANT PROFESSOR McCCLUMPHA

Critical studies in the Canterbury Tales and minor poems.

(b) *Shakspeare.*

Sophomore ii.

A study of representative plays.

Course V. *XVIII century English prose.*

Junior or senior i.

A study of the essayists and novelists of the XVIII century.

Course VI. *XIX century essays.*

Junior or senior ii. ASSISTANT PROFESSOR McCCLUMPHA

Prose works of Lamb, Carlyle, Arnold and Ruskin studied.

Course VII. *The Victorian poets.*

Junior or senior ii. ASSISTANT PROFESSOR McCCLUMPHA

A study of Tennyson and the later Victorian poets.

Course VIII. *Advanced work in English philology.*

PROFESSOR KLAEBER

(a) *Chaucer.*

Senior i.

(b) *Beowulf.*

Senior ii.

Course IX. *Shakspeare.*

Junior and senior i. PROFESSOR BURTON

Course X. *Literary criticism.*

Junior and senior i. PROFESSOR BURTON

A study of development of method and view in the critical appreciation of literature.

Course XII. *Fiction.*

Junior and senior i and ii. PROFESSOR BURTON

A study on alternate years of the modern romance and the modern novel of realism.

Course XIII. *Modern English prose.*

Junior and senior ii PROFESSOR BURTON

A study of the present literary vernacular in its best examples.

FOR GRADUATES.

Graduates courses offered by PROFESSOR BURTON.

The essay as an English literary form.

The drama as technic.

The development of the modern drama. This course for 1902-03.

(These are alternates.)

A senior seminar is also conducted in the pre-Raphaelite poets.

The junior-senior courses are open to graduate students under the rules of the graduate department.

The following graduate courses are offered by ASSISTANT PROFESSOR McCCLUMPHA.

The English short story. This course runs throughout the year and meets Saturdays at 10:30 a. m. in Dr. McClumpha's office.

The following graduate courses are offered by PROFESSOR KLAEBER.

Introduction to the middle English grammar, with reading of select texts.

Critical reading of difficult Old English texts.

Research work in old English literature.

Historical study of English, for teachers.

N. B. The undergraduate courses in English philology are open to graduate students, subject to the rules of the graduate department.

FRENCH.

FOR UNDERGRADUATES.

Course I. French begun. *Freshman or sophomore, i, ii.*

De Borde's Elements of French; Kuhu's French Reader; modern plays.

Course II. Advanced grammar and composition. *Freshman i, ii, and sophomore i, ii.*

Fasnacht's Progressive French Course.
Paul Bercy's Selections for Translating English into French. The classical authors of the XVII and XVIII centuries will be read. Fortier's Histoire de la Littérature Française will be read.
Open to freshman who have completed the French required for entrance.

Course III. (a). *Sophomore or junior i.*

Translations from English into French; modern authors—Daudet, Hugo, Malot, Merimée; history of French literature up to the classical period; the modern drama; plays from Labiche, Madame de Girardin, Scribe, etc.

(b) The classical literature of France. *Sophomore or junior ii.*
Corneille Racine. Molière.

Course IV. Lectures on the literature of the xviii century. *Junior or senior i.*

With a view to the causes of the French Revolution. Howell's farce—The Albany Depot, translated into French. De Vigny's Cannede Jonc, V. Hugo's Quatre Vingt Treize and Hernani.

(b) The xix century in France. *Junior or senior ii.*

The romantic movement, lectures; Howell's farce—Five o'Clock Tea, translated into French; Texts: Dumas, Balzac, Daudet.

Course V. Italian. *Senior i, ii.*

Ahn's Italian course. Goldoni, Tasso, Petrarch, etc. (Once a week.)

FOR GRADUATES.

Course VIII. Romance languages. Old French.

Origines de langue Française par Petit de Julleville, Morceaux Choisis des Auteurs Française du Moyen Age, par L. Clédat. 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.

Course IX. History of Romantic movement.

Course X. Italian. Interpretation of Dante's Inferno.

Course XI. Old Spanish. El Poema del Cid.

GEOLOGY.

FOR UNDERGRADUATES.

Course I. Physical geology. Junior or senior i. PROFESSOR HALL.

1, Geodynamics, discussing the atmosphere, water, terrestrial heat, plants and animals, as geologic agents; 2, structural geology, explaining stratification, displacements, dislocations, fractures, induced rock-structures and mineral veins in their relations to the arrangement of material in the earth; 3, physiographic geology, pointing out the more prominent earth features and discussing their origin, significance and the agencies affecting them; 4, an enumeration of the common rock making minerals in their formation, occurrence and alterations.

Course II. Historical geology. Junior or senior ii. PROFESSOR HALL AND MR. UPHAM

A study of the strata of the earth. An outline of the salient features of the earth's history, discussing its several eras with their faunas and floras. The special purpose of the course is to outline the geographical history of the North American continent. Lectures and reading, twice a week.

Course I and II supplemented by either III or IV are intended primarily for students not intending to specialize in geology.

Course III. Petrographical geology. Junior or senior ii. DR. BERKEY

General considerations on 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. Kemps Handbook of Rocks. Reference reading and demonstrations, Twice a week.

Course IV. Paleontological geology. Junior or senior ii. DR. SARDESON

A study of the more important types of fossils in their geological relations. Lectures and demonstrations. Twice a week. Open to those who have completed course i or course xi.

Course V. Applied geology. [2] Junior or senior ii. PROFESSOR HALL

An outline of the economic relations of geology. The course comprises a discussion of the nature and distribution of the non-metallic materials of an economic value, including coal, mineral oils and natural gas; phosphates and other natural fertilizers, together with soils; the geologic conditions of water supply; abrasive and fittile materials; natural and artificial building stones; mortars and cements for construction, road-making, followed by a brief summary of the nature and distribution of ore deposits of the less and more important metals. Williams Applied Geology and reference reading.

Course VI. Petrography. Senior ii. PROFESSOR HALL

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 continuation of course iii. Laboratory, with lectures and reference reading.

Course VII. Paleontology. Junior or senior i. DR. SARDESON

The course treats of paleontological evidence, its sources and interpretation and its relation to the theory of evolution. Lectures and demonstrations. Occasional expeditions can be arranged. Open to students of geology and biology.

Course VIII. Paleontology. Senior i, ii. DR. SARDESON

The several 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.

- Course IX. Economic geology.* 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.
- Course X. Special problems.* Senior ii. PROFESSOR HALL
The investigation by individual students of particular problems, involving the field work of an investigation of some particular formation 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, preparation of geological mass, profiles and sections will be taught.
- Course XI. An outline of general geology.* [1] Junior or senior ii. PROFESSOR HALL
This course treats of the leading physiographic facts and principles; the microscopic characters of the common rocks and a discussion of the general principles of petrographical and stratigraphical geology. Sections and reading supplemented by excursions and practical problems.
- Course XII. Physiography.* [2] Junior or senior i. PROFESSOR HALL
An outline discussion of the principles of earth sculpture with special reference to the ethnic movements and the commercial movements of mankind.
- Course XIII. Geography and geology of Minnesota.* [2].
Junior or senior ii. PROFESSOR HALL
An outline of physiographic features; a review of the geography, petrology, paleontology and stratigraphy of the several periods of geologic history embraced within the State; a discussion of the material resources of Minnesota, particularly in building stones and metalliferous products.
- Students desiring courses ix or x must take courses preparatory to the same in junior year.

FOR GRADUATES.

- Course XIV. Petrographical problems.* PROFESSOR HALL
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.
- Course XV. The Keweenawan eruptives* PROFESSOR HALL
of eastern and northeastern Minnesota; their stratigraphic relations, textural and structural characters; or other problems to be selected on consultation.
- Course XVI. Glacial geology.* 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 below the Falls of Saint Anthony, the Dales of the St. Croix and other problems. The special field to be selected on consultation.
- Course XVII. Paleontologic geology.* DR. SARDESON
A study of the Ordovician fauna with special illustrations from the Ordovician of Minnesota and neighboring states.
- Course XVIII. Paleontology.* DR. 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.

GERMAN.

FOR UNDERGRADUATES

Courses i and ii are for students who begin German in the University and must not be taken by those who have presented German for admission to the University.

Students who have taken courses i and ii in the University cannot receive credit for course iii.

Students who begin German in the University will take the courses in the following order: Courses i, ii, v or iv, vi.

Those who have presented German for admission will elect in this order: Courses iii, iv, v, vi.

*Course I. German begun.**Freshman and sophomore.*ASSISTANT PROFESSORS WILKIN AND SCHLENKER
DR. SCHULZ AND MR. BURKHARDT

- (a) Whitney's Brief German Grammar, Bernhardt's German Composition and Buchheim's German Poems.
- (b) *German prose selections.* Leander's *Träumereien*, Heyses *L'Arrabbiata*, von Hillern's *Höher als die Kirche*; grammar and composition completed.
- (c) *Scientific prose.* Hodge's German Science Reader; grammar and composition completed.

*Course II. German second year.**Sophomore and junior i, ii.*ASSISTANT PROFESSORS WILKIN AND SCHLENKER
DR. SCHULZ AND MR. BURKHARDT

- (a) Gerstäcker's *Irrfahrten*, Zschokke's *Das Wirtshaus zu Cranzac* or Baumbach's *Die Nonna*; grammar reviewed; German conversation based on text.
- (b) Schiller's *Wilhelm Tell*, Lessing's *Minna von Barnhelm* or Freitag's *Die Journalisten*; grammar and composition.

*Course III. Classic prose and poetry.**Freshman and sophomore i, ii.*

PROFESSOR MOORE, ASSISTANT PROFESSOR WILKIN AND DR. SCHULZ

- (a) Goethe's *Prosa* and *Gedichte*, author's life and works, Spanhoofd's *Deutsche Grammatik*. Oral and written exercises based on text.
- (b) Schiller's *Belagerung von Antwerpen*, Heine's *Prosa* and *Buch der Lieder*, life and works of the authors.
- (c) Brandt & Day's *German Scientific Reading*, Spanhoofd's *Deutsche Grammatik* completed, original letters and essays.

*Course IV.**Sophomore i, ii.* ASSISTANT PROFESSOR SCHLENKER

- (a) *Modern drama.* Sudermann's *Johannes* and Hauptmann's *Die versunkene Glocke*. Written and oral exercises.
- (b) *Classic drama.* Lessing's *Emilia Galotti* and Goethe's *Iphigenie*; letters and essays; selected outside reading throughout the year.

*Course V. Advanced subjects in literature and criticism.**Junior and senior.* PROFESSOR MOORE

- (a) *Goethe's Faust*: history of its composition. Faust legend; its treatment in literature before and since Goethe's time. The plan of Goethe's *Faust*; change in the order of the scenes; solution of the Faust problem in Part II. Lectures; essays by the class on related subjects.
Schiller's *Ballads*, German *Prosody*.
- (b) *German lyric poetry since the Reformation.* Selections from Lessing's *Laocoon* and *Dramaturgy*. History of German literature.
For those who have completed course ii or iv.

Course VI. German literature since the death of Goethe.

PROFESSOR MOORE

Rapid reading of recent authors. For those who have completed course v.

FOR GRADUATES.

- Course VII. Life and works of Luther.* PROFESSOR MOORE
Course VIII. Old High German. PROFESSOR KLAEBER
 Braune's Althochdeutsche Grammatik; Braune's Althochdeutsche Lesebuch.
Course IX. Seminar. PROFESSOR MOORE
 Goethe's Faust, Part II.
Course X. Teacher's seminar. PROFESSOR MOORE
 Historical German grammar. Methods of modern language instruction.
Course XI. H. Helmholtz: DR. SCHULZ
 Ueber die Erhaltung der Kraft. G. Kirchhoff und K. Kunsen: Chemische Analyse
 durch Spectralbeobachtungen. 1901-02.
Course XII. O. Ule und F. Langhoff: DR. SCHULZ
 Warum und Weil. Zoologie und Botanik. 1902-03.
Course XIII. Middle High German. ASSISTANT PROFESSOR SCHLENKER
 Study of the history and language of the period. Paul's Mhd. Grammatik. Read-
 ings from H. v. Aue. Armer Heinrich, Nibelungenlied, Gudrun, Walter von der
 Vogelweide.

GREEK.

There are two groups of students in Greek, known as group A, and group B. The first, A, consists of those who have completed two years or more of preparatory Greek before entering the University; the second, B, consists of those who have not previously studied the language. During the freshman year these groups are in separate classes; in succeeding years classes are combined as indicated in the statement of courses given below.

Students of group B who desire honors in Greek must take six semesters of elective work in Greek in the junior and senior years.

- Course I. Greek begun.* Freshman B, i.
 Brook's Introduction to Attic Greek.
Course II. Anabasis. Freshman B, ii.
 Prose composition based on the text.
Course III. Xenophon's Memorabilia. Freshman A, sophomore B, i.
 Prose composition based on the text; collateral readings in history.
Course IV. Lysias and Demosthenes. Freshman A, sophomore B, ii.
 Prose composition based on the text; collateral readings in history and antiquities.
Course V. Plato. Sophomore A, junior B, i.
 Collateral reading and theses.
Course VI. Tragedy. Sophomore A, junior B, ii.
 Collateral reading and theses.
 In courses iii, iv, v, vi, a certain amount of private reading in Greek in addition to that read in the class room will be required of students in group A.
Course VII. Lyric and bucolic poetry. Junior A and senior B, i.
 Collateral reading; study of dialects; theses; lectures.
Course VIII. Archaeology of Greek art. Junior or senior ii.
 Lectures with collateral readings and theses.
 This course is open to all students in the junior and senior classes.
Course IX. Tragedy (advanced course). Senior A and B
 (a) The trilogy of Aeschylus.
 (b) Oedipus Tyrannus; Oedipus Coloneus; Antigone.
 (c) The Choephore of Aeschylus, Electra of Sophocles and Electra of Euripides.
 Collateral reading; theses; lectures on epic poetry and the drama.

Course X. Epic poetry.

Senior A and B, ii.

A study of Homeric Language and verse; collateral readings; theses, lectures.
The Odyssey and Iliad will be offered in alternate years. The Iliad will be read in 1901-02.

Course XI. Seminar in Greek poetry.

Senior A, and B, i, ii.

One hour per week.

Students in group B who desire the work must read all the Greek required of candidates for honors in Greek.

FOR GRADUATES.

Course XII. Greek poetry, epic, lyric, dramatic, bucolic.

An advanced course in the study of the entire field of Greek poetry in its historic development; with critical reading of authors.

Course XIII. Greek oratory. A study of the historical development of oratory among the Greeks; reading from the various orators from Antiphon to Demosthenes.*Course XIV. The Septuagint and New Testament.*

A knowledge of Hebrew is necessary for the successful prosecution of the work of this course.

HISTORY.

Course I. English constitutional history, with a brief survey of continental history.

ASSISTANT PROFESSORS WHITE AND ANDERSON, AND MISS McDONALD

Four hours a week through the year; required of all sophomores who do not elect second year mathematics—but students who have carried two years or more of history in the high schools may, upon the approval of the department, substitute course ii, iv or v.

The course begins with about six weeks of introductory work on the history of western Europe from the barbarian invasions to the treaty of Verdun. The remainder of the year is devoted to a study of English constitutional history from the Anglo-Saxon conquest to the accession of the House of Hanover. Continental history will be touched upon at various points where its connection with English history makes it necessary.

Course II. European history, x century to 1648.

ASSISTANT PROFESSOR WHITE

Four hours a week through the junior or senior years.

Down to the Reformation the minor European states are treated only incidentally, the work being made to center about the development of the German and French nations. The course thus falls naturally into three parts:

First—History of the German Empire from the 10th century to the Reformation. A careful study is made of the German government, especially the effect upon it of the Papal-Italian connection, the main theme being the conflict of the Empire and the Papacy.

Second—History of France from Hugh Capet to Charles VIII. The special theme here is the growth of the French nation, care being taken to contrast the governmental development of France with that of Germany. Important collateral themes studied are feudalism and the crusades.

Third—The Renaissance and Reformation are studied as general European movements. Some use will be made of the sources, and as far as possible, a first-hand knowledge gained of these movements and their leaders. The history of Europe from the middle of the 16th century to the peace of Westphalia is then covered briefly.

A thesis on some important related topic is required in connection with each of the first two divisions of the course. In part three the preparation of several short themes takes the place of this.

A reading knowledge of French, German, or Latin, while not required in this course, is an advantage.

Course III. *Scotch and Irish history—political and economic.*

ASSISTANT PROFESSOR WHITE

Four hours a week through the junior or senior years.

This course will not be given in 1902-1903.

Course IV. *Europe since 1780.*

Four hours a week through the year. ASSISTANT PROFESSOR ANDERSON

Open to juniors or seniors who have completed course I. The chief aim of the course is to put the student into appreciative contact with immediately contemporary history. Three of the four hours are given up to lectures and recitations attended by the entire class; the fourth hour is devoted to source and topical study in small sections. Much of the research work is done from periodicals, annual registers, year books and the like. In the lectures, much attention is given to the matter of political geography; a large number of maps have been specially prepared for this purpose under direction of the instructor.

The first three or four weeks are devoted to a study of the political, economic and social condition of Europe on the eve of the French Revolution; the next ten weeks are given to the French Revolution and the Napoleon period, the history of all Europe being grouped about that of France; the remainder of the year is taken up in the study *seriatim* of the history of the leading national states, and, as far as the time permits of the minor nationalities.

During the course of the year the following books are required: *Putzger's Historischer Schul Atlas*, *Andrew's Historical Development of Modern Europe* (student's edition), *Gardiner's French Revolution*, and *Lowell's Governments and Parties of Continental Europe*.

Course V. *Constitutional history of the United States.*

PROFESSOR WEST

Four hours a week through the year. Open to juniors and seniors who have completed course I; and required for courses vi, ix, and very desirable for xi and xiii, 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. The work falls into the following divisions:

Colonial: the development of selected European germs in an American environment, the divergence from the European types, and the final separation in the Revolution. The topics given most attention are the development of representative government in the different colonies, especially in New England; the effects of the Stuart restoration and the critical colonial period, 1660-1689; the character of French colonization and the cause of the failure of France in the struggle for the new world; the constitutional struggle preceding the Revolution and the progressive American standard of political rights.

The formation and organization of the Union: the transition from colonial to commonwealth governments, and the evolution of the state constitutions; the central government under the confederation; the making of the constitution; the organization of the Federalists and the centralizing tendencies they set in motion; the victory of Jeffersonian democracy and the modification of Jeffersonism in the war of 1812.

The growth of nationality: social and economic conditions in 1800; territorial expansion; the frontier and its meaning; Jacksonian democracy; the slavery struggle; civil war and reconstruction: economic development and questions.

Course VI. *The making of the constitution of the United States.*

PROFESSOR WEST

An intensive course two hours a week, open to seniors 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.

Course VII. American history since 1789 as shown in the development of the constitutional law.

PROFESSOR WEST

An intensive course, two hours a week, open to seniors who completed course v, to graduates, and to qualified law students. Course vi also 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.

Course VIII. Constitutional history during the Civil War and Reconstruction period.

PROFESSOR WEST

Open on the same terms as vi and vii. Two hours a week. Not given in 1902-1903.

Course IX. Studies in American biography.

ASSISTANT PROFESSOR ANDERSON

Two hours a week through the year. 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 an acquaintance with the entire body of writings relating to the subject somewhat more special than can be secured in the general course. The subject for 1902-1903 will be Thomas Jefferson.

Course X. A critical study of historical masterpieces.

ASSISTANT PROFESSOR ANDERSON

Open to seniors who have taken two courses in history, and to graduates. Two hours per week through the year. Courses ix and x are given in alternate years. 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. In 1902-1903 the masterpiece for study will be either Lecky's History of England in the Eighteenth Century, or Gardiner's History of England, 1603-1641.

Course XI. The history of American diplomacy.

ASSISTANT PROFESSOR ANDERSON

Offered to seniors and graduate students who have had two courses in history or one in history and one in international law. Two hours a week through the year. 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. To alternate with course xii. internal affairs of the country. Given in 1902-1903, but not in 1903-1904.

Course XII. *The history of European diplomacy, 1814-1878.*

ASSISTANT PROFESSOR ANDERSON

Offered to seniors and graduate students who have had two courses in history or one in history and one in international law. Two hours a week through the year. History iv is the best preparation. Students will have Debidom's *Historie Diplomatique de l' Europe, 1814-1878*, second edition. Ability to read French is required. Not offered in 1902-1903.

Course XIII. *Colonial expansion and system of administration.*

PROFESSOR WEST

Two hours a week; open to students who have completed course 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.

Course XIV. *A critical study of authorities for early New England history—based upon a reading of Winthrop's New England.*

PROFESSOR WEST

Two hours a week; open to graduates only. This is primarily a course in historical criticism. Each member of the seminar has a group of secondary authorities assigned him whom 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 six. Courses xiii and xiv are not given in the same year.

Course XV. *A seminar upon the teaching of history in secondary schools.*

PROFESSOR WEST

Not given in 1902-1903.

Course XVI. *A history of the "Philosophy of History."*

PROFESSOR WEST

Two hours a week; open to graduates; given in alternate years with course xv.

Course XVII. *Interpretation of medieval economic documents.*

ASSISTANT PROFESSOR WHITE

Characteristic documents relating mainly 12th and 13th century economic history are to be carefully studied with reference both to language difficulties and historical criticism. Such documents will be selected as will tend to throw the most light on the leading economic problems of the medieval period. The work is to be based on *Documents Relatifs a L' Histoire et du Commerce en France*, edited by Faguiez.

Course XVIII. *English constitutional history.*

ASSISTANT PROFESSOR WHITE

One meeting a week through the year. Critical and detailed study of the reigns of Henry III and Edward I, with special attention to the establishment of the great Charter and the evolution of Parliament. Based on a careful reading of Bracton and the chronicles of Matthew Paris and William Rishanger. A working knowledge of Latin is required. Courses xi and xii are not given in the same year.

LATIN.

Course I. *Cicero de Amicitia and de Senectute.*

Freshman i.

Exercises in Latin composition and a review of the syntax.

Course II. *Livy.*

Freshman ii.

Selections from Livy and one play of Plautus or Terence; rise and development of Roman institutions.

Course III. *Horace.*

Sophomore i.

A study of his life, times, style and works; a history of Latin literature.

Course IV. *Tacitus, Agricola and Germania.*

Sophomore ii.

Pliny the Younger; selections from his letters.

Course V. *Cicero's letters.*

Junior i. PROFESSOR PIKE

A study of the fall of the Republic.

Abbott's Cicero's Letters. Strachan-Davidson's Cicero.

- Course VI. Selections from the Annals of Tacitus.* Junior ii. PROFESSOR PIKE
Illustrating the civil life and political history of the period from Augustus, to Nero.
Allen's, Annals; Teubner's, Tacitus; Cape's, Early Empire.
- Course VII. Roman satire.* Senior i. PROFESSOR CLARK
Reading of Juvenal, Perseus, Horace, and fragments of early satire, with a study of
the rise and development of Roman satire.
- Course VIII. Lucretius de rerum Natura, Cicero de Natura Deorum. Ovid Fasti.*
Senior ii. PROFESSOR CLARK
Roman religion—elements and worship
- Course IX. 223 Patristic Latin.* Senior i. PROFESSOR CLARK
(a) *Lactantius. Augustine and Tertullian.*
(b) *Latin Hymns.*
Not offered in 1902-1903.
- Course X. Latin seminar.* PROFESSOR CLARK
The course for 1902-1903 will be a study of the Æneid of Vergil. Books vi to xii will
be read with a study of Vergilian prosody, an investigation of the sources of the
Æneid and its influence on later Latin will form a part of the work, and form the
basis for papers of original research.
- Course XI. Latin seminar.* PROFESSOR PIKE
The work for the season of 1901-02, will consist of the translation and annotation
of the moral epistles of Seneca and a study of Stoic philosophy at Rome.
- FOR GRADUATES.
- Course XII. Sankrit.* PROFESSOR CLARK
Grammar and Nala Story offered in 1901-02.
- Course XIII. History of the early empire.* PROFESSOR PIKE
A comparative study of original sources. Tacitus, Suetonius, Dion Cassius, Pater-
culus, etc., offered in 1901-02.
- Course XIV. Roman antiquities.* DR. GRANRUD
Roman constitutional history from the earliest times to the establishment of the
Julian monarchy. 2d Semester. Roman private life, the family and the clan;
birth and education, marriage and burial; the Roman house and furniture; daily
life and amusements. 1st Semester. Offered in 1901-02, and 1902-03.
- Course XVI. Roman drama. (a) Tragedy.* PROFESSOR CLARK
Seneca's works with a comparison of the originals. Fragments of Roman tragedy
with a study of its rise and nature. Offered in 1902-1903.
- Course XVI. Roman drama (2). (b) Com. Dy.* PROFESSOR PIKE
Plautus and Terence. Offered in 1902-1903.
Courses v, vi, vii, viii, are open to graduate students taking a minor in Latin.

MATHEMATICS.

FOR UNDERGRADUATES.

- Course I. Higher algebra.* Freshman i.
Simple equations, inequalities, proportion, variation, progression, quadratic equa-
tions, simultaneous equations of the second degree, maxima and minima of func-
tions, differentiation of algebraic functions, development of functions, logarithms,
theory of equations and solution of numerical higher equations.
- Course II. Plane and spherical trigonometry and elements of analytical geometry.*
Freshman ii.
With numerous applications.

- Course III. Analytical geometry.* *Sophomore i.*
 The conic sections, both by rectilinear and polar coördinates, producing equations of loci whose law of development is known, constructing and discussing such equations, transformation of coördinates, properties of loci by means of their equations.
- Course IV. Differential calculus.* *Sophomore ii.*
 Differentiation of algebraic and transcendental functions, development of functions, maxima and minima, treatment of tangents, subtangents, normals, subnormals, asymptotes, direction and rate of curvature, evolutes, envelopes and curve tracing.
- Course V. Integral calculus.* *Junior i.*
 Integration of the various forms, rectification of curves, quadrature of plane and curved surfaces, cubature of volumes, equations of loci by means of the calculus.
- Course VI. Determinants and solid analytical geometry.* *Junior or senior ii.*
 The plane, the straight line in space, quadric surfaces, applications. Each of the above courses requires all of the preceding courses.
- Course VII. Differential equations.* *Junior or senior ii.*
 Open to those who have completed the first six courses.
- Course VIII. Method of least squares.* *Junior or senior i.*
 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 six courses.
- Course IX. Descriptive geometry.* *Junior iii, senior i.*
 Problems relating to points, lines, planes, solids, surfaces of revolution and warped surfaces; orthographic, isometric horizontal, oblique, and perspective projections; shades and shadows. Recitations, lectures and practice. Open to those who have completed the first four courses.
- Course X. Modern analytical geometry.* *Senior i.*
 Discussion of equations of the first and second degree (tri-linear co-ordinates), equations of tangents and polars for the three forms of the second degree equation, the principal of duality. Open to those who have completed the first seven courses.
- Course XI. Theory of equations.* *Senior i.*
 Based on Burnside and Panton, including a review of the elementary properties of equations, discussion of the roots of unity, the solution of the cubic and the bi-quadratic, the proof that every equation has a root, symmetric functions of the roots, introduction to co- and in-variants. Open to those who have completed the first six courses.
- Course XII. Applied mechanics.* *Senior i, ii.*
 Statics, dynamics, strength and elastic properties of the ordinary materials of construction, hydro-mechanics (study of the laws of pressure and the flow of liquids). Recitations and lectures. Open to those who have completed the first six courses.

FOR GRADUATES.

- Course XIII. Determinants.*
Course XIV. Advanced work in co-ordinate geometry.
Course XV. Advanced work in differential calculus.
Course XVI. Advanced work in integral calculus.
Course XVII. Quaternions.
Course XVIII. Theory of functions.
Course XIX. Hyperbolic and elliptic functions.
Course XX. Spherical projections.
Course XXI. History of mathematics.

Courses III-XII are offered to those who do not elect them in their undergraduate years

MILITARY SCIENCE AND TACTICS.

HAYDN S. COLE, Lieutenant U. S. A., Commandant.

For the instruction in military drill and administration the students are organized into a corps of cadets, consisting of a battalion 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 \$25 and is as neat and economical dress as the student can obtain.

Drill is required of all men in the freshman and sophomore classes.

Military drill may be taken voluntarily by others outside of the freshman and sophomore classes and to encourage this, as it is considered beneficial not only to the individual student but to the State generally, the extra work is considered by allowing two years' drill to count as one-half of a credit in the second semester of the senior year. It is understood, however, that only one-half credit can be thus obtained.

Military instruction is intended to be so conducted as to develop a soldier-like bearing and foster a spirit of gentlemanly courtesy, soldierly honor and obedience to lawful authority, as well as to familiarize students with company and battalion manœuvres, guards and the theoretical and practical use of fire arms.

On the graduation of each class the commandant will report to the Adjutant-General of the Army the names of the graduates who have shown special aptitude for the military service and furnish a copy thereof to the Adjutant-General of the State.

The officers and non-commissioned officers are required to be good students in the other departments, soldier-like in the performance of their duties, exemplary in their general deportment and able to pass a creditable examination in drill regulations. In general, the officers are selected from the senior class; the sergeants from the junior class; and the corporals from the sophomore class.

Freshman—Practical instruction in schools of the soldier, company and battalion: signals, ceremonies.

Sophomore—Practical and theoretical instruction in schools of the company and battalion: Advance and rear guard drill: Practical and theoretical instruction in guard duty Gallery practice: Schools of the cannoneer and battery dismounted: Ceremonies.

Junior, senior—Theoretical instruction—Advance and rear guards, Outposts, Reconnaissance, Camping: Duties of Company Commander.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

MAJOR:

John F. Bernhagen.

CAPTAINS:

Urni S. Duncan.
Norman G. Lind.

R. S. Lovett.

Frank O. Fernald.
Warren C. Knowlton.

FIRST LIEUTENANTS:

Henry D. Campbell,
Adjutant.
Joseph H. Davidson.

Justin V. Smith.
Carl Herrick.

Robert Kelley.
F. O'Neil
John C. Hutchinson.

SECOND LIEUTENANTS:

James G. Stanley
Paul C. Burrill.

Charles Alexander.
Halstead C. Moody.

Carl Taylor.
Percy S. Saunders.

E. Tuohy, Principal Musician.
H. E. Barlow, Sergeant Major.

Paul Breen, Chief Musician.
Fred Smith, Chief Bugler.

FIRST SERGEANTS:

E. R. Mosher.	Chester H. Tibbetts.	Putnam D. McMillan,
Theodore Beyer.		S. G. Collins.

SERGEANTS:

E. W. Smith.	J. B. Ladd.	S. B. Bailey.
D. E. Prouty.	F. H. Nutter.	M. L. Page.
R. R. Knight.	A. C. Whitney.	R. F. Firmin.
C. W. Brooke.	J. V. Williams.	E. Boerner.
A. G. Alley.	G. N. Martin.	B. Dibble.
C. L. Haney.	A. F. Stockman.	

CORPORALS:

A. P. Asher.	G. H. Downs.	C. V. Pierce.
C. B. Barnum.	A. R. Gibbons.	W. C. Adams.
P. A. Brooks.	L. M. Powell.	L. S. Alden.
L. P. Campbell.	A. C. Remele.	F. A. Alenander.
E. J. Cheney.	W. B. Sheldon.	R. H. Keyes.
I. A. Churchill.	E. C. O'Brien.	G. N. Manthey.
E. C. Parker.	A. S. Bockman.	E. L. Noyes.
R. S. Pattee.	R. H. Baldwin.	M. A. Nye.
J. Thompson.	F. C. Cutter.	W. F. Rosenwald.
O. B. Wiren.	A. R. Fairchild.	G. W. Ward.
T. W. Weum.	C. F. Firkins.	A. B. Wells.
M. F. Baker.	A. G. Furber.	A. P. Pratt.
V. H. Bosworth.	G. H. Stone.	W. P. Schow.
F. A. Cannon.	H. G. Morton.	E. H. Williams.

MINERALOGY.

Course I. General mineralogy. *Junior i, ii.* PROFESSOR HALL AND DR. BERKEY

The morphology of minerals, consisting of the elements of crystallography and the projection and construction of figures of crystals; the physical and chemical characters of minerals, with demonstrations; a study of the native elements and the rock making minerals; the basis of mineral classification.

The ores and economic minerals are described and their crystal forms, physical properties and chemical composition, together with their occurrence and association, are treated. The most important groups of minerals are studied. Minerals are discussed in their genetic relationship and distribution.

Laboratory work consists of tests illustrating the range of minerals and the application of chemical and blowpipe analysis to the determination of species. An introduction to the methods of quantitative blowpipe analysis; special topics; reference reading and discussions.

Course II. Quantitative mineralogy.

Junior ii. PROFESSOR APPELBY AND MR. CHRISTIANSON

Determination of value of ores. Lectures, recitation and laboratory work. Course i, metallurgy, in the school of mines.

Course III. Physico-chemical methods, with their applications. Senior ii. DR. BERKEY

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.

Course IV. Optical mineralogy. Senior i. PROFESSOR HALL AND DR. BERKEY

A study of the structure of crystals and crystal grains.

An application of methods used in determining minerals by their optical properties; goniometric and staurosopic practice, embracing the elements of lithology. Lectures and laboratory work.

Course V. The morphology of minerals. Senior ii. DR. BERKEY

A study of crystallography, embracing projection and the geometric relations of crystal planes.

Course VI. An outline of mineralogy. Junior or senior. DR. BERKEY

A study of methods of identification of minerals, with their applications. Conferences, reading and demonstrations. Once a week throughout the year.

FOR GRADUATES.

Course VII. PROFESSOR HALL AND DR. BERKEY
Original problems in morphological and physical mineralogy.

Course VIII. DR. BERKEY
Special investigations in physical and chemical mineralogy.

Course IX. PROFESSOR HALL AND DR. BERKEY
Description of mineral occurrence and association. Genetic relationships. Field work in connection with the different phases of the particular problem in hand.

MUSIC.

Students who are sufficiently advanced in music are allowed, under the conditions mentioned below, to take instrumental music as one study through the junior and senior years: provided that no student shall receive more than four credits in music.

For instrumental music, whatever the instrument, students must be sufficiently advanced to play, with facility and accuracy, the major and minor scales and the equivalent of Czerny's Velocity Studies for the piano. The student's fitness will be determined by examination.

A minimum of eight hours per week must be given to lessons and practice, the character of the work to be reported upon each semester, as in case of other studies.

The work to be taken under instructions in the Northwestern Conservatory of Music and the instruction to be paid for by those receiving it. The Conservatory makes special rates to the students of the University.

PEDAGOGY.

PROFESSOR KIEHLE

These courses are provided for those who wish, by a more extended scholarship and a more systematic study of education, to prepare for positions of supervision and teaching in the departments of higher education. They are also for the general student who, in the home and in the state, is interested in the proper care, training and education of children and youth, and who is willing to give to this subject the same intelligent study that is accorded to other problems of history and sociology.

Course I. History of education. Junior i.

Students electing this course will pursue the study of the relation of education to civilization; how the latter is promoted by education, and the relation of institutions to education. It will be considered in two parts.

Part I. Ancient and Pre-Christian education, with China, Greece, Rome and the Hebrews as types, and as furnishing an historical order and sequence in the subject.

Part II. Modern and Christian education, with a survey of the relation of ancient educational results to modern education; also a brief discussion of the educating methods and results of the Christian Church through early centuries. This will be followed by a study of education in the medieval university period and following that the renaissance and the reformation. Open to juniors and seniors.

Course II. *The philosophy of education.*

Junior ii.

The purpose of this course will be to define the purpose of education, and the principles which govern in preparing the mind and character of youth for the duties of life. It will include topics, as the following: The influence of physical development upon the mental and the recognition of these facts in education. The order of mind development, and the bearing this has upon matter and method in teaching. The recitation, its purpose and the principles that govern in conducting it. Open to juniors and seniors who have had not less than one semester in psychology.

The above courses are offered as general and preparatory courses for teaching. It is very desirable that those who are preparing for teaching special subjects should give additional study to the application of sound principles of teaching to the special lines for which they are preparing—with this in view several departments are prepared to offer work in teachers' course. Such courses not only define the best methods of conducting work, but elaborate in subject matter, so that the teacher not only knows better how to teach, but knows more of what to teach. These courses are announced under the several departments to which teachers are referred. The courses as far as now ready are the following:

History,	PROFESSOR WEST
Drawing,	PROFESSOR KIRCHNER
Geography and geology of Minnesota.	PROFESSOR HALL
Manual training,	PROFESSOR FLATHER
Latin,	PROFESSOR CLARK

THE UNIVERSITY STATE TEACHER'S CERTIFICATE.

Upon graduation from the college of science, literature and arts, students who have completed one semester of psychology, and the first two semesters of pedagogy, and who have attained a general average of 85 per cent. in all studies, may apply for and will receive, upon the vote of the faculty, the University State Teacher's Certificate, which by state law authorizes them to teach in the public schools of Minnesota for two years from date. After that time, upon satisfactory evidence of success, the certificate may be made perpetual by the endorsement of the state superintendent of public instruction and the president of the university.

PHILOSOPHY AND PSYCHOLOGY.

FOR UNDERGRADUATES.

Course I. *Descriptive psychology.*

i or ii. PROFESSOR WOODBRIDGE,

ASSISTANT PROFESSOR WILDE, AND MR. SWENSON

This course is intended to serve as a general course in psychology and as an introduction to the advanced courses offered by the department. The work consists of the study of a text supplemented by lectures and demonstrations and by the preparation of papers on some psychological topic.

Course II. *Experimental psychology. Part I.*

i. MR. GALE

Open only to students who have completed course i.

Three hours a week in the psychology of the senses through demonstrations and experiments; following in outline Titchener's Laboratory Course in Experimental Psychology, with special individual experimenting and reading for thesis work. One hour a week in the anatomy and physiology of the nervous system through lectures, demonstrations with models, original preparations, and lantern slides, and with practical laboratory dissections.

Course III. *Experimental psychology. Part II.*

ii. MR. GALE

Open only to students who have completed course i.

Demonstrations and experiments in memory and association; in reasoning, with special original tests of reasoning in mathematics, science, law, and ethics; in feeling and willing, with special reference to the basis of aesthetics and ethics.

- Course IV. Research problems in experimental psychology.* *i and ii.* MR. GALE
Open only to students who have completed course ii or course iii.
Original research in special problems in experimental psychology or special advanced study of brain cells and tracts through original material and through the comparative and development methods. Students electing this course will be expected to spend eight hours a week in research work.
- Course V. Anthropological psychology.* (2) *i.* PROFESSOR WOODBRIDGE
Open only to students who have completed course i.
Study of primitive religious, moral, aesthetic, and intellectual conceptions.
- Course VI. Problems of psychical research.* (2) *ii.* MR. GALE
Open only to students who have completed course i.
The phenomena of "psychical research", i. e., thought-transference, spiritualism, suggestion in the various forms of mind-cures, hallucinations, and the deceptions of the senses in the preceding phenomena and in conjuring.
- Course VII. The psychology of music.* (2). *ii.* MR. GALE
Lectures with experimental demonstrations to analyze the total aesthetic effects of music into its elementary components of tone quality and quantity, rhythm, melody, harmony contrast, with the biographical, historical and personal associations, and its connections with poetry in songs and with the drama in opera. Based largely on original experimental material, together with such works as those of Helmholtz, Koenig, Stumpf, Riemann, Zahn, Lanier, Gurney, Gilman, Wallaschek and R. Wagner.
Extra hours will be given as illustrations in different forms of piano compositions, chamber music, song cycles of Schubert, Schuman and Brahms; piano arrangements of Beethoven's Ninth Symphony, and at least of Parsifal from Wagner's music-dramas. Special lectures will be given preparatory to the best public concerts during the musical season.
- Course VIII. Logic.* *i or ii.* PROFESSOR WOODBRIDGE,
ASSISTANT PROFESSOR WILDE, AND MR. SWENSON
A study of the nature of knowledge and the principles of formal logic. Jevons' Lessons in Logic will be used supplemented by lectures and exercises.
- Course IX. History of philosophy.*
PROFESSOR WOODBRIDGE AND ASSISTANT PROFESSOR WILDE
Lectures and special study of individual philosophers.
First semester.—Ancient and medieval philosophy. Special study of Plato.
Second semester.—Modern philosophy. Special study of Hobbes and Hume.
- Course X. The principles of ethics.* *i.* ASSISTANT PROFESSOR WILDE
An introductory course, comprising a study of the distinction between moral and non-moral phenomena, an analysis of voluntary conduct, and a discussion of the nature of conscience, the meaning of right and wrong, the purpose of life, human responsibility, and the authority of moral law.
- Course XI. Philosophy of religion.* *ii.* ASSISTANT PROFESSOR WILDE
A study of the religious consciousness, its origin, development, and significance: an analysis of the conception of God and a discussion of the place and function of religion in modern life.
- Course XII. Fundamental problems of philosophy.* [2] *i.* PROFESSOR WOODBRIDGE
An introductory course in philosophy designed for students not electing long courses in the department.
- Course XIII. Aesthetics.* (2). *ii.* PROFESSOR WOODBRIDGE
A study of the nature and principles of beauty, and a discussion of the place and function of art in life.

- Course XIV. Metaphysics.* [2] ii PROFESSOR WOODBRIDGE
Open only to students who have completed course viii or course ix.
A critical and constructive discussion of theories of knowledge and reality.

FOR GRADUATES.

- Course XV. Experimental psychology of feeling.* MR. GALE
Rhythm, melody, harmony, color, proportion, movement, conduct.
- Course XVI. Experimental psychology of reasoning.* MR. GALE
By question blanks, individual trials, analysis, and other means.
- Course XVII. Psychology of childhood.* MR. GALE
Study of a larger mass of original material (on three children) than any yet published—especially in feeling and reasoning.
- Course XVIII. Reading of psychological works in German, French, and Italian.* MR. GALE
- Course XIX. Brain histology and brain microphotography.* MR. GALE
Technical practice in the methods of Golgi and Weigert, and especially in the cutting of series. Study of a large and valuable collection of original preparations and photographs with the works of Barker, Donaldson, Edinger, Obersteiner, Kölliker, His, Flechsig, Retzius, Golgi, and Ramon y Cayal.
- Course XX. Pre-Socratic philosophy.* PROFESSOR WOODBRIDGE
A critical study of the fragments of early Greek philosophy, with attempts at systematic reconstruction. 1902-1903.
- Course XXI. The philosophy of Aristotle.* PROFESSOR WOODBRIDGE
A critical reading of his logical treatises, the *Metaphysics*, and the *Psychology* in the original Greek. 1901-1902.
- Course XXII. The philosophy of Kant.* PROFESSOR WOODBRIDGE
A critical reading of the three *Critiques*; the relation of Kant to the development of modern philosophy. 1901-02.
- Course XXIII. The philosophy of Hume.* PROFESSOR WOODBRIDGE
A critical reading of Hume's philosophical works, the position of Hume in the development of English philosophy. 1902-03.
- Course XXIV. Advanced logic.* PROFESSOR WOODBRIDGE
Theory of knowledge and analysis of belief. 1902-03.
- Course XXV. The history of ethics.* ASSISTANT PROFESSOR WILDE
A critical reading of the chief works in the history of ethics. 1901-02.
- Course XXVI. Systematic ethics.* ASSISTANT PROFESSOR WILDE
A detailed study of the principles of conduct and the basis of moral obligation. 1902-03.
- Course XXVII. The idealistic philosophy of religion.* ASSISTANT PROFESSOR WILDE
A study of the religious philosophy of Kant, Fichte, and Hegel. 1902-03.
- Course XXVIII. German idealism.* ASSISTANT PROFESSOR WILDE
A critical discussion of the philosophies of Fichte and Hegel. 1902-3.
- Course XXIX. Philosophic ideals of education.* ASSISTANT PROFESSOR WILDE
A study of some of the chief philosophic theories as to the aim and method of education. 1903-04.

PHILOSOPHICAL SEMINAR.

The seminar 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.

PHYSICAL CULTURE.

FOR WOMEN.

MISS BUTNER

The course in physical 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. A full year of work, in addition to the work required in this department, counts as half a credit in the second semester of the senior year. The work consists of systematic exercises for the development of all parts of the body.

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 disuse. 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.

FOR MEN.

DR. COOKE

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.

PHYSICS.

FOR UNDERGRADUATES.

The mathematics of the freshman year is required as preparation for all courses in this department.

Course I (long—first year.)

(a) Mechanics of solids and fluids.

Sophomore i.

(b) Heat and electrostatics.

Sophomore ii.

With experimental lectures and laboratory work.

Course II (long second year.)

(a) Electricity and magnetism.

Junior i.

(b) Sound and light.

Junior ii.

With experimental lectures and laboratory work.

Course III (short.)

(a) Mechanics, heat, and electrostatics.

Sophomore i.

(b) Electricity, magnetism, sound and light.

Sophomore ii.

With experimental lectures.

*Course IV. Advanced laboratory work.**Senior i. ii.*

Open to those who have completed course ii.

FOR GRADUATES.

Course V. Advanced work in some special field; experimental investigations being the principal feature of the work.

Course IV is also open to graduate students desiring the work.

POLITICAL SCIENCE.

FOR UNDERGRADUATES.

For a general course in economics students may take courses i, ii, v.

Special course in private economics, i, ii, iii, iv, vi, vii, x.

In public economics, i, ii, iv, v, vi, vii, x.

ECONOMICS, PRIVATE AND PUBLIC.

Course I. Elementary.

Junior i. PROFESSOR McVEY

A thorough course in the elements of economics. The aim is to inculcate accepted doctrine, and show the nature and bearings of questions unsettled. Text book, problems, lectures and discussions. 4 hours.

Course II. Corporation finance.

Senior i. PROFESSOR McVEY

A study of the methods of financing modern corporations, and the analysis of their accounts and statements. Text-books, Green, Corporation Finance; Sumner's Investment securities; Woodlock Anatomy of a Railroad Report. Lectures, collateral reading and problems. 2 hours.

Course III. Economic geography.

Senior i. Lecturer to be announced.

A discussion of the character of commercial relations, localization of industry, and such other peculiarities as may be ascribed to physical environment. Lectures and collateral reading. Not given in 1901-02. 2 hours. Details to be announced.

Course IV. Advanced economics.

Junior i. PROFESSORS FOLWELL AND McVEY

This course extends through the year. In the first semester, a brief exposition of of economics as a system is given by Professor Folwell; then follow discussions on the principal topics of Hadley's Economics, with problems under Professor McVey. 2 hours. For second semester, see course ix.

Course V. Public finance.

Senior i. PROFESSOR FOLWELL

Public expenditure, national, state and local, from the standpoint of public wants. The principles and policy of revenue and taxation. Public debts and financial administration. Illustrated chiefly by American examples. 4 hours.

POLITICS.

Course I. The science of the state.

Junior i. DR. 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. The state is considered from the philosophical, the juridical, and the historical points of view. A text book with lectures and topical readings. 4 hours.

Course II. The elements of jurisprudence.

Junior i. DR. 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 of cases summarizing principles. The course is based on a text, with lectures and assigned reading. 4 hours.

Course III. The science of administration.

Senior i. DR. SCHAPER

A course in American administration, running through the year. A study of the government, national, state and local. In the first semester a brief sketch of the history of the science including an account of the continental administrative courts. A study of the operation of the United States government under the constitution follows. The plan of work will be announced later. 2 hours.

ECONOMICS, PRIVATE AND PUBLIC.

Course VI. Modern industrialism.

Junior ii. PROFESSOR McVEY

The development of the modern industrial system from the middle of the eighteenth century. So far as time allows the phenomena of corporations, monopolies and trusts are treated. Particular attention is paid to the question of state interference. Lectures and collateral readings, 2 hours.

Course VII. Banking and money.

Senior ii. PROFESSOR McVEY

Elements and principles of the subjects. Lectures, papers and text book. 4 hours.

Course VIII. Transportation.

Seniors and engineers ii. PROFESSOR FOLWELL

The evolution of transportation in the United States, and by railroads in particular. Economic aspects and public policy of railroads. 2 hours.

Course IX. Advanced economics.

Junior and senior ii. PROFESSOR McVEY

A continuation of course iv. A study of modern economists and their writings with special reference to price, value, wages and international trade. 2 hours.

Course X. Methods of investigation.

Seniors ii. PROFESSOR McVEY

A course in methods of using libraries, collecting and organizing material, followed by the actual investigation of important questions. One hour per week for seniors and graduate students. Not offered in 1901-02.

POLITICS.

Course IV. The science of government.

Junior ii. DR. SCHAPER

An account of the government as the agent of the state; comparative historical study of the evolution of the most important governmental systems, including an account of the tribal, patriarchal, and feudal systems, the Greek, Roman, modern European and the American systems. This course follows course i and with the same plan of work. 4 hours.

Course V. City government.

Senior ii. DR. SCHAPER

A comparative study in modern city charters and administration as illustrated by the systems in vogue in Germany, France, England and America. 2 hours.

Course VI. The science of administration.

Senior ii. DR. SCHAPER

A continuation of course iii. In the second semester the state, county and township governments in operation are studied. 2 hours.

Course VII. Public international law.

Senior ii. PROFESSOR FOLWELL

From a carefully elaborated syllabus, such topics as intervention, treaty-making, extradition, rules of war, neutrality, etc., are selected for treatment as time allows.

The preparation of papers on topics related to the instruction is part of the regular work in this department.

A moot senate meets weekly during during the second term for practice in parliamentary procedure. If desired, Professor Folwell will give a short course of lectures on parliamentary laws. Open to volunteers from the junior and senior classes.

FOR GRADUATES.

The particular lines and subjects of study are selected by individuals or groups after consultation with the head of the department. So far as possible instruction will be given to groups.

When insufficiently grounded in elementary subjects, graduates are permitted to join undergraduate classes, but are expected to do more work than is required of undergraduates.

Economics courses, ii, iv, v, vii, viii and ix, and politics courses iii, vi and vii, are planned and conducted in a manner suitable to graduate students.

Among subjects desirable for graduates electing work in this department and in which instruction will be given so far as the duties of the teaching force will permit are:

Economic schools and movements. Evolution of economic theory. The science and technique of statistics. The doctrine of rights. Comparative politics. Neutrality of states.

The political science seminar conducted by Professor Folwell meets weekly on Fridays throughout the year. Open to all graduate students of the department, and to seniors especially interested and qualified.

RHETORIC AND ELOCUTION.

RHETORIC.

Course I. Rhetoric.

[1] *Freshman i and ii.* PROFESSOR SANFORD, MISS COMSTOCK AND MR. SANFORD

This course includes two hours a week of rhetoric, the writing of compositions, and the study of prose master-pieces; and two hours a week of the study of Shakspeare's plays. To students of high standing in this course, an elective course in argumentation is offered. It consists in theoretical study of argumentation and practical work in written and spoken debate.

Course II. English composition and rhetoric.

[1] *Sophomore.* MR. FIRKINS

The students write exercises in class and weekly essays outside of class exemplifying the important points in description, narration, exposition and argumentation successively. The work consists of writing and criticism only; neither textbooks nor lectures are employed.

Course III. Addresses, responses to toasts, orations.

[1] *Sophomore.* MR. FIRKINS

This course consists of original speeches, four or five in number, which are written, learned and publicly delivered. (N. B. Course ii will probably extend over the first few weeks of the second semester.)

Course IV. Debate.

[1] *Sophomore i, ii*

Students may elect debate in place of course ii and iii. Individual drill and thorough criticism precedes each debate rendered in class.

Course V. Literary criticism.

Junior i, ii. PROFESSOR SANFORD

Study of models of English poetry, oratory, fiction, etc., with critical essays. Open to those who have completed course i.

Course VI. Lectures upon the history of art.

Senior ii. PROFESSOR SANFORD

With essays on art subjects. Open to students who have completed course i.

Course VII. Debate.

Senior i, ii. PROFESSOR SANFORD

This course aims at the training of men in public speaking. It consists of theoretical work in argumentation. Standard debates and orations are analyzed and briefed; original debates are briefed, written and rehearsed for criticism. Special emphasis is laid upon class room debate with criticism on delivery, thought and composition.

Course VIII. Advanced rhetoric.

Junior ii. MR. FINKINS

In this course essays are written twice or three times a week. They aim at some specified excellence, such as coherence, vividness, strength of imagery, or logical plan; and examples of this specified excellence from the writings of great authors are read by the students as a preparation for the work. Textbooks are not used; the principles of the subject are orally explained or dictated by the instructor. The first semester is occupied with narrative and description; the second with exposition and argumentation.

ELOCUTION.

Course IX. Reading.[1] *Sophomore i, ii.* ASSISTANT PROFESSOR McDERMOTT

Sketches from standard authors studied with special attention to articulation, enunciation, flexibility of voice and purity of tone.

Course X. The physical side of vocal expression. ASSISTANT PROFESSOR McDERMOTT

This course aims at the following objects: An understanding of the vocal mechanism; the strengthening and cultivation of the voice; the correction of foreign accent, defective enunciation and common faults of quality such as aspirated, oral, pectoral, guttural and nasal tones; the specific application of the principles of clearness, simplicity, strength and variety in delivery. Interpretation is approached from within not from without and correct thinking is made the basis of correct expression.

Course XI. The psychological side of vocal expression.

Junior or senior ii. ASSISTANT PROFESSOR McDERMOTT

In this course the functions of the dramatic instinct, the will, the intellect, the imagination and the emotions are considered independently and conjointly with reference to delivery. The effect upon expression of the neglect of any one of these elements is shown, and literature is studied with a view to the harmonious development of all.

Course XII. American oratory. Junior or senior i. ASSISTANT PROFESSOR McDERMOTT

Standard orations are analyzed; synopses, oral biographies, accounts of historical settings and expositions of the orator's style and logic are required. Forensics and debates are prepared and one original oration each semester is required, and a short selection from the oration under consideration is committed for practice in delivery, and short stories from best modern authors are retold for fluent command of English. Beside class work each student is given a brief period for individual criticism; for this reason only a limited number can be admitted.

Course XIII. British oratory and ancient oratory.

Junior or senior, ii. ASSISTANT PROFESSOR McDERMOTT

A continuation of course xiii.

SCANDINAVIAN LANGUAGES AND LITERATURES.

FOR UNDERGRADUATES.

Course I. Language course for beginners.

(a) [4] Swedish.

Junior or senior i, ii.

(b) [4] Danish-Norwegian.

Junior or senior i, ii.

Cours. II. [4] Scandinavian literature before 1800.

(a) [2] History of literature.

Junior or senior i, ii.

(b) [2] Study of special authors.

Junior or senior i, ii.

Course III. [4] Scandinavian history before 1500.

Junior or senior i, ii.

Cours. IV. Language courses, advanced.

(a) [4] Danish-Norwegian.

Junior or senior i, ii.

(b) [4] Swedish.

Junior or senior i, ii.

(c) [4] Icelandic.

Senior i, ii.

Course V. [4] *Scandinavian literature of the six century.*

(a) [2] History of literature.

(b) [2] Study of special authors.

Junior or senior i, ii.

Junior or senior i, ii.

Course VI. [4] *Scandinavian history.*

Junior or senior i, ii.

FOR GRADUATES.

Course VII. *Icelandic or Old Norse.*

The history, language and literature of Iceland and Norway from earliest times to 1500 A. D.

Course VIII. *Old Swedish.*

The history, language and literature of Sweden from earliest times to 1500 A. D.

Course IX. *Old Danish.*

The history, language and literature of Denmark from earliest times to 1500 A. D.

Course X. *Modern Danish language and literature.*

Course XI. *Modern Swedish language and literature.*

Course XII. *Modern Norwegian language and literature.*

SOCIOLOGY.

Course I. *Elements of sociology.*

[4] i. PROFESSOR SMITH.

Course II. *Social pathology.*

[2] i. PROFESSOR SMITH.

Course III. *Social theory.*

[2] i. PROFESSOR SMITH.

Treats of the history of opinion and discusses leading French, German, English and American authors.

SPANISH.

Course I. *Spanish, begun*

Junior i, ii. DR. BECKMAN.

Grammar; Hosfeld's Method; Reader; Montilla's Libro de Lectura III; reading of some modern novelists as Valera, Alarcon or others.

Course II. *Spanish, second year.*

Senior i, ii. DR. BECKMAN.

Spanish fiction and drama; modern authors and Cervantes, Calderon, Lope de Vega. Spanish conversation and composition.

THE WEYERHAEUSER CHAIR OF SEMITIC LANGUAGES AND HISTORY.

Course I. *Hebrew accidence and syntax.* Junior or senior i, ii. PROFESSOR JEWETT.

Course II. *Critical reading of selected portions of the Old Testament.*

[1] Junior or senior i, ii. PROFESSOR JEWETT.

Course III. *Arabic.*

[2] Junior or senior i, ii. PROFESSOR JEWETT.

Course IV. *Arabic.*

[1] Junior or senior i, ii. PROFESSOR JEWETT.

Reading of difficult prose and selected poems—for advanced students.

Course V. *History of the Hebrews from the earliest time to A. D. 70.*

Junior or senior i. PROFESSOR JEWETT.

This course is designed to give a general view of the political, religious and social history of the Hebrews down to the fall of Jerusalem. Instruction is given by means of text-books, collateral reading and informal lectures, some of which are illustrated by lantern slides. No knowledge of Hebrew is required as preparation for this course.

Course VI. *Mohammedan history to the end of the Crusades.*

Junior or senior ii. PROFESSOR JEWETT.

This course may be taken independently of course v.

School of Technical and Applied Chemistry

GENERAL STATEMENT.

The regular four years' course in the school of chemistry, leading to the degree of bachelor of arts, is designed for those who wish to become teachers of chemistry, analysts, investigators, manufacturing and applied chemists. The course here presented includes general, organic, analytical, theoretical and applied chemistry. The course includes, besides these various chemical subjects, extended work in physics, metallurgy, mineralogy, crystallography, geology, botany, bacteriology, drawing, language and mathematics.

Electives are offered in order to give the students an opportunity of selecting subjects important to them, but which are not at present included in the regular course. The chief object is to enable them to take animal biology and its allied subjects preparatory to special physiological chemistry. The course is also arranged so that history of philosophy, economics and history may be chosen conveniently.

The student will find the work of sufficient range to give him a broad, liberal, scientific education.

The general regulations concerning admission, unclassified students and graduate work, are the same as for other students of the college science, literature and the arts.

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 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.

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, textile, and other materials used in dyeing and bleaching, with a rapidly increasing collection of clays and materials used in the 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.

COURSE OF STUDY.

FRESHMAN YEAR.

FIRST SEMESTER.	SECOND SEMESTER.
Mathematics (4)	Mathematics (4)
German or French or Latin or English (4)	German or French or Latin or English (4)
Qualitative analysis (4)	Qualitative analysis (4)
Drawing (4)	Drawing (4)
Military drill (2)	Military Drill (2)
Gymnasium (1)	Gymnasium (1)
SOPHOMORE YEAR.	
Botany (4)	Botany (4)
Organic chemistry (4)	Organic chemistry (4)
Quantitative analysis (4)	Quantitative analysis (4)
Assaying (3)	Assaying (3)
Mineralogy (4)	Laboratory, Mondays
Military drill (2)	Military drill (2)
Rhetorical work (1)	Rhetorical work (1)

JUNIOR YEAR.

FIRST SEMESTER.

Theoretical Chemistry (4)
 Water Analysis (2)
 Geology (4)
 Physics (4)
 Metallurgy (3)
 Inorganic Preparations (2)

SECOND SEMESTER.

History of Chemistry (2)
 Iron and Steel Analysis (4)
 Geology (4)
 Physics (4)
 Metallurgy (3)
 Micro Chemistry (2)

SENIOR YEAR.

Chemistry of Carbohydrates (2)
 Gas Analysis (2)
 Mineral Analysis (2)
 Colloquium (2)
 Metallurgy (4)
 Wine and Beer Analysis (2)
 Thesis

Food Adulterations (2)
 Photographic Chemistry (2)
 Industrial Chemistry (2)
 Electro Chemistry (2)
 Metallurgy (4)
 Special Problems (2)
 Crystallography (3)
 Thesis

COURSES IN CHEMISTRY.

- Course II. (a) Qualitative analysis. Freshman i.* ASSISTANT PROFESSOR NICHOLSON.
 Lectures and laboratory work. The course includes the general reactions of the metals and their qualitative separation.
- Course III. Qualitative analysis. Freshman ii.* ASSISTANT PROFESSOR NICHOLSON
 Lectures and laboratory work. Reactions and identification of the acids.
- Course IV. Quantitative analysis. Sophomore i.* ASSISTANT PROFESSOR SIDENER
 Lectures and laboratory work. The course includes an introduction to quantitative and a beginning of gravimetric analysis.
- Course V. Volumetric analysis. Sophomore ii.* ASSISTANT PROFESSOR SIDENER
 Lectures and laboratory work. The course includes an introduction to volumetric analysis with a discussion of standard solution and the necessary stoichiometric calculations.
- Course VI. (a) 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 für Darstellung Organischer Präparate*.
- Course VII. (b) 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 Präparate*.
- Course VIII. Theoretical chemistry. Junior i.* DR. 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*.
- Course IX. History of chemistry. Junior i.* PROFESSOR FRANKFORTER
 Lectures and reading. This course includes a full historical discussion of alchemy and chemistry.
- Course X. Water analysis. Junior i.* PROFESSOR FRANKFORTER
 Lectures and laboratory work. The course includes an exhaustive discussion of the chemical and sanitary properties of water.
- Course XI. Gas analysis. Senior i.* DR. 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.

- Course XII. The chemistry of sugar.* *Senior i.* ASSISTANT PROFESSOR NICHOLSON.
Lectures and laboratory work. The course includes a discussion of the carbohydrate group with the important methods of analysis.
- Course XIII. Industrial chemistry.* *Senior ii.* ASSISTANT PROFESSOR SIDENER
Laboratory work and reading. The course includes the analysis of various commercial products.
- Course XIV. Wine and beer analysis.* *Senior i.* MR. PEASE.
Lectures and laboratory work. The course includes the determination of alcohol and other constituents in wine and beer, with a special study of fermentation.
- Course XV. Special problems.* *Senior ii.* ASSISTANT PROFESSOR SIDENER
Laboratory work. The course includes the working out of various mineralogical, technological and metallurgical problems,
- Course XVI. Photographic chemistry.* *Senior iii.* 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.
- Course XVII. Electro-chemical analysis.* *Senior ii.* PROFESSOR FRANKFORTER
Lectures and laboratory work. The course includes the qualitative and quantitative separations of the metals by electrolysis.
- Course XVIII. Micro-chemical analysis.* *Junior ii.* DR. HARDING
Lectures and laboratory work. The course includes the methods for the determination of minute quantities of substances by means of the microscope.
- Course XIX. Food adulterations.* *Senior ii.* DR. HARDING
An examination of common food products for adulterants.
- Course XX. Iron and steel analysis.* *Junior ii.* ASSISTANT 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.
- Course XXI. Mineral analysis.* *Senior i.* ASSISTANT PROFESSOR SIDENER
The course includes the analysis of building stones and some of the most important minerals.
- Course XXII. Inorganic preparations.* *Junior ii.* DR. HARDING
The preparation of inorganic salts, supplemented by Bender's *Anorganische Präparatkunde*.
- Course XXIII. Colloquium.* *Senior i.* ASSISTANT PROFESSOR SIDENER
A thorough quiz in general inorganic chemistry.
- Course XXIV. Colloquium.* *Senior ii.* PROFESSOR FRANKFORTER
A thorough quiz in general organic chemistry.
- Course XXV. Special problems.* *Senior ii.* ASSISTANT PROFESSOR SIDENER
This course includes work on ores of base metals, limestones, slags, etc.
- Course XXVI. Physical chemistry.* *Sophomore ii.* DR. HARDING
Lectures and laboratory work. The laboratory work will include that laid down by Reychler with such references as Nernst and Ostwald.

COURSES FOR GRADUATE STUDENTS.

1. *Special inorganic chemistry.* 2. *Electro-chemistry.* 3. *Organic chemistry.*
4. *The alkaloids.* 5. *Analytical chemistry.*

THE COLLEGE OF

ENGINEERING AND
THE MECHANIC ARTS.

The College of Engineering and the Mechanic Arts.

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FRANK L. McVEY, Ph. D., *Professor of Private Economics.*

WILLIAM A. SCHAPER, Ph. D., *Instructor in Political Science.*

OTHER DEPARTMENTS GIVING INSTRUCTION.

CHRISTOPHER W. HALL, M. A., *Professor of Geology and Mineralogy.*

CHARLES P. BERKEY, Ph. D., *Instructor in Mineralogy.*

JOHN G. MOORE, B. A., *Professor of German.*

CHARLES W. BENTON, Litt. D., *Professor of French.*

HAYDN S. COLE, Lieut. U. S. A., *Instructor in Military Science.*

FRANCIS P. LEAVENWORTH, M. A., *Professor of Astronomy.*

WILLIAM S. PATTEE, LL. D., *Lecturer on Contracts and Torts.*

ORGANIZATION OF THE COLLEGE.

In this college there are three regular courses of study, viz.: civil engineering, mechanical engineering and electrical engineering, leading to corresponding professional degrees.

There is also organized in this college a four years' course of study in science and technology, leading to the degree of bachelor of science, with an additional year leading to the professional degrees.

DRAWING AND INDUSTRIAL ART.

A four years' course in drawing and industrial art, is offered to students prepared for admission to the freshman class, and who show a talent for such work. No degree is offered for the completion of this course.

UNCLASSED STUDENTS.

Unclassed students are permitted to pursue, under the direction of the faculty, one or two lines of study, selected from some regular course. Such students must be persons of mature years, and present preparation sufficient to admit them to the freshman class. Persons of mature years, who shall give satisfactory evidence of ability to do with credit the work applied for, may be admitted by vote of the faculty.

FEES.

All students in the college are required to pay an incidental fee of seven and one-half dollars per semester. No distinction is made between citizens of the state and non-residents. No reduction is made for late entrance or for leaving before the end of the semester. 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; shop work \$7.50.

ADMISSION.

Examinations for admission are held only at the beginning of the year. See calendar and program of examinations.

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.

- I. Students will be admitted to the freshman class on **passing the regular entrance examination.**
- 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, and

(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.

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 or 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.

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.

REQUIREMENTS FOR ADMISSION.

N. B.—Time element, as indicated with each subject, is essential.

A three years' course of reading in English classics.

English Composition, one year.

Algebra, elementary, one year.

Algebra, higher, one-half year.

Geometry, plane, one year.

Geometry, solid, one-half 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 **eight** year-credits, or their equivalent, to be chosen from the following list:

NOTE—It is provided that if any language, other than the English, is offered from the list of elective subjects, at least two years of that language shall be offered.

Latin, (four years.)

- Grammar, one year.
- Cæsar, four books, one year.
- Cicero, six orations, one year.
- Vergil, 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.

English.

- Latin element, one year. Latin grammar will be accepted in lieu of this subject.
- Literature, one year.

History, Greece and Rome, one-half year.

- England, one-half year.
- Modern, one-half year.
- Medieval, one-half year.
- Senior American, one-half year.

Civics, 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.

Drawing, (1) one year.

Shop Work, (1) one year.

SYLLABUS.

For syllabus of subjects required for admission, see pages 56-60.

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 blanks of the institution granting the certificate, and should show:

1. The subject 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.

Monday is taken as a holiday. 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.

At the close of each term, examinations are held in the studies of the term. In order to be "passed" the student must obtain seventy-five per cent. In determining the standing of a student in any subject the result of his daily work in that subject is combined with the result of the final examination in the ratio of two to *one*.

Students who pursue any subject unsuccessfully are reported as "incomplete," "conditioned" or "failed." "Incomplete work must be made up within one semester, at the convenience of the professor concerned, or become a "condition," subject to the rule governing conditions. "Conditions" not made up before the subject is offered again becomes "failures" subject to rule governing failures. "Failures" must be taken over again in class. The examinations for conditioned students are held at the beginning of the first semester in the work of the first semester, at the beginning of the second semester in the work of the second semester.

Any student having a condition in any study may have the option of presenting himself for examination in that study, either at the time regularly set for making up conditions in that study or at the beginning of the college year, immediately after the long vacation.

Any student in the college whose average standing for the year is less than seventy-five per cent will be required on re-entering the University to pursue again all the subjects of the year in which he has not attained a grade of eighty per cent or more.

Students who receive a condition or failure in work of either semester so as to make it impossible for them to continue the same line of work in the following semester shall not be allowed to elect an advanced subject in place of the one omitted, but shall be required to devote their full time to the remaining subjects of the course.

However, those students who attain an average grade of eighty per cent in the remaining subjects pursued may elect an advanced subject in the place of the one omitted.

Any student intending to absent himself from the University during any part of the college year must obtain a leave of absence from the faculty.

The faculty will exclude students from attending classes in any subject upon the recommendation of the department concerned.

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.

GRADUATION.

Students completing the course of study to the satisfaction of the faculty of the college, are entitled to receive the professional degree. Any person may undergo, at suitable times, examination in any subject, and if such person pass in all the studies and exercises of the course, he is entitled to the appropriate degree; **provided**, however, that at least one full year must 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.

Course of Study.

FRESHMAN YEAR.

FIRST SEMESTER.

The same for all courses: Mathematics, 5; German, French or Spanish, 4; Qualitative analysis, 4; Drawing, 4; Shop work, 5; Military drill, 2.

SECOND SEMESTER.

For the civil engineering course: Mathematics, 4; German, French or Spanish, 4; Qualitative analysis, 4; Drawing, 4; Surveying and Platting, 4; Rhetorical work, 2; Military drill, 2.

For the mechanical and electrical engineering courses: Mathematics, 4; German, French or Spanish, 4; Qualitative analysis, 4; Drawing, 4; Shop work, 4; Rhetorical work, 2; Military drill, 2.

SOPHOMORE YEAR.

FIRST SEMESTER.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.
Mathematics, 5.	Mathematics, 5.	Mathematics, 5.
Physics, 4.	Physics, 4.	Physics, 4.
Topography, 5.	Shop work, 5.	Shop work, 5.
Technological chemistry, 2.	Technological chemistry, 2.	Technological chemistry, 2.
Drawing, 4.	Drawing, 4.	Drawing, 4.
Rhetorical work, 2.	Rhetorical work, 2.	Rhetorical work, 2.
Military drill, 2.	Military drill, 2.	Military drill, 2.

SECOND SEMESTER.

Mathematics, 5.	Mathematics, 5.	Mathematics, 5.
Physics, 4.	Physics, 4.	Physics, 4.
Drawing, 2.	Drawing, 2.	Drawing, 2.
Topography, 5.	Mechanism, 3.	Mechanism, 3.
Highways, 2.	Shop work, 5.	Shop work, 5.
Practical astronomy, 2.	Kinematic drawing, 2.	Kinematic drawing, 2.
Military drill, 2.	Military drill, 2.	Military drill, 2.

JUNIOR YEAR.

FIRST SEMESTER.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.
Mechanics, 5.	Mechanics, 5.	Mechanics, 5.
Physics, 4.	Physics, 4.	Physics, 4.

NOTE—Sophomores may elect gymnasium work in lieu of drill during the months of December, January and February.

Mechanical laboratory, 2.	Mechanical laboratory, 2.	Mechanical laboratory, 2.
Machine design, 2.	Machine design, 4.	Machine design, 4.
Curves and earthworks, 2.	Shop work, 3.	Shop work, 3.
Field work, 3.	Industrial electricity, 1, and	Industrial electricity, 3.
Stress in framed structures, 3.	Stress in framed structures, 2, or	
	Industrial electricity, 3.	

SECOND SEMESTER.

Mechanics, 5.	Mechanics, 5.	Mechanics, 5.
Physics, 3.	Physics, 3.	Physics, 3.
Structural details, 3.	Machine design, 4.	Machine design, 2.
Stress in framed structures, 3.	Dynamos and motors, 3.	Dynamos and motors, 3.
Railroad work, 3.	Mechanical laboratory, 2.	Mechanical laboratory, 2.
Geology, 3.	Steam engines, 2.	Steam engines, 2.
	Electrical laboratory, 3.	Electrical laboratory, 3.
		Electrical design, 2.

SENIOR YEAR.

FIRST SEMESTER.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.
Masonry, 3.	Thermodynamics, 3.	Thermodynamics, 3.
Experimental laboratory, 2.	Prime movers, 2.	Prime movers, 2.
Electric power, 3.	Mechanical engineering 2.	Electrical laboratory, 2.
Structural design, 5.	Machine design, 4. (Steam engine.)	Electrical engineering, 2.
Least squares, 2.	Mechanical laboratory, 3.	Mechanical laboratory, 3.
Political science, 2.	Political science, 2.	Political science, 2.
Railway economics, 2.	Elective, 4.	Elective, 4.
Water supply engineering, 2.		Alternating currents, 3.
Thesis.	Thesis.	Thesis.

SECOND SEMESTER

Structural design, 5.	Thermodynamics, 3.	Alternating currents, 3.
Field work, 2.	Mechanical laboratory, 4.	Electrical laboratory, 2.
Arches, 2.	Machine design, 4, or	Electrical design, 3.
Geodesy, 2.	Railway design, 4.	Electrical engineering, 2.
Political science, 2.	Political science, 2.	Political science, 2.
Sanitary engineering, 3.	Elective, 2 or 4.	Elective, 4.
Contracts and Specifications, 2.	Contracts and Specifications, 2.	Contracts and Specifications, 2.
Thesis, 3.	Thesis, 3.	Thesis, 3.

Courses of Instruction.

THE MODERN LANGUAGES.

The work in modern languages will be directed to those practical ends which are so essential to a well-rounded technical education. One year's work in German or French or Spanish, is required. The grammar and extracts from standard authors, among them distinguished scientific men, receive such attention that the student may prepare himself for mastering technical literature.

GERMAN.

Course I. German begun.

- (a) Whitney's Brief German Grammar, Bernhart's German Composition and Buchheim's German Poems.
- (b) *Scientific prose.* Hodge's German Science Reader; grammar and composition completed.

Course II. Classic prose and poetry.

- (a) Goethe's Prosa and Gedichte, author's life and works, Spanhoofd's Deutsche Grammatik. Oral and written exercises based on text.
- (b) Brandt & Day's German Scientific Reading, Spanhoofd's Deutsche Grammatik completed, original letters and essays.

FRENCH.

Course I. For those who present French for admission.

- (a) Syntax and composition, Mérimée, Duval, History of French Literature.
- (b) Victor Hugo, selections: Les génies de la Science.
- (c) Cuvier, Les révolutions du globe, La Revue Scientifique.

Course II. For those who enter the University without French.

- (a) Chardenal's French Course.
- (b) La Nature.
- (c) Luquien's French Prose of Popular Science.

SPANISH.

Course I. Spanish begun.

Grammar; Hosfeld's Method; Reader; Montilla's Libro de Lectura III; reading of some modern novelists as Valera, Alarcon or others.

Course II. Spanish second year.

Spanish fiction and drama; modern authors and Cervantes, Calderon, Lope de Vega. Spanish conversation and composition.

MATHEMATICS.

In imparting a knowledge of the mathematical subjects, special emphasis is placed upon their practical application. This gives the student a firmer grasp of the more important parts of these subjects and some appreciation of their real value, before reaching those technical studies where mathematics furnishes the only sure basis for professional knowledge and a most powerful instrument for use in original research.

Course I. Higher algebra.

Freshman i. 70 hours.

Advanced work on equations containing radicals, simple and quadratic equations, proportion, variation, progressions, summation of special series, binomial theorem, indeterminate coefficients, logarithmic series, Taylor's formula and the treatment of higher equations, including Cardan's rule for cubics.

- Course II. Plane trigonometry.* *Freshman i, ii.* 44 hours.
Trigonometric functions of acute angles, of angles in general, applications of logarithms, solution of right triangles, general properties of triangles, practical applications including the solution of cubic equations having real and unequal roots.
- Course III. Spherical trigonometry.* *Freshman ii.* 20 hours.
Reviews of some truths of solid and spherical geometry. Napier's rules, solution of right spherical triangles, general properties of spherical triangles and the application of spherical trigonometry to the solution of practical problems.
- Course IV. Analytical geometry.* *Freshman ii,* 24 hours; *sophomore i,* 65 hours.
Coördinate systems, transformation of coördinates, algebraic equations of different degrees produced and discussed by the aid of these systems, transcendental equations and loci:—three dimensions; the point, plane, line, surfaces and solids.
- Course V. Differential calculus.* *Sophomore i, ii,* 55 hours.
The differentiation of algebraic and transcendental functions, successive differentiation, series, derivatives, maxima and minima, tangents, subtangents, normals, subnormals, illusory forms, asymptotes, direction and rate of curvature, radius of curvature, evolutes, envelopes, singular points and curve tracing.
- Course VI. Integral calculus.* *Sophomore ii,* 40 hours.
The intregation of various algebraic and transcendental differentials, rectification of plane curves, quadrature of plane surfaces and surfaces of revolution, cubature of volumns of revolution, and the production of the equations of loci by integrating certain conditional differentials.
- Course VII. Some practical applications* *Sophomore ii,* 15 hours.
of the calculus to mechanics and physics, maxima and minima, center of gravity, center of hydrostatic pressure and moment of inertia.
The foregoing courses in mathematics are required, *in the order given,* of all under graduates in each of the engineering courses.
- Course VIII. Advanced calculus and differential equations.* *Junior or senior i, ii,* 24 hours.
Preparation courses v and vi.
- Course IX. Method of least squares.* *Senior i,* 36 hours. PROFESSOR LEAVENWORTH
A study of the combination and adjustment of observations and the discussion of their precision, especially as applied to engineering problems.

RHETORICAL WORK.

The work throughout to be illustrated by models drawn from scientific, technical and other literature.

- (a) *Freshman ii,* 34 hours.
Outline of rhetoric; study of the sentence; elements of style; choice and use of words; study of the paragraph and of the various kinds of composition, with especial emphasis on description and practical exposition; exercises in composition.
- (b) *Rhetoric continued.* *Sophomore i,* 34 hours.
Sight composition, exercises in describing engineering instruments, machines, materials, processes and structures. Technical debates.

DRAWING AND INDUSTRIAL ART.

ENGINEERING DRAWING.

- Course I.* *Freshman i, ii.* [4] 238 hours
(a) *Freehand.* *i* (2) 68 hours.
Lettering, geometric forms and engineering details in outline, including working sketches, translations and the elements of perspective.

(b) *Mechanical.* Freshman i, ii, [2] 136 hours.
Conventional methods, lettering, machine and structural details and standard sizes and shapes.

(c) *Descriptive geometry.* ii, [2] 34 hours.
Problems relating to points, lines, planes, solids, interpenetrations, surfaces of revolution, tangents and developments, including the constructive geometry involved. Recitations and lectures.

Course II. Sophomore i, [4], ii, [2], 204 hours.

(a) *Descriptive geometry.*
Orthographic, 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.

Course III. Instrumental. i, ii, [4] 238 hours.

Problems, projections, sections, developments and interpenetrations. With conventional renderings in line and wash.

FINE ART.

Course I. (a) General drawing. i, ii, [4] 272 hours.

From models, casts and nature. Study of the principles of perspective and light and shade. In charcoal, line and wash.

(b) *Antique.* i, ii, [4] 272 hours.

Studies of the human figure from casts in charcoal. Fractions, torsis, masks, busts, etc. Sketch class. Studies from life in pencil. Pen and ink, crayon and wash.

Course II. Illustration. i, ii, [4] 272 hours.

Drawing in black and white and in color from the living model (heads and figures with costumes). Character sketches and genre studies. Practice in the various mediums.

Open to those who have completed course i (a), or course i (b).

Course III. Modeling. i, ii, [4]. 272 hours.

In clay and casting in plaster. Studies from the antique and from life. Original compositions in applied art and progressive exercises of interpretation in relief and the round of sketches and original designs.

Course IV. Water color. i, ii, [4]. 272 hours.

From still life and nature. Open to those who have completed course i (a), or course i (b).

Course V. Pen and ink. i, ii, [4]. 272 hours.

Exercises in line work and drawing for illustrative work. Open to those who have completed course i (a), or course i (b).

Course VI. Oil painting. i, ii, [4]. 272 hours.

Studies of groups of still life, plants and flowers, and sketching from nature. Open to those sufficiently prepared.

Course VII. Lectures and reading. i, ii, [1] 34 hours.

On the principles and methods of perspective, light and shade, color, composition, and the history of art.

APPLIED ART.

Course I. Design. i, ii, [4]. 272 hours.

The anatomy of pattern and geometrical design, composition, color harmony, plant analysis and conventionalism, traditional ornament and animate forms. Principles and practice. Open to those sufficiently prepared.

Course II. Analysis of ornament. i, ii, [4]. 136 hours.
 Study of the characteristics of style. Outlines of historic ornament. Lectures, recitations and collateral reading.

Course III. Practical designing. i, ii, [4]. 272 hours.
 Original designs and working drawings.
 (a) Book decoration.
 (b) Textiles.
 (c) Furniture.
 (d) General course (with applications of historic ornament).

Course IV. Lettering. i, [2]. 68 hours.
 Study of the alphabet. Roman, medieval and modern styles. Practical exercises and collateral reading.

NORMAL ART.

Course I. For teachers. i, ii. (4) 272 hours.
 Elementary training in drawing, including drawing from blocks, groups, sketching of animals and the poised figure, design, water color and constructive work.

Course II. Art education. i, ii. (2) 136 hours.
 Theory and practice of teaching drawing. Lectures and observation and practical work. Embracing such topics and exercises as: Art as a factor in public education; correlation of drawing with other studies; observation, comparison, and planning of courses of instruction in the public schools, in addition to the working out of lessons in detail. Preparation course I., F. A., and Course I, Teachers.

MECHANICS.

(a) APPLIED MECHANICS.

Course I. Statics, dynamics and mechanics of materials. Junior i, 90 hours.
 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, etc. Recitations and lectures. Open to students who have completed the work of the first two years in mathematics and physics.

Course II. Arches, hydraulics and pumping machinery. Junior ii, 90 hours.
 Masonry arches and equilibrium polygon; hydraulics, including the laws of the equilibrium, pressure and flow of fluids; the theory of the action of pumps. Recitations and lectures. Open to those who have completed course i.

(b) THEORETICAL MECHANICS AND MATHEMATICAL PHYSICS.

FOR GRADUATES AND UNDERGRADUATES who have completed calculus.

Course I. The potential function and spherical harmonics.

Course II. Analytical statics and electrostatics.

Course III. Dynamics of rigid bodies.

Course IV. Circular, hyperbolic and elliptic functions with their physical applications.

FOR GRADUATES.

who have had advanced work in mathematics.

Course V. Directional calculus, vector analysis and determinants.

Course VI. Analytical theory of the conduction of heat.

Course VII. Theories of elasticity and sound.

Course VIII. Wave theories of light, heat and electricity.

Course IX. Kinetic theory of gases.

Course X. Hydrodynamics and fluid motion.

Course XI. Theory of functions with applications.

PHYSICS.

FOR UNDERGRADUATES.

The mathematics of the freshman year are required as preparation for all courses in this department.

Course I. (long—first year.)

(a) Mechanics of solids and fluids.

Sophomore i.

(b) Heat and electrostatics.

Sophomore ii.

With experimental lectures and laboratory work.

Course II. (long second year.)

(a) Electricity and magnetism.

Junior i.

(b) Sound and light.

Junior ii.

With experimental lectures and laboratory work.

Course III. Advanced laboratory work.

Senior i, ii.

Open to those who have completed course ii.

FOR GRADUATES.

Course IV. Advanced work in some special field; experimental investigations being the principal feature of the work.

GEOLOGY.

Course I. Geology.

Junior ii, 51 hours. DR. SARDESON

A condensed course in physical and historical geology, for civil engineers, geodynamics, structural geology, physiography, stratigraphic and historical geology are treated of successively. Excursions to typical localities will supplement work done in the class room. Lectures and references.

CONTRACTS AND SPECIFICATIONS.

Course I. Contracts.

Senior ii, 17 hours. DEAN PATTEE

Lectures on the law of contracts; essential elements of a legal contract; contracts by agents; mutual assent; misrepresentation in the contract; invalidity of contract through fraud; alterations; consideration. Agreements—oral and written; enforcement of contract.

Course II. Specifications.

Senior ii, 17 hours. PROFESSOR FLATHER

A study of engineering specifications. Classes of specifications; essential features; clauses; details. Examples. Lectures, recitations and practice in writing specifications.

ASTRONOMY.

Course I. Practical astronomy.

Sophomore ii, 34 hours. PROFESSOR LEAVENWORTH

Spherical co-ordinates; time; latitude; longitude, and other astronomical problems. Lectures,

POLITICAL SCIENCE.

Course I. Introduction to political science.

Senior i, 34 hours. DR. SCHAPER

A study of the state, its growth, forms and people. Lectures and reading.

Course II. Transportation.

Senior ii, 34 hours. PROFESSOR FOLWELL

The evolution of transportation in the United States, and by railroads in particular. Economic aspects and public policy of railroads.

CHEMISTRY.

Course I. Qualitative analysis.

Freshman i, ii, 272 hours. ASSISTANT PROFESSOR NICHOLSON

The course includes the general reactions of the metals and their qualitative separation; reaction and identification of acids, followed by practical problems in qualitative analysis. Lectures and laboratory work.

Course II. Chemical technology. *Sophomore i*, 68 hours. ASSISTANT PROFESSOR SIDENER

Includes technical analysis of materials of engineering, with especial reference to iron and steel, lectures and laboratory work.

CIVIL ENGINEERING.

MUNICIPAL AND SANITARY ENGINEERING.

Course I. Hydrographic survey.

Sophomore ii, 20 hours.

Text work on making soundings; methods of determining discharge of streams. Following this the electric current meter of the department is rated and a survey made employing it to determine the volume of flow in the Mississippi river, followed by a plat of the cross-section of the river at point of survey.

Course II. Water supply engineering.

Senior ii, 48 hours.

Rainfall and evaporation and available water supply as determined by soils and topographical features. Methods and means employed in water collection, purification and distribution for domestic and manufacturing purposes; embankments; reservoirs, mechanical filters, sand filters, etc. Text books, Fanning, Hill. Open to those who have completed course ii in applied mechanics (hydraulics).

Course III. Sanitary engineering.

Senior i, ii, 36 hours.

Sewerage systems, separate and combined; sewage disposal; intermittent filtration; broad irrigation; chemical treatment. Text book, Rafter and Baker. Open to those who have completed course ii.

Course IV. Municipal engineering.

Junior iii, 44 hours.

Problems relating to city streets, pavements, subways, etc.

RAILWAY AND HIGHWAY ENGINEERING.

Course V. Curves and earthworks.

Junior i, 36 hours.

Problems attending final location surveys of railroads and track laying, theory of the computation of volumes and preparation of preliminary estimates. Transition curve. Woodman, text book and notes.

Course VI. Execution in field of practical problems.

Junior i, 12 hours.

Illustrating the analytical work of course i, including the computation of earthwork of railroad grades and pits, platting profiles and construction of maps.

Course VII. Railway structures.

Junior i, 96 hours.

The different standard structures relating to railroad construction and maintenance are presented by lectures, the student making working drawings with bills of material, such structures as the following being treated: cattle guard, snow fence, timber culvert, pile bridge, water tank, station house and trestle. Field and office. Details obtained from actual structures as far as possible.

Course VIII. Railway location and estimates.

Junior ii, 96 hours.

Reconnoitering and preliminary surveys are made, followed by field maps and final location; profiles and cross-sectioning. Complete estimates covering the cost of earth and rock work, timber structures and right of way involved in the actual construction of the line are made, together with plans of important bridges and a right of way map of the adopted location.

- Course IX. Railway economics.* *Senior i*, 36 hours.
Discussion on the economic location of railways. Text, Wellington.
- Course X. Highway construction and maintenance.* *Sophomore ii*, 36 hours.
The economic relation of highways in transportation, with a treatment of the practical questions relating to materials and methods necessary to maintain good streets and highways. Lectures, Spaulding as text, with collateral reading, reports and essays. Tours of inspection of country roads and city pavements.

STRUCTURAL ENGINEERING.

- Course XI. Stereotomy. (Elective.)* *Junior.*
Working drawings by which to cut the stones for masonry, wing walls, bridge abutments, culverts, domes and arches, including groined and cloistered arches, and the intersection of two or more galleries. Lectures and drawings.
- Course XII. Stresses in framed structures.* *Junior i*, 85 hours. *Junior ii*, 85 hours.
Theory of structures and determination of stresses by graphical and analytical methods in the modern types of structures, for statics and for moving loads. Theory of the deflection of framed structures. Text book work, numerous problems and lectures, drawing room work in graphic statics. Text book, Johnson's Stresses in Framed Structures.
- Course XIII. Structural details.* *Junior ii*, 102 hours.
Study of the method of proportioning individual members of framed structures and the designing of joints and splices in steel and wooden structures. Design and complete working drawing of a plate girder railway bridge. Text book work; lectures and numerous problems in class room. About one-half of the term in the drawing-room for work in designing. Text-book, Johnson's Stresses in Framed Structures, Hand Books of Steel Manufacturers, Reference, Merriman's Part II, Bridge Series. Open to students who have completed course xii.
- Course XIV. Structural design.* *Senior i*, 153 hours, *ii*, 153 hours.
Theory and design of modern steel structures, including railway and highway bridges, swinging bridges, steel mill buildings, standpipes and towers, and other problems of structural interest. In this course the student becomes familiar with the method of designing important structures, and several complete designs with necessary computations, detail drawings, specifications and estimates are made. As much of the work is done in the class room under the immediate leadership of the instructor as possible. Such drawings are made in the drawing room as may involve important principles and details, and give the student a certain facility in making structural drawings. During this year occasional shop drawings are made for the same purpose but expertness in structural draughting is not aimed at. The large collection of blue prints, photographs and designs in the possession of the department is put to constant use for illustrative purposes. Reference, Johnson's Stresses in Framed Structures, Merriman's Part III and IV Bridge Series, Wright's Swing Bridges. Open to students who have completed course xii and xiii.
- Course XV. Arch bridges.* *Senior ii*, 68 hours.
Theory of the suspension bridge and of the elastic arch, with application to practical problems. Class room work and drawing. Text, Church's Mechanics, chapter xi, Merriman's Part IV Bridge Series. Reference, Howe's Arches, Du-Bois' Stresses in Framed Structures, chapters ix and x. Open to students who have completed courses xii to xiv inclusive.
- Course XVI. Masonry construction.* *Senior i*, 85 hours.
Properties of stones, bricks, cement and concrete, and their use in engineering structures. Foundations, retaining walls, piers and abutments, dams and chimneys. Theory and design of masonry arches. Class room work and drawing room work in designing. Text-book, Baker's Masonry Construction, Church's Mechanics, Howe's Retaining Walls, Wegman's Dams. Reference, Fowler's Coffer Dam Process, Patton's Foundations. Open to students who have completed course xii.

- Course XVII. Experimental laboratory,* *Seniors*, 68 hours.
 (a) Tests of strength and physical properties of brick, stone and cements.
 (b) Special investigations of the properties of structural materials, and of the strength of joints, columns and framed structures. Laboratory work.

TOPOGRAPHICAL ENGINEERING.

- Course XVIII. Surveying,* *Freshman II*, 36 hours.
 Work consists of recitations, lectures and illustrative problems relating to chaining, field problems employing chain; methods of keeping field notes; determination of area—D. M. D. and rectangular co-ordinate method; compass and transit surveying; study of instruments and their adjustment; methods for overcoming obstacles, determination of heights and distances inaccessible; methods of supplying omissions, of platting compass and transit surveys; discussions of the methods of laying out and dividing land, including the public land surveys of the United States.
- Course XIX. Surveying,* *Freshman II*, 36 hours.
 This time is devoted to the execution in the field of many of the problems discussed in the previous term. The care, proper use and adjustment of all instruments used are treated in field exercises. Chain, compass and transit surveys are made and circuits of level-lines run by each party. A meridian line is established by each party by observations on Polaris.
- Course XX. Draughting,* *Freshman II*, 36 hours.
 This time is given to construction of diagonal scales, protractors, circular and straight verniers. All surveys made in the field are platted and areas computed. Solution of problems and useful office reduction of all field notes.
- Course XXI. Topography,* *Sophomore I*, 72 hours.
 The methods of conducting topographical surveys are taken up in the order of increasing accuracy. At first a text-book is used to acquaint the student with the instruments employed; method of use and theory of adjustment. Lectures are given on the details of field work; parties of topographers are formed and each makes a complete topographic survey of a certain tract. Observations on Polaris at elongation for azimuth and at culmination for latitude conclude the field work. Individual work characterizes this course. Text, Baker.
- Course XXII. Draughting,* *Sophomore*, 36 hours.
 Notes taken in course xxi are reduced, areas computed and topographical maps made of land surveyed.
- Course XXIII. Analytical study of engineering instruments,* *Sophomore I*, 36 hours.
 Course xxiii continued, including stadia, gradientor, planimeter and slide rule. Reduction charts are made and stadia work of course xxiii reduced and platted, crosswires are replaced in transits.
- Course XXIV. Higher surveying,* *Sophomore II*, 36 hours.
 Analytical study of the aneroid and mercurial barometers and barograph is made for determining their efficiency in hypsometric surveys; of the solar compass and solar transit and various solar attachments for establishing government standard lines and the plane-table and stadia as a rapid means of prosecuting topographical surveys. Text-books, "Johnson's Theory and Practice of Surveying" and Baker's "Engineering Instruments."
- Course XXV. Field work and platting,* *Sophomore II*, 72 hours.
 Observations are made with barometers for difference of level; checked with spirit level. Meridians and parallels of latitude are run with solar compass and attachments, and an outline survey made, computed and platted. A plane-table survey, employing stadia and telemeter, is made by each party, and each student makes a map of the same. A general map is compiled from all the maps, a tracing made and blue prints taken by each student.

- Course XXVI. Geodesy.* *Senior ii, 36 hours.*
Lectures and text-book; Geodetic reconnaissance; base-line measurement, employing bars and steel tape; measures of angles, horizontal and vertical; field methods for time, latitude, longitude and azimuth; theory of computing geographical position. Lectures and text.
- Course XXIX. Field and office work.* *Senior ii, 72 hours.*
Making and reducing observations illustrating work of course xxviii.
- Course XXX. Geodesy.*
Precise and trigonometric leveling; adjustment of observations and projection of maps.

MECHANICAL ENGINEERING.

SHOP WORK.

- Course I. Carpentry and pattern making.* *Freshman i, 180 hours.*
Wood working, use of tools; lathe and bench work. Patterns for moulding, core boxes. Lectures and practice.
- Course II. Foundry practice and pattern making.* *Freshman ii, 144 hours.*
Patterns and flasks. Moulding, casting, mixing metals, brass work and core making. Shop practice, recitations and lectures.
- Course III. Blacksmithing.* *Sophomore i or ii, 60 hours.*
Use of tools, forging, welding, tool dressing, tempering. Lectures and practice.
- Course IV. Machine work.* *Sophomore i and ii, 270 hours.*
Chipping, filing, machine work, gear cutting, finishing; machine construction. Lectures and practice.
- Course V. Tool construction.* *Junior i, 108 hours.*
Tools, taps, reamers, cutters, and other special work. Lectures and practice. Preparation, course iv.
- Course VI. Carpentry, joinery and wood carving.* *Senior i, or ii, 144 hours. (Elective).*
A course in wood working designed with special reference to the needs of teachers of manual training.
- Course VII. Machine construction.* *Senior i or ii, 144 hours. (Elective).*
Constructions of patterns and machine work for special apparatus, or machinery, designed by the student.
- Course VIII. Shop economics.* *Senior ii, 36 hours. (Elective).*
Shop and factory organization and management; cost systems.

MACHINE DESIGN.

- Course IX. Principles of mechanism.* *Sophomore ii, 54 hours.*
The transmission of motion without consideration of the strength of parts. Gear wheels, cams, belts, screws, epicyclic trains, parallel motions, quick-return movements. Lectures and recitations. Preparation, course iii in mathematics.
- Course X. Kinematics.* *Sophomore ii, 72 hours.*
Graphical diagrams of the paths, speeds and accelerations of important mechanisms; centroids; analysis of mechanisms; construction of cams; kinematic pairs. Preparation, course ix.
- Course XI. Machine design. (a)* *Junior i and ii, 216 hours.*
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.
- (b) Machine design. Second half semester.* *Junior i, 72 hours.*
A modification of (a), adapted to students in civil engineering.

- Course XII. Machine design.* Junior ii, 72 hours.
Second half semester: Application of graphical methods to the design of valve gears and link motions; Zeuner diagrams, indicator cards. Lectures and drawing-room practice. Preparation, course i applied mechanics.
- Course XIII. Machine design.* Senior i, 144 hours.
Calculations and working drawings for a high speed automatic steam engine. Theoretical diagrams and determination of details. Preparation, course xii.
- Course XIV. Machine design.* Senior ii, 144 hours.
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.
- Course XV. Tool design.* Senior i or ii, 72 or 144 hours.
Design of special tools for manufacturing interchangeable parts; jigs and milling fixtures. Preparation, course vi and xi.

STEAM ENGINEERING AND PRIME MOVERS.

- Course XVI. Steam engine.* Junior ii, 36 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.
- Course XVII. Thermodynamics.* Senior i, 54 hours.
The mechanical theory of heat as applied to the steam engine and other motors. Preparation, courses i and ii in applied mechanics.
- Course XVIII. Thermodynamics.* Senior ii, 54 hours.
First half semester: Gas and oil engines, including devices for starting, igniting, and governing; gas producers; the adaptation of oils for generating power.
Second half semester: Refrigerating machinery and ice manufacture; air compressors and motors, and the transmission of power by compressed air. Preparation, course xvii.
- Course XIX. Prime movers.* Senior ii, 36 hours.
Theory of turbines, hydraulic motors and wind mills. Preparation, course liii in applied mechanics.
- Course XX. Mechanical engineering.* Senior i, 36 hours.
First half semester: Measurement of power. A study of the methods employed in measuring power. Dynamometers, Prony brakes; efficiency of motors; power required to drive machine tools and shafting. Recitations. Preparation, course ii in applied mechanics.
Second half semester. Steam boilers.
Application or theory of practice in the design and construction of steam boilers, chimneys, boiler settings and accessories, smoke prevention, incrustation; methods of operating boilers with safety and economy. Preparation, course i in applied mechanics.
- Journal Club*—Open to the seniors and juniors. Once a week.

ENGINEERING LABORATORY.

- Course XXI. Strength of materials.* Junior i, 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.

- Course XXII. Mechanical laboratory.* *Junior i, 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.
- Course XXIII. Mechanical laboratory.* *Senior i, 108 hours.*
Calibration of weirs, meters, dynamometers and other apparatus. Testing lubricating value of oils; calorimetry, tests of water motors, pumps, injectors, steam engines and boilers. Preparation, course xxii.
- Course XXIV. Mechanical laboratory.* *Senior ii, 144 hours.*
Tests of gas and hot air engines, locomotive testing, and special research work. Preparation, course xx.
- Course XXV. Mechanical laboratory.* *Senior ii, 72 hours.*
Modification of courses xxiii and xxiv for students in mining and metallurgy.

RAILWAY MECHANICAL ENGINEERING.

The following courses are available to seniors desiring to prepare themselves for special work in railway engineering.

- Course XXVI. Railway technology.* *Senior i, 72 hours.*
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 various railroad shops in the vicinity; supplemented by lectures, reading and recitations on locomotive details.
- Course XXVII. Railway design.* *Senior ii, 144 hours.*
(a) Of link and valve motions. Continuation of course xiv with special applications of the Stephenson link.
(b) Of locomotives and car details.
(c) Of the locomotive boiler.
(d) Of assembled parts. Preparation, course xxvi.
- Course XXVIII. Locomotive and construction.* *Senior ii, 36 hours.*
Lectures, reading and recitations on design and construction of locomotives, supplementing course xxvii. This treats,—
(a) Of parts not involving the boiler and use of steam; but including the carriage, as frames, springs and equalizing arrangements, running gear, brakes, trucks, lubrication.
(b) Of locomotive boilers and connecting 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 values for compounds.
- Course XXIV. Locomotive road testing.* *Senior i.*

FOR GRADUATES.

- Courses are offered in:
Engineering design.
Experimental investigation.
Railway engineering.

ELECTRICAL ENGINEERING.

- Course 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. For juniors in electrical and mechanical engineering.
- Course 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. For juniors in electrical and mechanical engineering.
- Course III. Electric laboratory. (a)* 6 hours per week, second semester.
Tracing circuits and locating faults; measurements of conductivity and insulation; construction and use of instruments; calibration of instruments; tests of batteries; operation and characteristic curves of dynamos and motors. Preparation required: physics, courses i and ii (a), electrical engineering, courses i and ii. For juniors in electrical and mechanical engineering.
- Course IV. Electrical design. (a)* 4 hours per week, second semester.
Problems in designing circuits, electro-magnets and dynamos; complete working drawings and specifications to accompany each design. Preparation required: physics, courses i and ii; electrical engineering, courses i and ii; machine design, course i. For juniors in electrical engineering.
- Course V. Electric power.* 3 and 6 hours per week, 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. For seniors in civil engineering, mining and metallurgy.
- Course VI. Alternating currents.* 3 hours per week, first and second semester.
Phenomena, measurement and use of alternating currents; elementary theory of transformer and alternator; methods of regulation; various types of commercial apparatus. Preparation required: physics, courses v and vi; electrical engineering, courses i and ii; differential and integral calculus. For seniors in electrical engineering.
- Course VII. Electrical engineering. (a). Electric lighting.* 2 hours per week, first half first semester.
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 lights. Preparation required: electrical engineering, course ii. For seniors in electrical and mechanical engineering.
- Course VIII. Electrical engineering. (b) Batteries.* 2 hours per week, half of first semester.
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. Preparation required: electrical engineering, course ii. For seniors in electrical and mechanical engineering.
- Course IX. Electrical engineering. (c). Electric railways.* 2 hours per week, half of first semester.
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. Preparation required: electrical engineering, course ii. For seniors in electrical and mechanical engineering.

Course X. Electrical engineering. (d). Electrical transmission. 2 hours per week, half of second semester.

Utilization of natural forces; various methods of transmission; theory of electric motor; power distribution with constant current, constant potential and alternating systems; study of particular plants. Preparation required: electrical engineering, courses i, ii and vi. For seniors in electrical engineering.

Course XI. Electrical engineering. (e). Central stations. 2 hours per week, second semester.

Preliminary surveys; choice of electrical systems; load diagrams; best units of power, comparison of steam, gas and water power; location and design of station; switch board; calculation, erection and maintenance of lines; erection of boilers, engines, dynamos and storage batteries; operation and regulation; maintenance of plant; emergencies; examination of stations in Minneapolis and St. Paul. 24 lectures for senior iii, electrical engineering. Preparation required; electrical engineering, courses ii and vi; mechanical engineering courses in thermodynamics and prime movers. For seniors in electrical and mechanical engineering.

Course XII. Electrical engineering. (f). Telegraph and telephone. 2 hours per week, half of second semester.

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. 24 lectures with problems. Preparation required; electrical engineering, courses i and vi. For seniors in electrical engineering.

Course XIII. Electrical laboratory (b). 4 or 8 hours per week, first and second semesters (b).

Photometric and electrical tests of incandescent and arc lamps and regulating devices. Experimental study of alternating currents; calibration of A. C. instruments; measurement of resistance, power and power factors; regulation and efficiency tests of alternators, transformers, rotaries and motors. For seniors in electrical and mechanical engineering.

Course XIV. Electrical design (b). 8 hours per week, half of first semester.

Design of a dynamo or other problem as assigned. Preparation required; electrical engineering, courses ii and iv. For seniors in electrical engineering.

Course XV. Electrical design (c). 6 hours per week, second semester.

Designs, specifications and estimates of an electric light or power plant, or other approved problem. Preparation required: electrical engineering, courses iv and vi. For seniors in electrical engineering.

Course XVI. Theory of alternating currents. 1 hour per week, first semester 2 or 3 hours per week, second semester.

Mathematical discussion of the properties and applications of alternating currents. Phenomena of transmission lines, transformers, generators, synchronous and induction motors and polyphase systems treated graphically and by complex quantities as developed by Steinmetz and others. For seniors in electrical engineering.

Course XVII. Plant operation.

Practice in operation and care of boiler, engines, motors, dynamos and circuits of the University lighting plant. One evening a week, through one or two half semesters. For seniors in electrical and mechanical engineering.

Course XVIII. Electrochemistry. 2 or 4 hours per week.

Theoretical and experimental study of electrolysis, electrodeposition and electric furnaces. For seniors in electrical engineering.

Course XIX. Journal reading. 2 hours per week, throughout the year.

Discussion of current electrical periodicals. For seniors in electrical and mechanical engineering.

Course XX. Electrical laboratory (c).

Efficiency tests and special problems.

EQUIPMENT.

As an organization of the University of Minnesota, the college of engineering and the mechanic arts, has the general advantage of the University. Students find available all the resources of the institution so far as their technical lines will permit their use. For the information concerning methods of work and equipment, the following condensed statements are offered:

CIVIL ENGINEERING.

Geodesy. For this work the department has a secondary base-line apparatus, a three hundred foot standard steel tape, astronomical transits and repeating theodolites, heliotropes, a telemeter, deflection magnetometer, precise levels, two marine chronometers, one on sidereal and the other on mean solar time.

Highway engineering. The department has suitable apparatus for conducting the usual tests applied to road materials.

Railroad work. The usual equipment of transits, levels, planimeters, gradientors, level-rods, range-poles, chains and tapes, is provided.

Surveying. The department has for this work the necessary outfit consisting of compasses—plane, railroad and pocket, transits, tapes, hand levels, aneroid and mercurial barometers, solar compasses and solar attachments, pantometers and anemometers.

Structural engineering. The department has a large collection of working drawings of prominent structures throughout the country; photographs of bridges, buildings and roofs, in this country and abroad. It also has a series of nearly all the structural shapes manufactured by Carnegie Steel Co.; a series of models of the principal joints used in modern structures; models of arches of different forms; templates for cutting the stone used in the construction of skew arches; calculating machines, etc.

The experimental laboratory in structural engineering contains a large Olsen testing machine of two hundred thousand pounds capacity, with complete attachments, including automatic and autographic recording apparatus, extension head for full sized columns ten feet long, and transverse beam for bending tests upon twenty foot beams. This is one of the most complete machines of its kind in the country.

The laboratory also contains an excellent equipment for the testing of cements, including a Riehle and a Fairbanks cement testing machines, sieves, briquette moulds, damp closet, tanks and all other apparatus necessary for this work.

Topography. For this work the department has plane-tables, telemeter rods, stradia-transits, reduction charts and side rules, clinometers, pedometers, current-meters, compasses, a relief map, a complete topographic map of the District of Columbia, besides a large collection of topographic sheets presented by the United States coast, geodetic and geological surveys.

Library. The civil engineering library is located on the main floor of engineering building where are to be found all the more important books

relating to this line of work. There are complete sets of the leading technical journals and proceedings, and reports of a large number of state and university engineering societies.

Reading room. Here are to be found all the leading American periodicals, and some foreign, relating to civil engineering. The files of the most important are bound and are easy of access to the student.

Methods of instruction. It is the aim of the department to secure for its students special training in the preparatory studies which form the basis of all engineering work—such as mathematics, physics, mechanics and drawing—these being the tools for the special engineering which follows.

A thorough course is then given in the theory and practice of the more important professional lines such as railroad and structural engineering and topography. Considerable time is devoted to hydraulics, municipal engineering, higher surveying and geodesy.

While theory is at all times made prominent it is always accompanied by practice according to the methods followed in actual professional work.

Inspection tours. The professional work of the department is illustrated in a practical manner by frequent visits to the engineering works and plants in the vicinity of Minneapolis and St. Paul.

MECHANICAL ENGINEERING.

The plan of instruction in this course is intended to give the student a thorough training in mathematics and the physical sciences; and in the fundamental principles of engineering.

The work is planned to make him familiar with the various applications of these principles, and with the practical details of machine construction and design.

A new building especially designed to meet the requirements of instruction in the various lines of shop work, has been erected during the past year, and it is believed that the increased facilities thus afforded for the prosecution of this work are unexcelled.

This building consists of a two-story portion, containing the machine shop on the first floor and the wood shop on the second, as shown in the plan; beyond the machine shop and at a different level is the forge shop and foundry, both one story in height.

Slow burning mill construction is used throughout. This consists of brick walls and heavy timbers which, in case of fire, burns slowly and are safer than the ordinary iron and timber combination for this class of buildings. An interesting feature is the construction of the floors, which are practically free from vibration, and give a very solid foundation for the machinery.

In the machine room a 3-ton crane covers a clear span of 12 feet the entire length of the shop, thus giving ample space for erecting. This crane also serves some of the larger machine tools.

The foundry has been the subject of especial study and possesses many features of interest and value. In accordance with the best modern prac-

tice for light work the floor is of concrete (except in one section as shown), and the gangways, leading from the cupola and extending lengthways of the room are of heavy iron plates set in cement.

A light traveling crane is also provided for the foundry. This has a span of 15 feet and runs the entire length of the room.

The lighting, heating and ventilation of the building have received careful consideration. In the machine and pattern shops 60 per cent of the wall space above the benches is in glass. In the foundry and forge shop less light is allowed, since an abundant supply of overhead light is obtained from windows placed in the lantern or ventilator which extends over the roof. Pipe coils are employed in heating the building, and these are placed partly on the side walls under the windows and partly overhead. Electric power is used for driving the machinery. The group system has been selected as best adapted to the conditions, and a number of small motors are placed in the several departments: 200-volt continuous current motors are employed in connection with a three-wire system of distribution, which is also used in the lighting circuit.

The machine shop contains representatives of the ordinary machine tools, gauges, and small tools usually found in a well-equipped modern plant.

The shop for pattern making and general wood work contains benches with vises and tools, lathes and lathe tools, an improved universal sawing machine, band saw, planer, and other power tools, and all hand tools used in carpentry and pattern making.

The forge shop is equipped with stationary and portable forges, a blower and exhaust fan, a one hundred pound drop hammer, and the necessary small tools used in blacksmithing.

The foundry contains a thirty-inch Whiting cupola, and two brass furnaces, which embody some novel features. There are two core ovens; one for ordinary work $3\frac{1}{2} \times 3\frac{1}{2} \times 5$ feet, and one $3\frac{1}{2} \times 7 \times 6$ feet for special cores which may be required. The feature of these core ovens is that the gases and products of combustion are caused to traverse suitable conduits under a plate floor and do not come into direct contact with the cores. The usual moulding tools, ladles, crucibles, and all of the tools and material needed in moulding and casting iron, brass or white metal, are provided.

The shop work is intended, not so much to give the student skill in the manual operations of the respective crafts, as a knowledge of the methods and processes of practical construction.

The mechanical laboratory, in which the experimental research of the department is conducted, has been considerably enlarged and its equipment greatly increased. Two testing machines of 50,000 pounds and 100,000 pounds capacity, and three transverse testing machines are provided for determining the strength, ductility, resilience and other characteristics of the various materials used in engineering work under tensile, compressive, transverse and torsional stress. Several forms of absorption and transmission dynamometers are available for determining the power generated

by engines or other motors, or absorbed by shafting or machinery; a Carpenter coal calorimeter for determining the heat value of coal, and apparatus for the analysis of flue gases.

The laboratory is also provided with two machines for determining the lubricating qualities of oils and the relative values of metals used for journals and bearings; a mercury column and a Crosby direct pressure-gauge tester, for use in calibrating gauges and other pressure indicators. Besides the boilers in the university heating plant, there are in the laboratory, a 35 horse-power boiler and a high pressure boiler capable of carrying a working pressure of 300 pounds, with the necessary gauges, calorimeters, tanks and pyrometer, for making complete duty trials; several automatic steam engines equipped with condensers, indicators, brakes, scales and thermometers, which are employed to determine the efficiency in the use of steam under various conditions assumed or found in actual practice, and for valve setting and indicator work.

The operation and economy of other heat engines are illustrated by an Otto gas engine of five horse-power, a White gasoline engine of eight horse-power, a Rider two-cylinder and an Ericsson single cylinder hot air engine, a pulsometer, and steam pumps. The equipment also contains a Pelton and a Tuerk water motor, a water ram, injectors, weirs, nozzles, meters and other pieces of apparatus and instruments which an engineer is called upon to use in the course of his professional work.

A constantly increasing quantity of commercial testing is being done in connection with the regular work of the course which brings the student into actual contact with the engineering world and affords him valuable experience and data for his future work.

The library of the department contains a collection of historic and recent works, the best standard books being purchased as soon as issued. There are a number of complete files of the transactions of engineering societies and of the leading technical publications. The reading room is amply supplied with both the general mechanical and railway press.

Railway mechanical engineering. Courses have been arranged for students wishing to specialize in this subject. The various courses may be elected separately, subject to the requirements for previous preparation, to fill out the electives, or options in the regular senior year of any department.

Students planning to elect these courses are encouraged to work, under special arrangements, in railway shops during the summer vacations. This has proved its value as preparatory to the special work of the senior year. In every possible way the methods of the department are intended to place the student in touch with the best railway work; keeping always in sight the limitations which railway experience has found financially and practically to exist.

The location of the University is particularly favorable, being between the cities of St. Paul and Minneapolis in proximity to the shops, yards and headquarters of the extensive railway systems of the Northwest, which offer exceptional facilities for the prosecution of this work. The Northwest Rail-

way Club, meeting monthly for papers and discussions is open for the attendance of students, while several are enrolled as members.

Visits of inspection. During the year numerous visits are made to the manufacturing plants of St. Paul, Minneapolis and Chicago, which have proven to be of great value in supplementing the class room work.

ELECTRICAL ENGINEERING.

The new electrical building provides permanent quarters for the electrical departments. The portion of the building, 92 feet long and 50 feet wide, contains the University electric light and power plant. The main portion of the building, which is 80 feet long and 60 feet wide with two stories and basement, is devoted to the work of the electrical engineering department of instruction. In the basement are the electro-chemical laboratory, battery room, toilet and locker rooms. On the first floor are the dynamo laboratory, high tension laboratory, office, instrument room and shop. On the second floor are laboratories for photometry, photography, meter and lamp testing and rooms for recitations, draughting, library and office.

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 1150 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 electroplating 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.

The department library contains an excellent collection of electrical and allied works.

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. A journal club meets weekly for the discussion of current literature in mechanical and electrical engineering, keeping the students in touch with current progress and best modern practice and teaching them the value of the technical press.

There is a growing collection of samples furnished by various manufacturers and dealers, a great help in exhibiting best modern practice and in teaching young engineers to appreciate the merits of different products. A collection of samples from repair shops and elsewhere is of especial value in illustrating the treatment received by apparatus in commercial use and the necessity of careful design and construction. Free access is given to the private libraries and collections of the professors.

Instruction. The course aims to give the students a knowledge of phenomena and principles and the various applications of electricity, the methods and instruments used in measuring and transforming it, and practice in the design and operation of electrical apparatus. Practice and theory are taken together as far as possible. During the junior and senior years students have daily work with electrical instruments and apparatus and with commercial problems. Occasional inspection tours among the extensive and varied electrical interests in Minneapolis and St. Paul furnish excellent illustration. The University electric light and power plant, which is in the same building affords opportunity to observe commercial conditions at close range.

All engineering students are strongly advised to spend their vacations in factories, repair shops, electric light and railway stations, etc., in order to obtain commercial experience, and that they may better appreciate the relations of their technical training and actual work.

It is the aim to train the students to be independent and efficient workers, and to adopt the methods of professional engineers. Students are required to verify the formulas used in various calculations, and are encouraged to derive their own formulas for simplifying work in special cases. At the same time they are expected to use logarithms, slide rule, tables, curves, charts and all legitimate means for obtaining accurate results with least amount of drudgery.

Laboratory work. In the more advanced work students are encouraged to determine for themselves as independent workers the best methods and conditions for accurate results. While the laboratory work is classified, the students are treated individually and are advanced as rapidly as their attainments warrant.

In fitting up the laboratory, care is taken to secure representative types of apparatus of commercial style and size, in order to acquaint the students with actual practice. In putting up new lines and in setting up apparatus, the students are required to work in accordance with standard practice. Each student is given a certain amount of practice in the construction of electrical apparatus.

Design. The electrical engineers have drawing and design in common with the mechanical engineers in the first three years. A large number of numerical problems are given during the course. During the junior and senior years, electro-magnets and mechanisms, dynamos and motors, lines, switches, switchboards and plants are designed. Complete working drawings and specifications for some special problem are elaborated. A file of nearly 600 blueprints and drawings in the department library in addition to those in other departments is available to the students.

DRAWING AND INDUSTRIAL ART.

This department occupies rooms in the mechanic arts building and Pillsbury Hall. The equipment of models and illustrative material is quite extensive and embraces among its many collections the following: A complete set of Schroeder models for descriptive geometry; a collection of casts of architectural details and historic ornament; full length figures and busts of historic and classic sculpture and collections of charts, prints and drawings. There is also a small library of standard works.

The course in industrial art is carefully outlined with a view to the gradual and progressive development of art training. The work in design is not entered upon until the beginning of the second year. It is essential that a thorough knowledge of drawing in all its varied aspects and mediums should form the foundation of all decorative and industrial art. After such knowledge is acquired, every facility will be afforded students for pursuing the line for which their work shows especial aptitude. The course of study is arranged to enable the student to pursue one of three lines of work; regular art, design, and normal art.

COURSE OF STUDY.

FRESHMAN YEAR.

Through the year.
Language or science, [4].
English (or rhetoric), [4].
Drawing, [4].
Drawing, [4].
Lectures and reading, [1].

SOPHOMORE YEAR.

Language or history, [4].
Science or language or psychology
and logic, [4].
Drawing or pedagogy, [4].
Design or drawing, [4].
Rhetorical work, [1].

JUNIOR YEAR.

Archæology (ii) and art lects., (ii) [4]
Pedagogy, or elective, [4].
Design or drawing, [4].
Drawing, [4].
Lectures and reading, [1].

SENIOR YEAR.

Elective, [4].
Drawing or elective, [4].
Design or drawing, [4].
Painting or modeling, [4].
Thesis,

LIBRARIES AND READING ROOMS.

The reference and the seminar libraries, of the several departments of instruction, are well supplied with technical literature. In the engineering building, is a library consisting chiefly of books devoted to civil and mechanical engineering, comprising over one thousand volumes; the library of the department of engineering and mechanics numbers eighteen hundred volumes of choice mathematical and scientific works; the departments of electrical engineering and physics together have an excellent collection of standard works which numbers over fourteen hundred volumes; the chemistry library contains over five hundred technical works; the department of drawing and industrial art possesses a choice collection of between one hundred and two hundred volumes relating to drawing, art and design. The above number upwards of four thousand volumes, comprising many works which are the private property of professors, yet accessible to the students.

In addition to the above are the large libraries of the University, the City of Minneapolis, the Minneapolis Athenaeum, the Minnesota Academy of Natural Sciences, the City of St. Paul and others, containing many works of value to the engineering and scientific student. The standard works bearing on special subjects are secured as they appear. The more important scientific and technical periodicals are secured and placed in the reading rooms maintained in connection with the several departments of the college.

Journal clubs are organized, in most of the departments, for the discussions of current technical literature, relating to the best modern practice. Thus students are kept in touch with the development along engineering lines and are taught how to use the technical press.

In addition to the foregoing, the college has many periodicals donated by the societies publishing them, and others loaned by members of the faculty, who at all times place their periodical list and entire professional libraries at the disposition of the students. Still others are secured by exchanging the publications of the University and the Yearbook of the Society of Engineers.

THE SOCIETY OF ENGINEERS.

This society is an organization, holding regular meetings for the purpose of discussing topics of current interest, hearing reports and lectures from members of the faculty and others. During the past year the special lecturers of the college have delivered their lectures under the auspices of this society. A Yearbook of the society is published, which presents the progress of the original work done both by instructors and students.

THE BRIGGS PRIZE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, President of the Twin City Iron Works, 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.

Essays should contain about 3,000 words, and must be submitted to the professor of rhetoric on or before May first.

THE MINNEAPOLIS TIMES "GOOD ROADS" PRIZES.

The Times Newspaper Company offers, for competition, to the sophomores of the department of civil engineering, three gold medals for the best "essays" or "studies" in good roads.

First prize—A fifteen dollar gold medal.

Second prize—A ten dollar gold medal.

Third prize—A five dollar gold medal.

The essays are to be on some phase of the "good road" question, to be approved by the department. Papers to contain about two thousand words. The good roads "studies" must be of some actual condition of roads in the State of Minnesota.

All papers submitted for competition must be in the hands of the department one month before the date set for commencement. Prizes will be awarded by a committee of three, consisting of a representative of the Times, the department of civil engineering, and a third to be named by these two. Announcement of winners of prizes will be made at commencement.

THESES.

Theses. Each member of the senior class in this college, in addition to the final examination, must prepare a thesis on some subject particularly relating to his course. This paper must contain some original research made by the student himself. It must be creditable from a literary as well as from a technical point of view.

Theses shall be written in a clear hand, or typewritten; the paper used shall be of the standard size and quality adopted by the University; all charts, maps, drawings or other illustrative matter shall be presented on tracing cloth or bond paper; the whole shall be suitably bound and a copy deposited in the library of the University. The subject of the thesis must be submitted to the head of the department in which the student is a candidate for a degree, and the work of preparation must be formally begun by the beginning of the second term of senior year. During the second semester the student is expected to devote at least ten hours a week to preparation of his thesis.

The subject of the thesis and character of the work to be done upon it will be suggested in a large measure by the course of study pursued by the student. Great emphasis is laid upon the careful and accurate preparation of the thesis; because, more than any other work the undergraduate does, this certifies to his ability to undertake the difficult and responsible duties involved in the direction of engineering and industrial interests. The thesis must be completed and put in the hands of the faculty as early as the senior examination week of the second semester.

Courses in Science and Technology.

It is very desirable that engineering students taking one of the courses leading to the professional degree, civil engineer, mechanical engineer, or electrical engineer, should have a more liberal education than can now be obtained in the regular four years' course. This has led to the establishment of a five years' course in science and technology in which a student in the college of engineering may obtain more English and general culture studies, as well as more extended work in the technical sciences than has been offered heretofore. This course does not diminish in any way the regular courses in engineering—the work is merely distributed over a more extended period. Every subject now included in any one of the regular engineering courses is also included in the corresponding five years' course, and in addition to these there is the equivalent of one years' work in more general subjects.

At the end of the fourth year the degree, bachelor of science in engineering is conferred. The professional degree, civil engineer, mechanical engineer, or electrical engineer, is granted upon the completion of the fifth year, provided the choice of electives throughout the course has satisfied the requirements of the proposed engineering degree.

COURSE IN SCIENCE AND TECHNOLOGY.

FRESHMAN YEAR.

Engineering mathematics, 5.
English, 4.
French or German, 4.
Chemistry or history, 4.
Military drill, 2.

SOPHOMORE YEAR.

Engineering mathematics, 5.
History, chemistry, French, German, or English, 4.
Physics, 4.
Engineering drawing, 4.
Rhetoric, 1.
Military drill, 2.

JUNIOR YEAR.

FIRST SEMESTER.
Mechanics, 5.
Physics, 4.
Engineering drawing, 4.
Technical work, 2.
Elective, 4.

SECOND SEMESTER.
Mechanics, 5.
Physics, 4.
Engineering drawing, 2.
Technical work, 5.
Elective, 4.

SENIOR YEAR.

Technical work, 4.
 Technical work, 4.
 Elective, 4.
 Elective, 4.
 Elective, 4.

Technical work, 5.
 Technical work, 3.
 Elective, 4.
 Elective, 4.
 Elective, 4.

POST SENIOR YEAR.

The work of the post senior year is entirely elective, and consists of twenty exercises or recitations per week, selected from the following list. The only limitation imposed is that subjects cannot be chosen unless the work leading up to, and preparing for such subjects has been completed.

The following electives are offered:

In science:—Chemistry, physics, geology, mineralogy, astronomy and mathematics.

In technology:—Shop practice, engineering laboratory, drawing, design, specifications, measurement and transmission of power, steam boilers, railway engineering, shop economics, water supply engineering, sanitary and municipal engineering, bridge engineering, surveying, alternating currents, telephony and telegraphy, electric light, plant operation, central stations.

In literature and the arts:—English, French, German, history, political science and logic.

The subjects required for the completion of the five years' course will depend upon the particular professional degree desired. Thus for the course in science and technology leading to the degrees bachelor of science at the end of four years, and the professional degree at the end of the fifth year, the electives would be selected as follows:

FRESHMAN YEAR.

Mathematics, 5.
 English, 4.
 French or German, 4.
 Chemistry or history, 4.
 Military drill, 2.

SOPHOMORE YEAR.

Mathematics, 5.
 History or chemistry, 4 (one year of chemistry is required).
 Physics, 4.
 Engineering drawing, 4
 Rhetoric, 1.
 Military drill, 2.

COURSES IN SCIENCE AND TECHNOLOGY.

JUNIOR YEAR, FIRST SEMESTER.

CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING.
Mechanics, 5.	Mechanics, 5.	Mechanics, 5.
Physics, 4.	Physics, 4.	Physics, 4.
Engineering drawing, 4.	Engineering Drawing, 4.	Engineering drawing 4.
Technological chemistry, 2.	Technological chemistry, 2.	Technological chemistry 2.
Topography, 5.	Shop practice, 4.	Shop practice, 4.
	Industrial Elec, 3.	Industrial electricity, 3.
	or { Industrial elec, 1.	
	} Stresses, 2.	

SECOND SEMESTER.

Mechanics, 5. Physics, 3. Engineering drawing, 2. Topography, 5. Highways, 2. Practical astronomy, 2,	Mechanics, 5. Physics, 3. Engineering drawing, 4. Dynamos and motors, 3. Electric laboratory, 3. Mechanism, 2.	Mechanics, 5. Physics, 3. Engineering drawing, 4. Dynamos and motors, 3. Electrical laboratory, 3. Mechanism, 2.
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SENIOR YEAR, FIRST SEMESTER.

Water supply, 2. Curves and earthworks, 2. Field work, 3. Machine design, 2. Stresses, 3. Least squares, 2. Mechanical laboratory, 2. Electric power, 3.	Thermodynamics, 3. Prime movers, 2. Machine design, 4. Mechanical laboratory, 2. Shop practice, 10.	Thermodynamics, 3. Prime movers, 2. Machine design, 4. Mechanical laboratory, 2. Shop practice, 10.
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SECOND SEMESTER.

Stresses, 3. Structural details, 3. Railway work, 3. Sanitary engineering, 3. Geology, 2. Elective, 4.	Steam engines, 2. Mechanical laboratory, 2. Machine design, 4. Thermodynamics, 3. Shop practice, 10.	Steam engines, 2. Mechanical laboratory, 2. Machine design, 2. Electrical design, 2. Elective, 4. Shop practice, 10.
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POST SENIOR YEAR, FIRST SEMESTER.

CIVIL ENGINEERING. Masonry, 3. Structural design, 5. Experimental laboratory, 2. Railway economics, 2. Political science, 2. Elective, 6.	MECHANICAL ENGINEERING. Machine or railway design, 4. Mechanical engineering, 2. Mechanical laboratory, 2. Political science, 2. Elective, 8. Thesis.	ELECTRICAL ENGINEERING. Alternating currents, 3. Electrical engineering, 4. Electrical laboratory, 2. Mechanical laboratory, 2. Political science, 2. Elective, 6. Thesis.
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SECOND SEMESTER.

Structural design, 5. Arches, 2. Geodesy, 2. Field work, 2. Political science, 2. Elective, 2. Contracts and specifications, 2. Thesis, 3.	Contracts and specifications, 2. Machine or railway design, 4. Mechanical laboratory, 4. Political science, 2. Elective, 4. Thesis, 4.	Contracts and specifications, 2. Electrical design, 3. Electrical laboratory, 2. Electrical engineering, 4. Political science, 2. Elective, 2. Thesis, 4.
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As the strictly professional courses offer little opportunity for specialization in the physical and technical sciences, and the liberal culture studies are necessarily very limited in such courses, the general course in science and technology affords an opportunity for more extended work in physics, chemistry and other sciences, together with additional studies in English, history, political science and similar subjects.

While the choice of electives in the general course in science and technology is very liberal there is necessarily less freedom in the selection of subjects in those courses which lead to the engineering degrees.

For the first two years no electives are offered and the work is common to the general and the five years' professional courses

While the student is allowed to make his own selection of electives in the general course, subject to known requirements, the following is suggested as a representative non-professional technical course leading to the degree, bachelor of science in engineering, at the end of four years:

A FOUR YEARS' GENERAL COURSE IN SCIENCE AND TECHNOLOGY.

FRESHMAN YEAR.

Mathematics, 5.
English, 4.
French or German, 4.
Chemistry or history, 4.
Military drill, 2.

SOPHOMORE YEAR.

Mathematics, 5.
History, chemistry or language, 4
Physics, 4.
Engineering drawing, 4.
Rhetoric, 1.
Military drill, 2

JUNIOR YEAR.

FIRST SEMESTER.

Mechanics, 5.
Physics, 4.
Engineering drawing, 4.
Technological chemistry, 2.

Chemistry, 4.

SECOND SEMESTER.

Mechanics, 5.
Physics, 3.
Engineering drawing, 4.
Mechanism, 3.
or surveying, 3.
Chemistry, 4.
Mechanical laboratory, 2.

SENIOR YEAR.

{ Thermodynamics, 3,
or mineralogy, 4.
{ Industrial electricity, 3,
or electric power, 3.
Physics, 4.
Political science, 4.
Elective, 4.

{ Dynamos and motors, 3,
Thermodynamics, 3,
or geology, 4.
{ Steam engine, 2,
or highways, 2.
Physics, 4.
Political science, 4.
Elective, 4.

The required subjects are printed in Roman type; the electives, printed in italics, may be replaced by others selected from the general list.

THE
SCHOOL OF MINES.

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., *Instructor in Metallurgy.*
BENJAMIN F. GROAT, *Assistant Professor of Mathematics and Mechanics.*
EDWARD P. MCCARTY, E. M., *Instructor in Mining.*

OFFICERS OF THE DEPARTMENT OF GEOLOGY AND MINERALOGY.

CHRISTOPHER W. HALL, M. A., *Professor of Mineralogy and Geology.*
CHARLES P. BERKEY, Ph. D., *Instructor in Mineralogy.*

OFFICERS OF THE DEPARTMENT OF CHEMISTRY.

GEORGE B. FRANKFORTER, Ph. D., *Professor of Chemistry.*
CHARLES F. SIDENER, B. S., *Assistant 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., *Instructor in 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., *Associate Professor of Physics.*

ADMISSION.

Examinations for admission will be held at the beginning of the year. See Calendar and program of examinations.

Students prevented from entering at the beginning of the year may be admitted at a subsequent date when circumstances may justify this action. Such students are at a great disadvantage. Students expecting to enter the school 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 covering examinations and registration.

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GENERAL REGULATIONS GOVERNING ADMISSION.

- I. Students will be admitted to the freshman class on **passing the regular entrance examination.**
- 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, and
 - (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 Sept. 2d, in room 24, Pillsbury Hall, at 9 o'clock a. m.

REQUIREMENTS FOR ADMISSION TO THE FRESHMAN CLASS.

N. B.—Time element, as indicated with each subject, is essential.

A three years' course of reading in English classics.

English Composition, one year.

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.

Botany.

Chemistry.

Drawing.

English.

Latin element.

Literature.

French.

Grammar

Literature

Geology.

Greek.

Grammar.

Anabasis.

German.

Grammar.
Literature.

History.

Greece and Rome.
England.
Modern,
Medieval.
Senior American.

Latin.

Grammar,
Cæsar.
Cicero.
Vergil.

Physics.**Physiography.****Political Economy.****Shopwork.****Zoology.**

SYLLABUS

For syllabus of subjects required for admission, see pages 53-57.

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.

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.

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 certain electives in other colleges, provided suitable arrangements can be made. No advanced work in the school of mines will be allowed such students.

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.

UNCLASSED STUDENTS

No unclassified 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, examination in any subject; and 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 holding the degree of E. M. and vice versa, provided such a candidate complete an additional year's work at the school and present a suitable thesis.

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 such standing as their credentials or the examinations taken under the direction of the faculty of this school may entitle them to.

Students in the college of science, literature and the arts, in the college of engineering and mechanic arts, and school of technical and applied chemistry, 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 purpose to enter.

FEES

A registration fee of seven and one-half dollars is required at the beginning of each semester.

The various laboratory fees are as follows:

Chemical laboratory.....	per semester	\$5.00
Mineralogical "	"	3.00
Assaying "	"	10.00
Physical "	"	3.00
Mechanical "	"	3.00
Electrical "	"	5.00
Ore testing "	"	5.00

The visit to the mines made by the junior class costs the student from one hundred to one hundred and twenty-five dollars.

Books cost about as follows:

Freshman year.....		\$12.00 to \$15.00
Sophomore "		5.00 to 8.00
Junior "		18.00 to 25.00
Senior "		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.

A set of draughting instruments must be purchased by the freshman class. The necessary instruments will cost about eight dollars.

SUMMARY OF EXPENSES

FRESHMAN YEAR

Incidental fee.....	\$15.00
Chemical laboratory fee.....	15.00
Mineralogical laboratory fee.....	4.00
Physical laboratory fee.....	2.00
Assaying laboratory fee.....	10.00
Books.....	13.00
Draughting instruments.....	15.00
Note books and supplies.....	6.00
	<u>\$80.00</u>

SOPHOMORE YEAR

Incidental fee.....	\$15.00
Chemical laboratory fee.....	15.00
Physical laboratory fee.....	6.00
Books.....	7.00
Note books and supplies.....	2.00
	<u>\$45.00</u>

JUNIOR YEAR

Incidental fee.....	\$15.00
Visit to the mines.....	\$100.00 to 125.00
Books.....	20.00
Note books and supplies.....	2.00
Chemical laboratory fees.....	15.00
	<u>\$177.00</u>

SENIOR YEAR

Incidental fee.....	\$15.00
Electrical laboratory fee.....	5.00
Ore testing laboratory fee.....	10.00
Mechanical laboratory fee.....	3.00
Books.....	20.00
Note books and supplies.....	2.00
	<u>\$55.00</u>

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.

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 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 and Colorado, 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 ELLIOT SCHOLARSHIP LOAN FUND.

To fulfil 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 \$5000, 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 be repaid, without interest, at the earliest convenience of the recipients.

LIBRARY

The library consists of about eight hundred 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.

The work falls under the following sub-divisions, 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 stated 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. A part of the time is devoted to the making of mine and geological surveys.

A complete type-written report, covering the work, illustrated with sketches drawn to scale is required of each student. This report must be submitted before the student may register for the following year's work.

All field work must be taken at the time specified.

Designs and specifications. The student makes 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 freshman year, second semester, the work consists of the elements of plane surveying with special reference to the computations necessary.

Field Work in Surveying—Course IX. The month of August, preceeding the opening of the sophomore year, is spent in practicing 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. Ranging.
2. Chaining.
3. Compass reading.
4. Determination of length of pace.
5. Survey of a large area by pacing and hand compass.
6. Adjustment of hand levels and practice in leveling.
7. Adjustment and use of wye levels.
8. Adjustment of mining transit.
9. Reading angles.
10. Traverse with steel tape.
11. Azimuth traverse with stadia.
12. Survey of mining claim according to the regulations of the U. S. Government.
13. Measurement of earthwork.
14. Laying out railroad tangents, curves and crossings.

Each squad must provide itself with a 12-foot steel tape, graduated to tenths.

This course is open only to those who have taken Course VII, or its equivalent, and is part of the work of sophomore 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 AND 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 Dr. Berkey.

SECOND SEMESTER.

- Assaying* (Metallurgy I)—2 hours, Professor Appleby.
Assaying Laboratory (Metallurgy I)—4² hours, Prof Appleby and Mr. Christianson.
Chemistry (Chemistry II)—4² hours, Professor Nicholson.
Drawing (Drawing I)—4² hours, Professor Kirchner.
 **Mathematics* (Mathematics II)—4, Professor Groat.
Mineralogy (Geology and Mineralogy, Mineralogy II)—2 hours, Professor Hall and Dr. Berkey.
Mine Surveying (Mining VII)—2 hours, Mr. McCarty.

SUMMER WORK—MONTH OF AUGUST.

- Mine Surveying* (Mining VIII)—4 weeks, Professor van Barneveld and Mr. McCarty
 * Twice a day after beginning of field work.

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 II)—22 hours, Professor Kirchner.
Mathematics (Mathematics IV)—5 hours, Professor Groat.
Metallurgy (Metallurgy IV)—3 hours, Professor Appleby
Mining (Mining I)—4 hours, Professor van Barneveld

JUNIOR YEAR

FIRST SEMESTER

- Geology* (Geology and Mineralogy, Geology I)—2 hours, Professor Hall.
Mathematics (Mechanics I)—5 hours, Professor Groat.
Mechanical Laboratory (Mechanical Engineering XXI)—2² hours, Prof. Kavanaugh.
Metallurgy (Metallurgy V)—4 hours, Professor Appleby.
Mining (Mining II)—5 hours, Professor van Barneveld.
Petrography (Geology and Mineralogy, Geology III)—2² hours, Dr. Berkey.
Ore dressing (Mining V)—4 hours, Professor van Barneveld.

SECOND SEMESTER

- Mathematics* (Mechanics II)—5 hours, Professor Groat.
Mechanical Laboratory (Mechanical Engineering XXII)—2² hours, Prof. Kavanaugh
Metallurgy (Metallurgy VI)—4 hours, Professor Appleby.
Mine Mapping (Mining X) 3² hours, Mr. McCarthy.
Mine Surveying (Mining IX)—2 hours, Mr. McCarty.
Mining (Mining II)—5 hours, Professor van Barneveld.
Petrography (Geology and Mineralogy, Geology VI)—2 hours, Dr. Berkey.
Steam Engines (Mechanical Engineering XVI)—2 hours, Professor Flather.

FIELD WORK—MONTH OF MAY

- | | | |
|-------------------------------------|-------------|---|
| <i>Mining</i> (Mining III) | } 4 weeks { | Professor van Barneveld,
Professor Appleby, Mr. Christianson
and Mr. McCarty. |
| <i>Metallurgy</i> (Metallurgy VIII) | | |

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.

Mathematics (Mechanics III)—4 hours, Professor Groat.

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.

SECOND SEMESTER.

Chemistry (Chemistry XX)—4² hours, Dr. Frankforter.

Designs and Specifications (Mining VI)—4² hours, Professor van Barneveld.

Electro-Chemistry (Chemistry XVII)—3² hours, Dr. Frankforter.

(Met. E.)

Electro-Metallurgy (Metallurgy VII)—3 hours, Mr. Christianson.

(Met. E.)

Geology (Special Problems—Geology and Mineralogy, Geology X)—2² hours, Professor Hall. (E. M.)

Mechanical Laboratory (Mechanical Engineering XXV)—2² hours, Prof. Kavanaugh.

Mining Engineering (Mining IV)—5 hours, Professor van Barneveld.

Thesis—4 hours.

DEPARTMENT OF METALLURGY

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 courses include 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 Pillsbury Hall, and consists of—

1. *Preparation room.* Where the samples and reagents are weighed. This operation is conducted in a room entirely apart from the furnace room. The separation of the laboratory from the furnace room is of the greatest importance to the student. The preparation of ore is effected by a Forster crusher, Frazer & Chalmers sample pulverizer, and Bridgman ore sampler. The machines are run by an electric motor. Much time is thereby saved to the student for extended or advanced work in special lines.

2. *Furnace room.* After the sample has been placed in suitable vessels for fusion, it is taken to the furnace room which communicates directly with the preparation room. This room is well equipped with crucible and muffle furnaces and all the appurtenances necessary for carrying on the reduction of metals from their ores by fire methods.

3. *Balance room.* In this room are various balances for accurately weighing the gold and silver beads, and bullion.

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, pans for amalgamation, settlers, reverberatory furnaces for oxydizing and oxydizing-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 principal 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 method 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 the 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. That 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 12½x12 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 three-foot amalgamating 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.

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 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.

COURSES OF INSTRUCTION

COURSES IN CHEMISTRY

- Course I. Qualitative analysis.* *Freshman i.*
Lectures and laboratory work. The course includes the reactions of the metals as applied to their separation and identification. 3 hours lectures, 5 hours laboratory.
- Course II. Qualitative analysis.* *Freshman ii.*
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.
- Course III. Quantitative analysis.* *Sophomore i, 96 hours.*
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.
- Course V. Volumetric analysis.* *Sophomore ii, 96 hours.*
Lectures and laboratory work. The course includes an introduction to volumetric determinations with a discussion of standard solutions and the necessary stoichiometric calculations. Open to those who have completed course III.
- Course XVI. Special problems.* *Senior i, 48 hours or more.*
Laboratory work. The course includes the working out of various mineralogical technological and metallurgical problems. Open to those who have completed course V.
- Course XVII. Electro-chemical analysis.* *Senior ii, 48 hours or more.*
Lectures and laboratory work. The course includes the qualitative and quantitative separation of metals by electrolysis. Open to those who have completed course XVI.

*Course XX. Iron and steel analysis.**Senior ii*, 48 hours or more.

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.

*Course XXV. Special problems.**Senior ii*, 48 hours or more

Laboratory work. This course includes work on ores of base metals, limestone, slags, etc.

COURSES IN DRAWING

*Course I.**Freshman i, ii*, [4] 238 hours.*(a) Freehand.**i*, [2] 68 hours.

Lettering, geometric forms and engineering details in outline, including working sketches, translations and the elements of perspective.

*(b) Mechanical.**Freshman i, ii*, [2] 136 hours.

Conventional methods, lettering, machine and structural details and standard sizes and shapes.

*(c) Descriptive geometry.**ii*, [2] 34 hours.

Problems relating to points, lines, planes, solids, interpenetrations, surface of revolution, tangents and developments, including the constructive geometry involved. Recitations and lectures.

*Course II.**Sophomore i*, [4], *ii*, [2], 204 hours.*(a) Descriptive geometry.*

Orthographic, 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.

COURSE IN ELECTRICAL ENGINEERING

*Course V. Electric power.**Senior i*, 3 and 6 hours per week, 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.

COURSES IN GEOLOGY AND MINERALOGY

MINERALOGY

*Course I. General Mineralogy.**Freshman i, ii.*

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. Eight hours a week.

Course II. Physical Mineralogy.

Freshman ii.

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 ii.

A study of the structure of crystals and crystal grains. An application of the methods of determination by optical properties; the use of the petrographers' microscope, embracing the elements of lithology. Lectures and laboratory work. Four hours a week.

GEOLOGY

Course I. Physical geology.

Junior i.

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 i.

General considerations 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 ii.

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. Four hours a week.

Course IX. Ore deposits.

Senior V.

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 ii.

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 .

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 Σ notation, development of $f(x)$ and indeterminate coefficients, convergence, divergence, equivalence, exponential theorem, logarithmic series and logarithms, summation of series, derived functions, theory of equations, trigonometric ratios, right triangles, general definitions of functions, analytic relations, trigonometric equations, oblique triangles. Five hours per week.

Course II. Algebra, analytic geometry and spherical trigonometry. Freshman ii

Permutations and combinations, determinants, systems of coordinates, loci, straight line, transformation, equations of the conics, limits, areas and limits of sums, differentiation and integration of elementary forms, spherical formulae and solution of spherical triangles. Four hours per week. Preparation, course i.

Course III. Analytic geometry and infinitesimal analysis. Sophomore i.

Properties of the conics, equation of 2nd degree, higher plane curves, coordinates 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 ii

Applications continued, rational fractions, rationalization, formulae of reduction, multiple integration, various systems of coordinates, approximate integration, some differential equations of mechanics. Five hours per week. Preparation course iii.

COURSES IN MECHANICS

Course I. Statics and mechanics of materials. Junior i.

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 ii

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 i.

Properties of steam, perfect gases, heat engines, water power, theory of turbines. Four hours. Preparation, course ii.

COURSES IN MECHANICAL ENGINEERING

Course XVI. Steam engine. Junior ii, 36 hours.

Mechanics of the steam engine. Work in the cylinder; effect of reciprocating parts; steam distribution. Mechanism of steam engines. 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 instruments, indicator rigging; indicator cards; compounding. Preparation, course i in applied mechanics. Two hours a week.

Course XXI. Strength of materials. Junior i, 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 XXII. Mechanical laboratory. Junior ii, 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 XXV. Mechanical laboratory. Senior ii, 72 hours.

Calibration of wires, meters and other hydraulic apparatus; calorimetry; tests of pumps, engines and boilers. Open to students who are taking or have completed course xxii. Eight hours a week.

COURSES IN METALLURGY

- Course I. Assaying.* *Freshman 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 courses i, ii, mineralogy.
- Course II. Ore testing.* *Senior i.*
 Determination of methods of ore treatment. Lectures and practical work. Open to those who have completed course i.
- Course 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.
- Course IV. Metallurgy of wrought iron and steel.* *Sophomore ii*
 Lectures and recitations. Open to those who have completed course iii.
- Course V. Metallurgy of the precious metals.* *Junior i.*
 Gold, silver and platinum. Lectures and recitations. Open to those who have completed course iv.
- Course VI. Metallurgy of the base metals.* *Junior ii.*
 Associated with precious metals, including lead, copper, etc. Lectures and recitations. Open to those who have completed course v.
- Course VII. Electro-metallurgy.* *Senior ii.*
 Lectures and recitations. Open to those who have completed course VI.
- Course VIII. Field work in metallurgy.*
 Conference and reports. Last four weeks *sophomore ii.* open to those who have completed course vi.
- Course IX. Designs and specifications.* *Senior ii.*
 Supplementing thesis.

COURSES IN MINING

- Course I. Explosives, blasting, air compressors, etc.* *Sophomore ii.*
 Four hours a week.
- Course II. Mining.* *Junior i, ii.*
 Mode of occurrence of ore bodies; prospecting, shaft-sinking, tunneling, drifting, stoping, timbering. Methods of metal mining. Methods of coal mining. Hydraulic mining. Five hours a week.
- Course III. Field work.* *Junior ii.*
 Practice in mine surveying and field geology, study in mines. Open to those who have completed courses i, ii. Last four weeks of the semester.
- Course IV. Mining Engineering.* *Senior i, ii.*
 Mining machinery, underground transportation, hoisting, pumping, ventilation. Electricity applied to mining. Mine management. The examination of a mining property. Sampling ore reserves, etc. Mine accounts. Mine accidents. Mining law. Open to those who have completed courses ii, iii. Five hours a week.
- Course V. Ore dressing.* *Junior i.*
 Mechanical preparation of ore for the market, for metallurgical treatment, etc. Four hours a week.
- Course VI. Designs and specifications.* *Senior ii*
 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. *Freshman ii.*

Computation, platting, with special reference to mine surveying. Twice a week.

Course VIII. Field work. *Sophomore.*

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 II.*

Computations, methods, etc. Open to those who have completed course vii and ix. Three times a week.

Course X. Mine mapping. Six hours a week. *Junior ii.*

COURSES IN PHYSICS.

Course I. General Physics. *Sophomore i, ii.*

Experimental lectures and laboratory work.

THE
COLLEGE OF AGRICULTURE

THE
SCHOOL OF AGRICULTURE

THE
DAIRY SCHOOL

AND THE
EXPERIMENT STATION

The Department of Agriculture.

The Department of Agriculture is located on the University farm, three miles from the main campus of the University, and midway between St. Paul and Minneapolis. The campus is on a beautiful elevation overlooking the twin-cities and adjoining the State Fair grounds. The artistic buildings, and native trees, supplemented by new plantations and attractive drives add greatly to the interest of the department.

This department consists of several sub-organizations: The College of Agriculture, the School of Agriculture, the Dairy School, the Short Course for Farmers, and the State Experiment Station.

The technical agricultural work of the college of agriculture; the experiment station, and of the shorter courses is combined under professors who are heads of divisions. These professors, therefore, aided by assistants, are responsible for both the experiment work and the instruction in their respective lines.

The dean and director is in immediate charge of the experiment station, the college of agriculture, and the short course for farmers. Under the dean, the principal is in charge of the school of agriculture, and the professor of dairy husbandry, of the dairy school.

The students in the college of agriculture and those in graduate work pursue their technical agricultural studies with the professors in the college of agriculture, and have open to them a wide range of subjects in the college of science, literature and the arts.

Students in the school of agriculture, pursue their studies at University farm. Special instructors are employed to teach the academic studies of the high school grade which are necessary to supplement the agricultural work given by the various technical divisions of the department of agriculture.

Students in the intermediate course pursue all their studies at University farm, or in high schools or academies nearer their homes.

Students in the short course for farmers receive their instruction in the various technical divisions.

The college of agriculture year is from Sept. 9th to June 4th; The school of agriculture year is from Oct. 1st to March 20th; the dairy school is in session from Nov. 24th to Dec. 20th; and the short course for farmers is in session from Jan. 6th to Feb. 28th.

A more detailed account of the work of each division will be found under the respective headings.

EQUIPMENT.

The equipment of the Department of Agriculture of the University of Minnesota has been materially increased in recent years. The university farm contains two hundred and fifty acres of land. About forty acres are devoted to the campus, fifty acres to permanent pastures, and the remainder (mainly set aside for the experiment station), is used for instruction and experiments in field, garden, orchard and forest, and farm crops. The permanent pasture lands are rough and, in places, low and difficult to drain, but serve a very useful purpose. The one hundred and forty acres used for experiments and in giving instruction, have a good soil of mixed clay and sand, which is well adapted to its various uses. The experiments annually carried out on this land far exceed in importance the crops raised, though the method of culture used brings excellent yields. The amount of land is limited, hence portions of adjacent farms are rented for raising for sale newly bred seeds and for roughage for live stock.

The department of agriculture has also a farm of four hundred and eighty acres at Crookston, in the northwest portion of the state, and another of 352 acres at Grand Rapids, in the pine regions of Northeastern Minnesota, and rents land in Southwestern Minnesota, at Lynd. All this land is used for the experiments and educational work by experiment station officers. These farms were selected by the University as especially representative in locality, soil, etc., of the whole state.

A number of the most useful text-books and class bulletins have been prepared and others are being written. Special laboratories have been equipped; much of the apparatus and many of the methods of instruction have been devised by the teachers, and a considerable amount of museum material for demonstration work, for laboratory practice work and for research work has been collected. The fields, gardens, orchards, barns and laboratories afford much opportunity for observation in practical work, while the experiments in progress under the experiment station afford many advanced students opportunities to pursue research work.

BUILDINGS.

The buildings at University farm which have all been erected since 1884, are modern in their arrangement, and of comely appearance. Counting the proceeds from the old farm, and the appropriation made by the last legislature, the agricultural department of the University has now an investment in building of about \$340,000. Even now the rapid increase of students is so crowding some buildings that additional means is needed to provide permanent quarters for several important divisions, viz. the library, agriculture, entomology, the museum, a chapel and executive offices.

Dairy Hall is a commodious building admirably arranged for the accommodation of students in dairy practice work and is equipped with an

abundant supply of approved hand separators; milk, cheese, and cream vats; churns and butter workers. The dairy laboratory is supplied with all needed glassware, milk tests and other appliances used in training students in testing milk and cream and determining milk solids. It is also provided with several large lecture rooms, one of which is used in giving lectures on live stock and is so arranged that animals can be brought in for demonstration purposes when lectures on breeds and on judging live stock are given. The second floor contains the offices of the dean, the secretary, the professor of dairying, the professor of agriculture and the farm foreman.

The Home Building was the first erected on the campus. It has since been remodelled and now contains on the first floor the library, reading room, a reception room, and the offices of the principal and the registrar of the school of agriculture. In the basement are rooms which are utilized by the classes in cooking and laundering. In the two upper stories are accommodations for twenty-four students.

Pendergast Hall is a four-story building and contains on the first floor the assembly room and two small recitation rooms, one being used by the Young Men's Christian Association. On the other three floors are accommodations for ninety students.

The Dining Hall has dormitory accommodations for eighty students, besides the dining room which extends the whole length of the lower floor. About four hundred students can be served at one time.

The Girls' Home Building contains a large reception room attractively furnished with pictures, books, magazines and piano; also a commodious room used for the accommodation of day students, reference reading, and for the lectures on home administration. In addition to apartments for the preceptress there is room for about one hundred and twenty young women.

The Power House contains one lecture room with a seating capacity for seventy-five students, in which lectures are given on carpentry, power machinery and creamery engineering; also a small room containing a simple engine, steam pumps, injectors, etc. used for the purpose of instruction. The steam heat, electric light, power and water are furnished from this building for the entire campus, being carried in underground tunnels to the various buildings. For this work, four one hundred horse-power boilers, two engines and dynamos, and two deep well pumps are employed. Electric motors are used in various buildings where power is required.

The Forge Shop has been recently enlarged and a tool room, an office, an iron stock room, and a coal bin added. The shop proper covers 2700 ft. of floor space and is equipped with 44 forges, 7 vises, a foot-power trip-hammer, drill press, shear, tire shrinker, and all the necessary tools for farm blacksmithing. A blast fan furnishes blast for all the fires, and two large exhaust fans take away the smoke, giving almost perfect ventilation.

The Meat Shop affords accommodations for one hundred and twenty students in the lecture room. The killing and cutting rooms on the main

floor are well adapted to large details for practice work and the basement curing rooms offer excellent opportunity for training in this branch of the work. The store rooms are refrigerated by the ammonia process and are so arranged that work started by a student at any time can be held almost indefinitely thus making it possible to require students to finish exercises in any line.

The Agricultural Chemical Laboratory contains, besides lecture and recitation rooms, laboratories for practice in elementary agricultural chemistry, the chemistry of foods, soils and fertilizers, and domestic chemistry. These laboratories are equipped with the necessary apparatus for the testing of soils, foods, fertilizers, and agricultural products. Models and illustrative material are accessible in all of the laboratories. The laboratory and the work have both been planned to meet, as far as possible, the special needs of students in both agricultural and household science.

The New Veterinary Building has been completed and is now ready for use. On the lower floor are the following rooms: veterinary class and operating room with amphitheatre seats for 80 students; pharmacy and instrument room; box stall ward; open stall ward and contagious ward; and two dissecting rooms. On the upper floor are a large museum and physiology class laboratory and private office. There are a number of new features in the stalls and stall fixtures of the hospital, e. g. methods of feeding hay and grain, method of trying to prevent horses from getting cast in the stalls, different stall flooring-material are being tested with a view to determining relative economy, durability and varying effects on horses feet.

The Horticulture building is 50x80 feet on the ground and three stories high. Attached to it is a laboratory 26x50 feet, about 4400 square feet of greenhouses, and a machine shed 20x90 feet. One floor of the main building is devoted to physics, one floor to botany and one floor to horticulture, as are likewise the greenhouse and laboratory. The building is well equipped with apparatus and collections for instruction in physics, botany and horticulture. The class rooms have an electric light stereopticon which may be used at any time. The equipment for classes in the line of horticulture and forestry is complete, consisting of fruit models, canned fruit, grafting specimens, about 1600 photos, papier mache models of flowers of forty of the principal genera, 100 colored plates of vegetables and flowers, collection of American and Phillipine woods including some very choice sections from the Pacific coast, and apparatus for estimating timber and making valuation surveys. The laboratory is used in connection with the greenhouses, which latter are in fact but laboratories and are used solely for purposes of instruction. In the work in the laboratory each student is assigned a portion of a greenhouse bench on which he carries on a number of horticultural experiments.

The drill hall contains on the first floor the gymnasium and carpenter shop, and on the second floor, two class rooms, and offices for the entomologist and the instructor in animal husbandry. On the third floor are rooms for drawing classes and a museum.

The main barn contains on the lower floor stalls for beef and dairy cattle; on the second floor, horses, seeds, grain foods and machinery. This barn has two silos, a root cellar and ample hay bays.

The sheep barn is arranged for about a hundred sheep, and is located in the middle of a field used for growing annual pasture and fodder crops for sheep, and has a silo and root cellar.

The poultry building contains apartments for a number of breeds of fowls, and is equipped for experiments in breeding and feeding poultry.

A new swine building has been provided for by a recent appropriation.

The farm house contains, besides apartments for the professor of agriculture and foremen, rooms for laborers and students, and one wing temporarily serves as a seed breeding laboratory.

The buildings at Northwest Farm, Crookston, consist of a comfortable farmhouse, a stock and grain barn and some minor buildings.

Buildings at Northeast Farm, Grand Rapids, consist of a dwelling, a general barn, a dairy barn, a small house and a root cellar.

THE LIBRARY.

The agricultural library now contains six thousand books and about six thousand pamphlets, including reports and bulletins. Aside from the large number of pamphlets and other publications of the different agricultural institutions and societies, a large number of the most important technical and agricultural magazines are kept on file, bringing together all the agricultural literature of any importance.

The librarian of the United States Department of Agriculture having inaugurated a system of co-operation with agricultural college and experiments station libraries, sent an assistant librarian who spent two months reorganizing the agricultural library. Students and teachers can now readily find literature desired, in so far as it is collected in the library and the thanks of the department are due the Secretary of Agriculture for the valuable aid given. Further co-operation with the Department of Agriculture and the Congressional Library is being arranged.

The book room and the reading room in the Home Building have served the needs of the library to this date, but larger quarters will greatly facilitate the work of the teachers and experiment station officers, and will furnish needed opportunities for students in special as well as as those in the regular courses to consult agricultural literature.

The College of Agriculture.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*
WM. M. LIGGETT, *Dean.*
SAMUEL B. GREEN, B. S., *Professor of Horticulture and Forestry.*
HARRY SNYDER, B. S., *Professor of Agricultural Chemistry.*
T. L. HAECKER, *Professor of Dairy Husbandry.*
M. H. REYNOLDS, M. D., V. M., *Professor of Veterinary Medicine and Surgery.*
WILLET M. HAYES, M. AGR., *Professor of Agriculture.*
ANDREW BOSS, *Associate Professor of Agriculture, in charge of Live Stock.*
VIRGINIA C. MEREDITH, *Professor of Home Economics.*
JUNIATA L. SHEPPERD, *Household Science.*
FREDERICK L. WASHBURN, M. A., *Professor of Entomology.*
FREDERICK D. TUCKER, B. A., *Principal, School of Agriculture.*
COATES P. BULL, B. Agr., *Assistant in Agriculture.*

PURPOSE AND SCOPE OF THE COLLEGE COURSE.

The college course in agriculture is designed for those graduates of the school of agriculture, and students from other institutions equally well prepared, who desire further instruction in practical agricultural science, in the sciences related to agriculture, and in literature and the arts. Since all students who enter this course have had the technical, scientific and general work offered in the school of agriculture, the college course includes only advanced work of a collegiate grade. This course designs to efficiently prepare students for either farm life, or for the work of the agricultural specialist. It emphasizes the importance of plant and animal production and the up-building of rural homes and farm life, while the biological and physical sciences are made prominent.

Following the four years of preparation in practical agricultural lines in the school of agriculture, the freshman and sophomore years are devoted largely to the study of the sciences. The technical subjects relating to agriculture and household economics are mainly offered as electives in the the junior the senior years, when the freedom for election enables the student to choose as a specialty a major science, or an agricultural or a household subject around which to group related elective subjects. The elective courses during the last two years give an opportunity for further culture in literary and philosophical lines and for becoming more proficient in scientific research work in some of the many problems pressing for solution in the development of the state and national agricultural experiment stations. The instruction in the various technical agricultural and household divisions in the college course is for the most part a continuation of the work in these subjects in the school of agriculture, each subject being treated from a more technical standpoint. Students who have first grad-

uated from the agricultural school are ready in their junior and senior years to elect specialties for study and research work along lines in which they may hope to work after graduation.

Students who have taken the eight years required in the school and college course are a unit in believing that none too long a time is required for graduation. A number of the graduates of this course enter for graduate work, as do also graduates of other agricultural colleges.

There is a growing demand for men and women thoroughly trained in agriculture and household economics. The United States Department of Agriculture and numerous experiment stations and agricultural colleges are in constant communication with the department of agriculture, seeking men and women who are graduates of the college course. Agricultural papers, large farms, seed firms and manufacturers of flour are on the lookout for men and women especially qualified. Institutional positions in household economics are opening to women prepared to manage the homes of students and others collected in large institutions. The world has learned the wonderful value of trained specialists in agriculture and in home making, and the United States government, the state, and large institutions generally, which deal with farming and home making, offer great opportunities for graduates of the college of agriculture.

REQUIREMENTS FOR ADMISSION.

For graduates of the School of Agriculture—Graduates of the school of agriculture, who have completed the studies prescribed in the intermediate course, or fourth year, are admitted to the freshman class. Graduates of state high schools, normal schools or other schools of equal standing, are admitted to the freshman class after pursuing such studies for one year in the school of agriculture as the faculty may require. Before graduation, however, all of the required work of the school of agriculture must be completed.

Students from other colleges and universities—Graduates from other colleges and universities may be admitted upon presentation of certificates, and will receive credit from the several professors for all work satisfactorily completed of similar character and grade to that given in this course. Before graduation, however, each student must complete all work required in the school of agriculture.

Special students—Graduates of the school of agriculture may be admitted as special students and allowed to pursue such studies in the college of agriculture as are approved by the faculty.

REQUIREMENTS FOR GRADUATION.

After the completion of the prescribed course of study, including all of the required work and the requisite amount of elective work, students will be recommended for graduation with the degree of bachelor of agriculture.

COURSE OF STUDY.

FRESHMAN YEAR.

1st Semester.	2d Semester.
Elective from college of agriculture, 4.	Elective from college of agriculture, 4.
Drawing, 4.	Chemistry, 2.
German, 4.	Trigonometry, 2.
Higher Algebra, 4.	German, 4.
	Surveying and platting or (2) Rhetoric (4).
(1) Military Drill, 2.	(1) Military Drill, 2.
(2) Physical Culture, 2.	(2) Physical Culture, 2.

SOPHOMORE YEAR.

1st Semester.	2d Semester.
Botany or Zoology or Psychology, 4.	Botany Zoology or Logic, 4.
Chemistry, 4.	Chemistry, 4.
German, 4.	German or English or History, 4.
Elective, 4.	Elective, 4.
(1) Military Drill, 2.	(1) Military Drill, 2.
(2) Physical Culture, 2.	(2) Physical Culture, 2.
Rhetorical work, 1.	Rhetorical work, 1.

In the junior and senior years, the work is elective. Sixteen semesters are required.

Men are required to elect eight semesters from the courses offered in the college of agriculture, and eight semesters from the following subjects in the college of science, literature and the arts: Animal biology, botany, chemistry, physics, mathematics, philosophy, engineering, English, English literature, geology, mineralogy, political economy, history, astronomy, pedagogy, psychology, history of philosophy, Scandinavian, French, German, social philosophy, elements of contracts, Commentaries of Blackstone.

Women are required to elect during the junior and senior years, four full courses from the following: history, English literature, rhetoric, philosophy and French; and the equivalent of six other full courses from among subjects given in the college of science, literature and the arts, as above enumerated; and the equivalent of six full courses offered in the college of agriculture. Women who are sufficiently advanced may study music or art during the senior year, provided that no student may receive more than two semester credits in music and art together.

The student shall spend four hours per week in agricultural or (2) household practicums during each of four semesters, two semesters of which shall be in the freshman and sophomore years.

All students must advise with the dean or the committee on college and graduate work concerning all electives. No instructor shall allow any student to enter any course until such course is properly entered upon the student's registration card by the registrar of the University, and no credit shall be given for subjects in which the student has not been previously registered.

COURSES OF INSTRUCTION IN THE COLLEGE COURSE.

AGRICULTURE.

Equipment.—In the college course the general equipment of the University Farm is available for class and special instruction and for practice work. A seed breeding laboratory furnishes facilities for special instruction in field seeds and in laboratory work in plant breeding. The plant breeding nurseries, the variety testing and the seed distribution afford facilities for instruction and practice to students especially interested in these lines of work. The experiments and records in field management, in agricultural statistics and cultivation experiments provide material and opportunities for study and for gaining experience. Instruments of precision make practical the instruction in planning farms, land drainage, road making, fence building, etc. The farms of the vicinity will serve as a basis for designing farm plans and farm business, and rural engineering problems can be worked out in nearby rural communities. Many useful samples, drawings, photographs and references are being collected. The exhibits of machinery at the state fair grounds adjoining university farm, and those on exhibition in the warehouses of Minneapolis and St. Paul, supplement the collection in use at the University farm. Students can study the merchandising in grain and the milling of the various grain products in the twin cities. Statistics relating to the cost and profit of each staple farm crop are being gathered.

A portion of the instruction in agriculture is in the form of lectures. The writing of papers on special subjects is made a prominent feature. Research work is arranged for in many cases, and practice work on the farm and in the laboratory is provided. The aim is to have students get experience in field agriculture both practical and experimental, and in demonstration instruction.

Course I. Field crops and seed. 1 semester, c2-03.

In this course are considered the botany, cultivation, use and place in the rotation of the various cereal, forage, root, fiber, sugar and miscellaneous crops. Special attention is given to the subjects of permanent, rotation, annual and shift pastures, and to soilage crops; to permanent and rotation meadows; and to the production and preservation of all kinds of dry-cured and ensilaged fodders. A thesis on one or more field crops is required of each student.

Course II. Breeding. 1 semester, c3-04.

Heredity; variation; science of breeding; breeding as an art; improvement by nature and under scientific experimentation; securing foundation stocks; value of very large numbers; immense value of the occasional individual which can transmit qualities of peculiar value; use of an ideal; use and misuse of the score card; both numerical and graphic; intrinsic qualities, fancy points and distinguishing marks; pedigree records of prepotency; fundamental principles underlying the arrangement of the record books; bibliography and terminology; study of the literature of breeding.

Botany of the reproductive organs of field crops; field crop nursery management; producing new qualities by hybridizing and by change of environment; hybridizing

versus cross breeding, in-breeding and self fertilization; originating varieties and improving standard varieties; methods of disseminating new varieties; seed and plant introduction. Experimentation in the theories relating to heredity, variation and practical breeding; seed growing as a farm business; seed merchandising.

Course III. Rural engineering. ii semester, 02-03.

Subduing new prairie and timber soils; farm drainage; irrigation and irrigation works; tillage of crops, roads, their financial support, location, construction and maintenance; farm buildings; farm fences; farm implements and machinery.

Course IV. Agricultural economics. ii semester, 03-04.

Farm management; systems of farming; planning farms: fields, crops, stock, labor; farm finances, sales, prices; agricultural statistics, production, exports, wages; land laws, ownership, taxes, rental systems; transportation, mail facilities, technical education, agricultural pedagogics, farmers' organizations; relation of rural industries to other industries.

PRACTICUMS.

Opportunities to gain practical experience, to acquire greater manual dexterity in doing farm work, to secure practice in conducting experiments and to get experience in teaching agricultural subjects, are offered to those who elect one or more of their four "practicums" in agriculture. Students should arrange early in their course for this work, as the opportunities in plant breeding, in rural engineering, in field crops, in agricultural statistics and in assisting instructors in the various courses are available only at irregular intervals and must be arranged for in advance.

ANIMAL HUSBANDRY.

Equipment. Representatives of some of the leading breeds of cattle, sheep and swine are kept at University farm. Each year a number of experiments are under way in the feeding of these classes of animals, and breeding experiments are also undertaken with sheep and swine and theoretical experiments with the smaller animals. Experiments in summer feeding cattle, sheep and swine wholly or in part on pasture are carried on each year. The new veterinary building provides a temporary live stock judging room. Herds of blooded stock near the institution, and the annual show of live stock at the state fair serve for extended observation of breeds and methods of management.

Course I. Stock breeding. One-half semester.

Discussion of the principles of stock breeding as affecting breed maintenance and breed formation; standards of excellence and comparison of standards of breeds; heredity and the influences affecting it; prepotency, fecundity and their relation to successful breeding; the influence of nutrition on animal growth and form and the effect of artificial conditions, early maturity, selection and pedigree.

Course II. Feeding animals. One-half semester.

The principles of nutrition and digestion as applied to economical production; feeding rations and nutritive ratios; feed stuffs and methods of feeding; feeding of breeding stock and show stock; management of animals during pasture, yard and stall feeding for the block; feeding for specific production of wool or flesh; selection of animals for the feed lot; stabling suitable for the various classes of live stock.

Course III. Stock judging. One-half semester.

This course is calculated to meet the needs of students desiring to become expert stock judges and of those who wish to study animal form with a view to becoming breeders of superior animals. Score card work in combination with the presence of living specimens is a feature of this course. Students are drilled in judging from the standpoints of breed, type, form, stamina, quality, breeding capacity, suitability for feeding and for general and specific production. Special opportunities are given for judging live animals fitted for the block and in judging the dressed carcasses after slaughter, thus determining by observation the quality of animals judged.

LIVE STOCK PRACTICUMS.

Feeding and stable management of cattle, horses, sheep and swine; recording and calculating amounts of pasturage obtained from different forage crops keeping herd records, writing pedigrees and recording animals; calculating feeding records and cost of production; mechanical analysis of carcasses of animals to determine total amount of meat, and proportionate amounts of fat and lean; determinations of fat and lean meat with especially designed apparatus; calculating percentages of different parts of the carcasses.

AGRICULTURAL CHEMISTRY.

Equipment.—The laboratory is equipped with modern apparatus for the analyses of soils, fruits and agricultural products. The equipment contains a Berthelot-Atwater calorimeter for the determination of the caloric value of foods, apparatus for the chemical and physical analysis of soils, an electrical apparatus for determining the resistance of soils to soluble salts, and the necessary facilities for food investigations. Special facilities are offered in soil investigations, and in the analysis and testing of wheat, flour and cereal products for commercial purposes.

In all of the laboratory courses in agricultural chemistry, a fee is charged to cover the cost of material used, and breakage. The student is assigned a certain amount of apparatus and material for which he gives a receipt, and deposits \$2. with the accountant before beginning work. All apparatus returned in good condition at the close of the term, is credited to the student's account upon settlement.

Two and one-half semesters of chemistry are required in the freshman and sophomore years. All other courses are elective.

Course I. (a) General agricultural chemistry. Freshman ii, one-half semester.

Recitations, lectures and laboratory practice. Particular attention is given to the study of the elements and compounds which are of the most importance in agriculture. The laws governing the combination of the elements by weight and volume are illustrated by numerous problems. The writing of equations, chemical nomenclature, and the periodic system of classifying the elements are prominent features of the work. In the laboratory, experiments are performed illustrating the general laws of chemistry which have a bearing upon animal and plant life.

(b) A continuation of I (a). Sophomore i semester.

Course II, Agricultural qualitative analysis. Sophomore, ii.

This course is arranged to meet the wants of agricultural students. Six hours per week are given to the laboratory work and one period to a lecture and recitation. The writing of equations and the study of principles involved in the separation

of the various groups and individual compounds of elements are characteristic features of this work. It is the object of this course to familiarize the student with the processes employed in qualitative analysis so that he may be able to determine the composition of all ordinary substances, particularly of those that are of the most importance in agriculture.

Course III. Agricultural quantitative analysis. Junior or senior. i semester.

An elementary course in qualitative analysis. The principles involved in gravimetric and volumetric analysis are studied. Three periods per week are given to laboratory work and one period to a recitation and lecture. The work includes the gravimetric and volumetric determinations of iron, acidimetry and alkalimetry, the gravimetric determination of phosphorous pentoxide, the volumetric determination of calcium oxide and determination of nitrogen and potassium oxide. The object of this course is to prepare the student for special work in agricultural chemistry, and is required of all students who elect either courses vi or vii.

Course IV. The chemistry of foods. One-half semester.

Lectures. This course treats of the chemistry of human and animal foods, the chemistry of plant growth, the composition and food value of the various organic compounds contained in plants, the influences which soil and climate exert upon plant growth and the various factors which influence the value and composition of farm crops. The chemistry of human and animal nutrition is also considered. It is the object of this course to familiarize the student with the more recent investigations which have a bearing upon the chemistry of human and animal foods and to enable him to utilize these results to the best advantage in the production and use of foods. Ample facilities are offered in both laboratory and library for the study of this subject. (Given only in alternate years. Given in 1902.)

Course V. The chemistry of soils and fertilizers. One-half semester ii.

Lectures The chemical changes that take place in the soil; the various sources of plant food; the power which crops possess of obtaining food from the soil; nitrification; the laws governing the increase and decrease of the soil nitrogen and the organic compounds of the soil and the part which they take in fertility—are some of the more important topics considered. The influence which various methods of farming have upon fertility of the soil and the best methods for conserving fertility are studied. The subject of judging, rating and scaling soils forms a part of the work. (Given only in alternate years. Given in 1903.)

Course VI. Laboratory practice. (a) The analysis of dairy products. Semester i.

This course including the proximate analysis of milk, butter and cheese, the determination of volatile fatty acids, iodine absorption number, the chemical and physical properties of fatty bodies and the determination of adulterated dairy products. This work is planned to meet the wants of those who wish to become familiar with the methods employed in investigations in dairy-chemistry.

(b). The analysis of foods. One semester ii.

This work includes the determinations of starch, sugar, cellulose, and the more common and important compounds found in food materials. Particular attention is given to the analysis of wheat and flour for commercial and technical purposes. Ample facilities are offered in the laboratory for this work. The object of this course is to familiarize the student with the methods which are employed in investigations relating to the chemistry and economy of human and animal foods. Special attention is given to the study of methods of analysis and to the determination of compounds as pentosans, and the more important proteids in cereal products.

Course VII. The analysis of soils and fertilizers, (a) The chemical analysis of soils, i.

Laboratory practice. This course includes practice in the chemical analysis of soils and the study of the chemical methods employed in soil investigations. The course includes the analysis of soils by the use of strong and weak acid solvents. Particular attention is given to the study of the organic compounds, and experimental work is applied to field investigations.

(b) The physical analysis of soils, ii.

Laboratory practice in the physical analysis of soils by means of Hilgard's elutriator, and the sedimentation methods as modified by the use of centrifugal apparatus.

Courses VII (a) and VII (b) are intended for students who desire to make a specialty of the subject of soils.

DAIRY HUSBANDRY.

Equipment—Students in the college course have the advantages of the equipment of the dairy school. The feeding and breeding experiments in the dairy division of the experiment station serve a most useful purpose in the collegiate instruction. The cordial relations existing between the department of agriculture and the other state institutions are often advantageous to college students well advanced in dairy work.

Representatives of several breeds of cattle are kept for class use. Herds in the vicinity and those shown at the state fair are useful to students in this course. The dairy exhibit at the state fair and the state butter and cheese contests in St. Paul, under the auspices of the State Dairy and Food Commission, are points of interest and value.

*Course I. Dairy stock and dairy farm management.**One semester '02-'03*

Lectures, first semester, three hours per week. Practice work one hour per week.

This course is given during the first semester of the junior year. The lectures cover the breeding, rearing and management of dairy stock, the points and characteristics essential in animals intended for the dairy, practice work in judging dairy stock, and the management of the dairy herd.

*Course II. Feeds and feeding.**One semester*

This course consists of lectures covering scientific and practical questions underlying the principles of feeding. Practice work is given in formulating rations, in estimating the comparative value of food stuffs and in other problems connected with the subject. (Given in years beginning with even numbers.)

*Course III. Farm dairying.**One-half semester. '03-'04.*

Lectures and practice work, two hours per week.

In this course the student receives lectures on milk, its care, the various methods of creaming it, care of the cream, and the manufacture of butter and sweet curd cheese. A student taking this course devotes the greater portion of his time to practice work in the "farm dairy room."

Course IV. Factory course in butter and cheese.

This course is offered in December of each year. The work comprises two lectures a day, one on butter and one on cheese, and practice work two afternoons a week in butter making and two afternoons in cheese making. (Any student may take either part of this course and obtain credit for a half semesters' work.)

DAIRY PRACTICUMS.

Students are offered training two semesters in compounding rations, feeding cows, rearing calves, milking and many other details in the management of the dairy herd; operating hand separators, and other modern farm dairy appliances, the manufacture of butter and cheese and work in the dairy laboratories.

ENTOMOLOGY.

The study of entomology will be of a practical nature and only sufficient work will be given in dissecting and classifying insects to enable the student to recognize them as being useful, injurious or indifferent to agriculture and horticulture. The various artificial remedies and insecticides known to be of benefit will be discussed, as well as natural remedies based upon the life history of the insects. Injurious and beneficial insects found in Minnesota will be considered, with a view of fighting the former and protecting the latter. The relationship existing between insects and man, between insects and insects, and between insects and plants will be studied in detail. Students wishing to make a special study of economic entomology can find work in the laboratory during the summer, providing they show aptitude for such work and already possess the preliminary training.

HOME ECONOMICS.

This course is intended to give breadth, strength and thoroughness to the concept of the home, and also an appreciation of its privileges as a career for educated women.

Course I.

Lectures once a week during one semester of the junior year. The evolution of the home, the family as a social and economic institution; the relation of the home to civic life; the home as a place and an opportunity for the right development of the physical and spiritual natures.

Course II.

Lectures once a week during one semester of the senior year; home administration; the organization of a home; generic lines of expenditure; domestic service; and disposition of waste.

HORTICULTURE.

Course I. Fruit growing.

One-half semester. '02-'03.

Lectures. The study of the geography of fruit growing; outlook for fruit growing; planting, tilling and fertilizing of fruit lands; diseases and insects injurious to fruits; spraying; harvesting and marketing; varieties of vegetables.

Course II. Vegetable growing.

One-half semester. '02-'03.

Lectures. Geography of vegetable growing; tilling and fertilizing vegetable lands; irrigation and rotation of crops; seed growing and seed testing; vegetables under glass; pollination; diseases and insects injurious to vegetables and their prevention; harvesting and marketing varieties of vegetables

Course III. Green houses and their management.

One-half semester '02-'03.

Lectures and laboratory work. Green house instruction and management, temperature, soil, watering, benches; propagation by seeds, cuttings, layers and graftage; prevention of diseases and extermination of insects injurious to vegetables; rest and growth periods of plants; plants for greenhouse cultivation.

Course IV. Nursery work.

One-half semester. '02-'03.

Lectures and laboratory work. Seedage, layerage, cuttage, graftage, planting, pruning, thinning, storage of nursery stock, tillage of nursery lands; insects, diseases injurious to the nurseries and their prevention.

Course V. Plant breeding.

One-half semester '02-'03.

Lectures and laboratory work. The fact and philosophy of variation; crossing of plants; origination of domestic varieties.

Course VI. Floriculture.

'03-'04.

This course will include the work outlined in course III, but in addition, instruction will be given in the growing of flowers in the open borders in summer, and practical work in this line will be required.

Course VII. Pomology.

'02-'07.

FORESTRY.

- Course I. Forest influences.* *One-half semester.*
- Course II. Silviculture.* *'02-'03.*
Lectures and field work. *One-half semester.*
- Course III. Forestry mathematics.* *One semester '02-'03.*
Including valuation surveys, stem analyses and practice in scaling logs and lumber.
- Course IV. Lectures and field work.* *One-half semester '02-'03.*
Lumbering in Minnesota; forest management.
- Course V. Lectures and research work.* *One-half semester '02-'03.*
The forest situation in this country and its literature.

PRACTICUMS.

Practicums are offered in forestry, nursery work, greenhouse management, general horticulture and landscape gardening. Students desiring this work should arrange for it early in their course.

HOUSEHOLD SCIENCE.

The work for collegiate classes is a continuation of the instruction given in the school of agriculture, but goes more into detail than in the school course. While the home needs are first considered, attention is given to the supply and preparation of food in public institutions, boarding houses, restaurants and hotels; and the laundry.

Equipment. The rooms for instruction in cooking, dining room work and laundering, contain the necessary appliances for manual practice and for demonstration lectures. Specimens of manufactured foods, samples of cooking and laundering utensils and materials, and of dining room and kitchen furniture are provided. The facilities of the city markets give practice in marketing. The proximity of Minneapolis and St. Paul, in which are found large flour mills, manufactories of cereal foods, canning and pickling factories, and other establishments which prepare food stuffs, makes it possible for the classes to visit many places where facts of value are learned. The large public dining rooms with their kitchens, and the commercial laundries also offer opportunities for gaining valuable practical knowledge in these branches of household science. The instruction in the physical and biological sciences in the college of science, literature and the arts, and also the instruction in the college of agriculture supplements the collegiate work given in household science.

Course I. Food economics. *One semester.*

- (1) Selection of food materials; marketing; buying by sample; cost and value; quality as to freshness, flavor, etc. (2) Storage and care of foods, care of cupboards, cellars, refrigerators. (3) Selection and preparation of foods for large numbers; equipment of large kitchens, serving rooms and dining rooms. (4) Kitchen laboratories, arrangements, equipment and methods of directing practice work in cooking.

Preparation of foods: (1) Meat products, as beef tea, beef powder and beef extracts; (2) cereal products and materials made from flours and meals, methods of aerating dough, leavening agents, etc.; (3) beverages, as cocoa and koumiss; (4)

condiments and spices; (5) confections, as candies and sweetmeats; (6) sweets, as sugars and syrups; (7) commercial bakery products, as breads, biscuits, crackers and pies; (8) preserving by drying, canning, refrigerating; and with preservatives, salts, sugars, spirits, fats and acids.

Course II. Management of kitchen and dining room. One semester.

(1) The kitchen equipment; (2) kitchen marketing; (3) foods from the kitchen garden; (4) care of the kitchen; (5) disposition and utilization of kitchen wastes. The dining room: (1) equipment, furniture, decorations, china, silver, glassware, linens. (2) Management; setting the table; garnishing and table decorations. (3) Table service; duties of the host and hostess; carving and serving, reception, refreshments, etc.

Household inventories; bills of fare and dietaries, in rural homes, in urban homes, in public institutions, in boarding houses, in restaurants and hotels.

Fancy cookery; meat dishes, vegetable dishes, fruit dishes, pastries, ices, candies, sweetmeats, chafing dish cookery.

Course III. Laundering. One-half semester.

Removing stains, dyeing, setting colors, cleaning delicate fabrics, as silks, laces and fine wools; the use of cleaning agents, soaps, volatile oils and other chemicals; starches and blueing.

Commercial laundering and cleaning; power washing and ironing machinery, drying apparatus, gathering, distributing, accounts, etc.

PRACTICUMS.

Students in the college course are given opportunities to gain practical experience in cooking, laundering, and instruction. This division has charge of the large dining hall, where students may gain experience in supplying food to large numbers, to invalids, and in preparing meals for large delegations, putting up lunches, etc. Practice work is provided in preparing refreshments and dinners, also normal practice, for collegiate students who may sometimes help give instruction to the large classes of girls in the school of agriculture.

VETERINARY MEDICINE AND SURGERY.

The new veterinary building gives ample facilities for laboratory and clinical work. The hospital furnishes a wide variety of cases for study and demonstration. The dissecting room affords material and opportunity for studying the digestive organs and locomotor apparatus, and museum materials are being collected.

Instruction is given by text-book, lectures, collateral reading and by practice work in the hospital. The lectures are illustrated by means of skeletons, manikins, charts and by the living animal. Anatomy of the digestive organs and the higher physiology of digestion are given prominence in this work. Theory and practice of medicine are carried further than in the school of agriculture course. Infectious diseases of domestic animals are studied with references to causes, recognition, prevention and methods of control. Certain medicines which the intelligent stockman should understand are studied with reference to uses, doses and methods of administration. The work in this department continues through two semesters.

Course I. The muscular system. One semester, '02-'03.

Including muscle currents results of contraction, muscle fatigue and laws of muscular work; the nervous system, including irritability of nerves, electric phenomena of nerves, reflex action, and sympathetic nervous system; physiology of the skin and

nitrogen excreting apparatus; and advanced study of the veterinary physiology of digestion, taking up the digestive fluids, nervous mechanism of digestion, absorption and digestion of grains and fodders. It also includes a study of body nutrition, body income and expenditures, sources of heat supply and heat loss, and metabolism. Veterinary Physiology, by F. Smith, is used as a text and guide for this work in course I. but students are required to do collateral reading.

Course II. Locomotor apparatus. i. semester, '03-'04.

This course includes a study of the locomotor apparatus, including shoeing, diagnosis and treatment of common forms of lameness; diagnosis and treatment of common diseases; common medicines in their doses, uses, dangers and methods of administration.

COLLEGE GRADUATE WORK.

Special facilities are offered to graduate students from this and other agricultural colleges who wish to become familiar with methods employed in experiment station work, and to pursue their collegiate studies further. Courses for major and minor subjects may be arranged by consulting the professors in the different departments. Students who enter for advanced degrees register with the committee of the college of agriculture and must take their major subjects in the college of agriculture, but they may take one or both of their two minor subjects in the college of science, literature and the arts at the University campus. Graduate students registered with the committee on graduate studies in the college of science, literature and the arts may take one or both of their minor subjects in the college of agriculture.

I. The degree of Master of Agriculture will be conferred on a bachelor of this or any other agricultural college of equal grade who, not sooner than one year after graduation, if a resident graduate student at this agricultural college, shall pass an examination in certain prescribed lines of study and present a satisfactory thesis.

II. All general regulations of the college of science, literature and the arts, governing candidates for the master's degree, method of selecting work, amount of work required, degree of proficiency expected, and the time and manner of conducting the examinations, shall apply to candidates for master's degrees in the college of agriculture.

III. The degree of Doctor of Philosophy will be conferred by the college of agriculture on bachelors of this or any other agricultural college of equal grade within not less than three years after graduation therefrom under conditions similar to those prescribed by the faculty of the college of science, literature and the arts.

IV. Applicants for graduate work in the college of agriculture shall be referred to the dean of the department and to the committee on college and graduate work, which shall examine applicants and have general charge of graduate courses subject to the approval of the faculty.

Intermediate Year.

FOR GRADUATES OF THE SCHOOL OF AGRICULTURE WHO WISH TO ENTER THE COLLEGE COURSE.

The larger part of the studies in the school of agriculture are technical subjects in agriculture and home making and in related sciences. Graduates of the school who continue with the college course take a part of their work in the college of science, literature and the arts, where they are in classes with students who have graduated in city high schools.

They find it necessary, therefore, to spend a year in the further study of general academic branches, that they may advantageously enter all classes. To meet the needs of those graduates who cannot better secure such instruction in high schools near their homes, an intermediate year has been provided. Graduates of city high schools, on the other hand, are required to spend one and usually two years in the school of agriculture before they enter the college course. Thus the student entering the school of agriculture prepares for the college course in four years, and the student taking first the city high school course, then the school of agriculture course, spends five or six years in high school work.

The following prescribed course, or its equivalent taken in some other school, is required of graduates of the school of agriculture to gain entrance into the college of agriculture:

FIRST TERM.	SECOND TERM.
Algebra, (5)	Algebra, (5)
Geometry, (5)	Geometry, (5)
English, (5)	English, (5)
General history, (4)	Economics, (4)

The courses in mathematics for the intermediate year covers Wells' New Higher Algebra from the highest common divisor to logarithms, and Wells' Essentials of Plane and Solid Geometry, beginning with Book III. The work preliminary to these courses is done by the student in the B and. A years in the school of agriculture.

The course in English extends through both terms. Two periods a week are devoted to composition, with Scott & Denney's Composition-Rhetoric as a text-book, and three to the study of literature, which will also be made the basis of considerable written work. In the year 1901-2 the class studied characteristic works of the following authors: Shakespere, Bacon, Milton, Addison, Gray, Goldsmith, Burns, Wordsworth, Lamb, Macaulay, Ruskin, Browning and Tennyson. Individual members were assigned readings from various other authors.

General history is given during the fall term. Text-books, reference reading and lectures are employed. The aim is to make the student acquainted with the important epochs in the history of mankind. Especial attention is given to the social and political status of the tiller of the soil—to agricultural methods and conditions in different ages and nations.

In economics it is the purpose to introduce the students to the essential principles of the subject and to prepare them for further study. Instruction is given by means of text-books, reference reading and lectures. Problems of rural life and the relation of the farmer to commerce, finance and public welfare are discussed.

Members of the A. class in the school of agriculture, who have a light program, may be registered for one or more subjects in this intermediate year.

The School of Agriculture.

FACULTY.

- CYRUS NORTHROP, LL. D., *President.*
WILLIAM M. LIGGETT, *Dean.*
FREDERICK D. TUCKER, B. A., *Principal, Mathematics, General History, Economics.*
SAMUEL B. GREEN, B. S., *Horticulture, Forestry.*
CHARLES R. ALDRICH, *Drawing, Farm Buildings.*
WILLIAM ROBERTSON, B. S., *Agricultural Physics.*
J. A. VYE, *Penmanship, Accounts.*
HARRY SNYDER, B. S., *Agricultural Chemistry.*
T. L. HAECKER, *Dairy Husbandry.*
M. H. REYNOLDS, M. D., V. M., *Comparative Physiology, Veterinary Science.*
WILLET M. HAYS, M. Agr., *Agriculture.*
THOMAS SHAW, *Lecturer, Live Stock.*
J. M. DREW, *Blacksmithing, Poultry.*
ANDREW BOSS, *Animal Husbandry.*
WILLIAM BOSS, *Carpentry, Power Machinery.*
E. W. MAHOOD, M. A., *Algebra, Civics, and Director of Gymnasium.*
JUNIATA L. SHEPPERD M. A., *Cooking, Laundering.*
MARGARET BLAIR, *Sewing.*
VIRGINIA C. MEREDITH, *Preceptress, Home Economics.*
CHAS. F. KEYES, A. B., *Registrar, Geography, U. S. History.*
SOPHIE L. PENDERGAST, B. L., *English (Resigned).*
HAYDEN S. COLE, 1st Lieutenant, U. S. Army, *Military Science.*
WILLIAM A. WHEELER, B. Agr., *Agricultural Botany.*
FREDERICK L. WASHBURN, M. A., *Zoology, Entomology.*
CATHERINE COMFORT, B. L., *English.*

ASSISTANT INSTRUCTORS

- ROGER S. MACKINTOSH, *Horticulture.*
ERNEST W. MAJOR, B. Agr., *Dairying.*
JOHN A. HUMMEL, B. Agr., *Agricultural Chemistry.*
MARY A. BULL, *Cooking, Laundering.*
ARTHUR C. KOERNER, *Music.*
GRACE L. WHITRIDGE, *Physical Training.*
CLARENCE B. RANDALL, *Drawing, Farm Buildings.*
D. A. GAUMNITZ, *Dressing and Curing Meats.*
COATES P. BULL, B. Agr., *Agriculture, Rural Engineering.*
MARY S. MCINTYRE B. S., *Librarian.*

When applying for admission or information address Frederick D. Tucker, Principal, St. Anthony Park, Minn.

OPENING.

The school year opens October 1st, 1902, and closes March 20, 1903. The fall term closes Friday, December 19th, and the winter term begins Monday, Dec. 29, giving a vacation of ten days. Owing to the shortness of the school year, it is expected that students will be on hand the first day of the term, that registration may be completed and work be begun promptly. Students registered in the fall term will not be received after the first two days of the winter term, unless they present a reasonable excuse for such delay.

THE SCHOOL OF AGRICULTURE—ITS PURPOSE.

There are two distinct functions which are performed by the school of agriculture. It offers a practical course of study designed to fit young men and young women for successful farm life, and it serves as a preparatory school for the college of agriculture. Its place in the system is that of the secondary school and it is frequently referred to as the agricultural high school.

For the young people who cannot pursue the full college course the school supplies a training in the general branches supplementary to the grammar school work and a thorough course in the leading branches of agricultural knowledge put in practical form by means of the constant application of lessons in the field, laboratory, or workshop. Methods are eminently practical, and the study goes far enough to give the student sufficient knowledge of the subjects for the ordinary uses of farm life.

The details of this work, the division of the time for the various subjects, and the range of work required of the students will be found outlined in the following pages.

It is the aim of the school of agriculture to make good farmers and good citizens. The claim that education tends to take young men and women away from the farm is here combated by the creation of an atmosphere which constantly magnifies the occupation of the farmer, and brings clearly before the students the possibilities which lie before the intelligent and practical agriculturist.

The farm home and farm life are made attractive by the ever present example of what higher education, practical agricultural knowledge, and high standards of citizenship can make of the profession of farming. The young men are taught that farming is a pursuit offering the widest scope for their energies and talents, and as attractive remuneration as most classes of safe business.

The young women learn the possibilities of elevating farm life and making farm homes most attractive.

The school, then, does not educate students "away from the farm." On the contrary it educates them towards the farm. This is proved by the fact that eighty two per cent of the students return to agricultural occupations after leaving school. The several hundred graduates of the school of

agriculture, most of whom are living on Minnesota farms, are already proving the success of the principles and aims of the school by their active influence in developing the agricultural interests of the state.

The home life of the students at University farm is watched over by several members of the faculty, and it is the aim to provide such interests outside the regular school work as may assist in rounding out the characters of the young men and women. Literary societies afford opportunities for experience in writing, public speaking and debate. The faculty aid in giving receptions and in social gatherings which provide social experience. In the work of the Young Men's Christian Association and the Young Women's Christian Association there are plentiful opportunities for training in cooperative religious activity. Student and alumni clubs and organizations, and a progressive periodical "The Farm Students' Review" published by the alumni, are aids in learning how to work for the betterment of agricultural conditions.

Through its location adjacent to the chief cities of the state, the school affords to its students many chances to attend meetings of general or agricultural interest; to become acquainted with state institutions and official life; and generally to acquire a practical fund of information about affairs which will be of value in later years.

Through the endowments and appropriations of state and national government the school is maintained without tuition charge, and the faculty so conduct the cooperative arrangements for students that excellent board is secured at low rates.

The faculty also aids the students in the purchase of military suits, the rent of text books, and other matters of necessary expense.

The young men and women of the state who desire to become farm home-makers are cordially invited to enter the course at the school of agriculture. They are urged to come with suitable preparation—that is, the complete mastery of the common school branches; and to come with the intention of earnest and conscientious work throughout the entire three years' course.

HOW TO GET TO THE SCHOOL.

Check your baggage to Minneapolis.

Wednesday and Thursday, October 1st and 2nd, members of the Y. M. C. A., wearing lettered badges will be at the Union Station in St. Paul, and at the Union, Milwaukee and St. Louis Stations in Minneapolis, to meet and direct new students.

Take the Como Interurban car from either St. Paul or Minneapolis and get off at Dooley avenue.

The school will transport trunks at the opening of the school from Minneapolis for 25 cents each. No charge will be made for the return of the baggage at the close of school provided it is ready to go on the regular days assigned.

ADMISSION FROM COUNTRY SCHOOLS.

Applicants for admission will be examined in English grammar, arithmetic, history of the United States, and geography, unless they present state certificates showing that they have completed the eighth grade work in these subjects.

Students from city or village schools will not be admitted except, in addition to the above requirements, they present certificates from the principal of such schools showing completion of eighth-grade work and honorable standing in department.

State High School board certificates are accepted for work in English, physiology, algebra, geometry and civics.

Applicants who cannot obtain instruction in the common branches at their home district may be provisionally admitted if they can pass examinations in reading, letter writing, arithmetic through fractions or bring certificates from their county superintendents. No such student shall be registered for more than one term in preparatory work except by approval of the registration committee or faculty.

No student who can complete the common branches in their home schools will be admitted.

Applicants for admission after the opening of the term will, in addition to the regular entrance examinations, be required to show proficiency in the work done by the class up to the time of their application. All who cannot enter by the first of November should wait until the beginning of the winter term.

EXPENSES.

The total expense for the year need not exceed \$85. This amount does not include the cost of the required military suit for boys, traveling or personal expenses.

The cost to the student for board, heat, light and washing is the actual cost of maintaining the table and caring for the house. This does not exceed \$3 per week. An assessment of \$12 is made in advance for the purchase of provisions at cash prices. At the end of each month the actual cost of board is calculated and an assessment made. At the final settlement the \$12 assessed the student when he first entered the school is credited to his board account. The culinary department is managed by an experienced matron and all the buildings are under the supervision of the dean. The buildings are all lighted with electric lights and warmed by steam. The sleeping-rooms are each furnished with a bedstead, mattress, dressing bureau, chair and table.

No deductions in charges are made for absence of less than four days. If students are compelled to be absent for that length of time they will be allowed half rates, *if they arrange with the matron before leaving.*

Text-books are furnished at a term rental of \$1 to students who do not desire to purchase.

FEEs.—Each student pays an incidental fee of \$1.50 per term, and also pays for breakages of apparatus used in practical work.

A competent nurse is kept on the ground to care for the sick. To meet this expense each student is charged a fee of 50c per term.

DEPOSIT.—In addition to the assessment of \$12 for board, a deposit of \$5 is required of each student as a guaranty for the return of all books and other articles borrowed.

MONEY REQUIRED.—On entering school the student must make a payment of \$20; \$12 on board, \$5 deposit, \$1 book rent, \$1.50 fee and hospital fee 50c. If books are purchased on entering no rental is charged.

MILITARY DRILL UNIFORM.—All male students are required to provide themselves with the prescribed uniform, which consists of navy blue blouse, trousers and cap, and is as neat and economical a dress as the student can obtain. The suit complete, to measure, will be furnished under special contact for \$10.75.

Each student furnishes four sheets, one pair of blankets, one quilt, one bed spread, one pillow, three pillow cases, towels, comb and brush.

An assignment of rooms will be made at 9 a. m. commencement day and will hold good only until 8 p. m. the first day of the following term, when the student's presence will be necessary to make good his claim.

Students wishing to retain their rooms after vacation must be on hand when the second term opens, or pay one-half the price of board and room for the time they are late.

Students arriving after the dormitories are filled, will be compelled to find rooms elsewhere at an additional cost of 50c per week.

REQUIREMENTS FOR GRADUATION.

First—The completion of the prescribed course of study with an honorable standing in deportment.

Second—An essay of not less than one thousand words upon a topic connected with agriculture or home economics.

Third—For young men, a practical experience in field work at the University farm or elsewhere, as shall appear in reports received from responsible sources.

STUDENTS' DEBATING SOCIETIES.

Societies for the purpose of improvement in elocution and debate and for obtaining instruction in the form of lectures give excellent opportunities for entertainment and culture.

LECTURE COURSE.

During the school year a lecture and entertainment course consisting of six lectures and concerts is given in the chapel at a cost of 75 cents for the series. The best talent is secured and the course is both instructive and elevating.

October 10. "The American Home," Rev. Thomas McClary; Oct. 17, "Wm Moris, or the Gospel of Work," Elbert Hubbard; Nov. 1, Concert, Instrumental and Vocal, Parker Concert Co.; Jan. 16, "Value of Life and Opportunity," Rev. Norman Bartlett; Feb. 12, "Hickory Farm,"—Humorous, Melvin Robinson; March 6, "Joy of Farm Life," Rev. J. M. Cleary.

STUDENTS CHRISTIAN ASSOCIATIONS.

The Young Men's and Young Women's Christian Associations have for their objects, social fellowship and moral and spiritual development. To this end two receptions are held each year, and each week Bible classes, a general religious service and mid week prayer meetings are carried on. The associations are non-sectarian so that all students may find in them an opportunity for Christian growth and mutual helpfulness.

ATHLETIC ASSOCIATION.

The students have a well-organized athletic association and a well-equipped gymnasium. A competent instructor is in charge each evening. An opportunity is thus given for a healthful amusement and for needed physical exercise.

COURSE OF STUDY.

FIRST (C) YEAR.

FIRST TERM.

Agricultural Botany [5]

*Drawing [2]

Music and Gymnasium work [2]

English [5]

*Blacksmithing [2½]

*Carpentry [2½]

Military Drill [2]

Agriculture [3]

or

*Laundering [1]

Physical Culture [2]

*Sewing [3]

Social Culture [1]

Field Agriculture [3]

SECOND TERM.

Agricultural Botany [5]

*Farm Accounts [2½]

Music and Gymnasium work [2]

Comparative Physiology [5]

Study of Breeds [3]

*Carpentry [2½]

*Drawing (Farm Buildings) [2]

Blacksmithing [2½]

Military Drill [2]

or

†Cooking [2]

*Drawing (Farm Houses) [2]

Physical Culture [2]

SECOND (B) YEAR

FIRST TERM.

Agricultural Physics [5]

Dairy Chemistry [2]

*Dairy Husbandry [2½] { Dairy Lectures
Dairy Practice
Dairy Breeds

Fruit Growing [3]

Music and Gymnasium work [2]

Algebra [5]

COURSE OF STUDY—Continued.

*Stock Judging [1] Breeding [2] Military Drill [2]	} or {	*Cooking [2] Household Art [1] Physical Culture [2] *Sewing [2]
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SECOND TERM

Agricultural Chemistry [5]

Dairy Husbandry [2½]	{ Dairy Stock Lectures Dairy Practice Dairy Feeding
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Music and Gymnasium work [2]
Agricultural Physics [5]
Vegetable Gardening [3]

Field Crops [5]
Military Drill [2]

} or {	*Cooking [2] Home Management [1] Physical Culture [2] *Sewing [2]
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THIRD (A) YEAR.

FIRST TERM.

*Agricultural Chemistry [5]

Forestry [3]

Music and Gymnasium work [2]

Entomology and Zoology [5]

Poultry [3]

*Grain and Machinery [1]
*Veterinary Science [2½]

} or {	*Cooking [2] *Sewing [2]
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SECOND TERM.

Civics or Geometry [4]

Plant Propagation [3]

Dressing and Curing Meats [1]

*Stock Judging [1]

Meats [1]

Home Economy [1]

Feeding [3]
Soils and Fertilizers [5]
*Veterinary Science [2½]

} or {	*Cooking [3] Domestic Chemistry [3] Domestic Hygiene [1] *Sewing [3]
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Figures in brackets indicate the number of hours per week in which the subject is pursued. All work in subjects marked thus extend through double time in the daily program. †Three periods.

ASSEMBLY.

On each school day at 11:40 a. m. the students assemble in the chapel. After the opening exercises brief talks are given by the principal, members of the faculty, and invited guests.

Members of the graduating class will, at this period, discuss the best books in literature and articles on public questions which appear in the leading magazines.

This plan gives to the students, in the course of the year, many things which will strengthen their lives for meeting the demands of citizenship in the rural communities.

SCHOOL OF AGRICULTURE—PROGRAM, FALL TERM, 1902.

INSTRUCTOR.	8:15-9:00	9:05-9:50	9:55-10:40	10:45-11:30	11:40	1:15-2:00	2:05-2:50	2:55-3:40	3:45-4:30	4:35-5:20
Aldrich.....						C Drawing 2, 5, or 1, 4		C Drawing 2, 5 or 1, 4		
Blair.....			B Sewing, 4, 5			C Sewing, 1, 3, 5		C Sewing 1, 3, 5		
Boss, A.....						B Sewing, 2, 4		A Sewing 2, 4		
Boss, W.....		A Power of Machinery, 0				B Breeding, 2, 3				
Colo.....						B Stock Judging, 4		C Carpentry 1, 4 or 2, 5		
Drew.....		A Poultry				C Carpentry 1, 4 or 2, 5	X Carp Lec 3	C Carpentry 1, 4 or 2, 5		
Green.....		1, 2, 3	1, 2, 3	1 and III		C Blacksmithing 1, 4 or 2, 5		C Blacksmithing 1, 4 or 2, 5		C Military, 1, 3
Haecker.....		A Poultry	A Poultry II and IV	B Fruit Gro'g	B Fruit ro'g	X Lec., 3		Y Lect 3		B " 2, 4
Hays.....			1, 2, 3	1, 2, 3		A Forestry 1, 2, 3				
Keyes.....	C II and IV Agricul 1, 2, 3	CI Field Agriculture 1, 3, 5		C III Agriculture 1, 2, 3		B Dairy Lecture 15	B Dairy Practice 1, 3 or 5			
Koerner.....						Machinery and Handing Crops				
Mahood.....	II and IV B Algebra	I and III B Algebra	PI Arithm'c	P II Arithm'c		P Geography	P History			
Meredith.....	G English	P & C III English	CI & IV Eng.	C II English						C Music, 2, 4
Comfort.....		C III Comp. Physiology	C I & IV Com Physiology							A Music, 5
Reynolds.....	B I Physics	B II Physics	B III Physics	B IV Physics				A Vet. Science 2, 4		B Music, 1, 3
Robertson.....	C II and IV Study of Breeds 1, 2, 3									
Shaw.....										
Shepperd.....										
Snyder.....		A. Agr. Chem.	B II and IV Dairy Ch'y 4, 5	B I III Dry Chem 4, 5 A I Lab Ag Chem 1, 2, 3, 4		B Cooking 3	A Cooking 4, 5	C Laund. 1, 2, or 3, 4	B Cooking 5	
Tucker.....		G Geometry	G Gen. His.	G Algebra				A II Agr. Chemistry 1, 3		
Vye.....	Penmanship					Accounts 2, 5 or 1, 4	Y Lectures 3	Accounts 2, 5 or 1, 4	X Lectures 3	
Wheeler.....	C I Agr. Bot.	C II Agr. Botany	C III Agr. Botany	C IV Agr. Botany						
Whitridge.....		C Physical Training 2, 4	B I, II Phy'c'l Training 2-4							
Washburn.....	A Entomology & Zoo.									

ASSEMBLY.

SCHOOL OF AGRICULTURE—PROGRAM, WINTER TERM, 1903.

INSTRUCTOR.	8:15-9:00	9:05-9:50	9:55-10:40.	10:45-11:30.	11:40	1:15-2:00	2:05-2:50	2:55-3:40.	3:45-4:30	4:35-5:20
Aldrich.....					ASSEMBLY.	C Drawing, 2, 5, or 1, 4.		C Drawing, 2, 5, or 1, 4.		
Blair.....						B Sewing, 2, 4.		A Sewing, 1, 3, 4.		
Boss, A.....						A. Feeding 2, 3, 5.	A. Dressing	A. Stock Judging 1.		
Boss, W.....						C Carpentry 1, 4, or 2, 5.	Cur. Meats 1	C Carpentry, 1, 4, or 2, 5.	A. Meat 2.	
						X Carp Lec. 3		Y. Carp. Lect. 3		
Cole.....										C. Mill. 1, 3.
Comfort.....	G. English.	C. IV. Eng	C. I. IV Eng.	C. II. Eng.						B. Mill. 2, 4.
Drew.....										
	II, III, IV									
Green.....	B Veg. Gard			I.						
	2, 3, 4.			B. Veg. Gard						
Haecker.....				2, 3, 4.						
	II, IV.	III. B Field	II. IV. B.							
Hays.....	C Agr.	Crops.	Field Corps.							
	1, 2, 3.									
Keyes.....										
Koerner.....										
Mahood.....	P. I. Arith.	A Civics,	P. II. Arith.	A Civ. 1, 2, 3, 4						
		1, 2, 3, 4.								
Meredith.....			(B) Home	C. Home						
			Manage. 5.	Econ., 5.						
Reynolds.....		C. III. Physio.	C. I. Physiol.							
Robertson.....	B. I. Physics.	B. II Phys.	B. III Phys.	B. IV. Phys						
Shaw.....	C. II, IV.	C. I. Study of								
	Study of B.	B. 1, 3, 5.								
	1, 2, 3.									
Shepperd.....										
Snyder.....	A Domes.	I. IV.	Soils & Fert	II. III.						
	Chem., 3, 4, 5.	B Agr. Chem.		B. Agr. Chem.						
Tucker.....		A Geom.	Economics.	G. Algebra.						
		1, 2, 3, 4.								
Vye.....	Penmanship.	C. I. Phys.	B. I. Phys.							
Whitridge.....		Tr. 2, 4.	Tr. 2, 4.							
	C. I.	C. II.	C. III.	C. IV.						
Wheeler.....	Plant Study.	Plant Study.	Plant Study.	Plant Study.						

The School of Agriculture.

COURSES OF INSTRUCTION IN THE SCHOOL OF AGRICULTURE
 AGRICULTURE.

The instruction in agriculture, as in horticulture, etc., continues throughout the course and is outlined as follows:

Course I (C) Introductory agriculture:

Soils; selecting and planting farms; subduing the fields; drainage; irrigation; fences; roads; buildings; water supply; groves and introductory lessons concerning farm business, farm life and the relations of general science to agriculture.

Course II. (B) Field crops and farm management:

Farm management: Remodeling farm plans; rotation of crops; manuring-production and management of farm manures, green manure crops, and the place of commercial fertilizers in field management in various parts of the state; farm administration, management of fields in relation to fertility, to weeds, to yields, to live stock and to profits.

Field crops:—Place in the rotation; preparation of the land; planting; cultivating; harvesting; storing and marketing of grains, field roots, fiber crops, sugar crops, grasses, clover and other forage crops; planting, care and use of pastures and meadows.

Weeds:—Keeping weeds down by careful crop rotations; careful field work, and good methods of farming generally; study of botany and habits of the various species of harmful weeds; methods of destroying each class of weeds.

Breeding:—Laws of heredity and variation; possibilities of increasing values; improvement and formation of varieties; general facts as to methods of breeding; specific plans of breeding leading field crops.

ANIMAL HUSBANDRY.

Course I. (C)—Study of breeds.

This work covers a discussion of characteristics of the leading pedigreed breeds of beef cattle, sheep and swine adapted to northwestern conditions; the environments to which each breed is especially suited; and practice in the selection of animals that are representative of the various breeds.

Course II. (B)—Breeding.

Students receive instruction in the principles that govern breeding, in the influences that affect heredity, and also in the care and management of breeding stock.

Course III. (C)—Feeding.

The principles of feeding as applied to the production of horses, beef cattle, sheep and swine are taught. Special attention is given to the choice and preparation of foods for animals during different periods of growth and during the time they are used for breeding purposes and to summer feeding and pasturage. Practice is given in compounding rations that will include in the best manner the food stuffs commonly produced on the farm. As far as is practicable, these talks are illustrated by the presence of living specimens of the animals under discussion.

Course IV. (A)—Dressing and curing meats.

The instruction given the men consists of demonstration lectures on the preparation of meat for farm use. They are required in addition to take two weeks practice work in dressing, cutting and curing such meat as is likely to be used on the farm. Work is also given them in selecting and judging fat stock, and in judging dressed meats.

The instruction given to the women in the subject of meats pertains to the selection and value of different classes of meat, and to the best methods of curing and preserving.

STOCK JUDGING.

During the B. and A. years classes are arranged for work in stock judging in connection with courses II, III and IV. Score cards are used to an extent sufficient to familiarize students with that method of judging, and special efforts are made to do systematic and closely critical work in the selection of animals representative of the breeds and for breeding purposes. Living specimens are used and rings will be made up for the student contests in stock judging. In connection with the work in dressing and curing meats, the judgment passed on live animals for the block is verified by score cards, judgment of the dressed carcasses and by actual block tests. These tests are made by the students and bring out the percentage of meat in each commercial cut of the carcass. The quality of meat is passed upon in this connection by experts, and a careful report made to ascertain the type of animals best calculated for the production of the most meat of the best quality.

AGRICULTURAL CHEMISTRY.

One term is given to the study of the elements and compounds which are of most importance in agriculture. This work is planned to prepare the student for intelligent study of the subject of agricultural chemistry, particularly of the chemistry of foods, and of soils and fertilizers, and at the same time to familiarize the student with the more important chemical changes which take place in every day life. Laboratory practice forms a prominent feature of all of the work in agricultural chemistry.

Course I. (B)—Dairy chemistry.

The chemical and allied changes which take place in the handling of milk and in its manufacture into butter and cheese, and the application of these principles to the production of milk and its products form the basis of this work.

Course II. (B)—Chemistry of foods.

The composition of plant and animal bodies, the chemistry of the plant and of its food and growth, the chemistry of animal nutrition, digestibility and value of foods, and the laws governing the economic uses of foods, are some of the subjects considered. The composition and the utilization of farm crops for food purposes, and the application of the principles of chemistry to plant and animal life form the basis of this work.

Course III. (B)—Soils and fertilizers.

The composition of soils, and their properties, the sources of plant food, the kinds and amounts of food required by crops and the best ways of supplying these demands, the various forms in which plant food exists in the soil, farm manures, their uses and action upon the soil, the income and outgo of fertility from the farm, soil exhaustion and soil improvement, the rotation of crops, as based upon the chemistry of soils and the principles governing the conservation of the fertility of the soil form the more important features of this subject.

Course IV (a) Domestic chemistry.

The combination of human foods to the form balanced rations, dietary studies of families, cost and value of foods, losses in the cooking and preparation of foods, cereal food products, animal food products, adulteration of foods and their detection, fuels, soaps, dye stuffs and colors, composition of common household utensils, the household water supply, preparation of home made baking powders, bakers'

chemicals, composition, food value and characteristics of tea, coffee, chocolate, cocoa, molasses, honey, vinegar and spices, the grading and testing of wheat flour and the chemistry of bread making, form the essential parts of this work.

ALGEBRA.

Algebra is required during the first term of the second year. This work covers Wells' *New Higher Algebra* to highest common factor. Special attention is given to literal notation, negative numbers, the equation and factoring.

BLACKSMITHING.

The students are instructed in the management of the forge and fire, and in bending, shaping and wedding iron and steel. They are required to make links, rings, hooks, bolts, clevises, whiffletree-irons, tongs, cold-chisels, punches; in short, to become familiar with all the operations necessary to enable them to do their own repair work when they return to the farm. Particular attention is given to rapid and accurate wedding and to the shaping and tempering of steel tools. The forges used are such as any farmer can make for himself, and each student is taught to make his own tools, so that he will be able to furnish his shop with very little outlay.

CARPENTRY.

Instruction is given by means of text-books, lectures, and work in the shop and drawing room in the care and use of tools, including setting and filing saws, filing bits, grinding plane irons, chisels and other tools; also in laying out work and framing buildings. Methods of construction are illustrated by models and drawings. Various articles for use about the farm are manufactured by the students.

CIVICS.

During the last term of the course students receive instruction in this science, and graduate with a good understanding of the origin, necessity, nature and various forms of government, and the machinery employed to carry on public works, establish justice and provide for the common defense; of the organization and management of local institutions, the town, the village, the city, and the county; the manner in which states are created and the affairs administered; the three departments,—legislative, judicial and executive, and the functions of each; the interdependence of the state and its citizens, as well as the powers and obligations of each, by due attention to which the state may be strengthened and the condition of its citizens ameliorated.

The relation of the state to the general government; the constitution, and the powers it confers; and the provisions for amendments,—are taught. The more important principals of commercial law, including contracts, agency, partnership, corporations, and commercial paper, receive attention. Instruction is also given in the United States method of surveying public lands.

COOKING.

The course in cooking extends through five terms of the curriculum as given below, with the subjects covered in each term.

Course I (C) second term—Kitchen management; care of cooking utensils, glass, china and silverware; measuring and invoicing; cooking vegetables, cereals and breads.

Course II. (A) First term—Cooking meats, preserving fruits and vegetables.

Course III. (B) Second term—Eggs, beverages, soups, salads and table service.

Course IV. (A) First term—Marketing and care of foods; dairy dishes, made over dishes, invalid cooking.

Course V. (A) Second term—Desserts, food rations, dietaries, confections, bills of fare and dining room.

DAIRY HUSBANDRY.

Farm dairy lectures.—A course of lectures is given in farm dairying, giving instruction in the care of milk and utensils, explaining the principles involved in creaming milk by the gravity and centrifugal processes and giving full instruction in regard to running farm separators and the manufacture of butter and cheese in the farm dairy.

Dairy practice.—Students receive practical training in the most advanced methods of creaming milk, ripening cream, churning, working and packing butter, the manufacture of sweet curd cheese, and measuring the value of milk by the Babcock test and lactometer. This practice work begins the third week of the first term and continues through the school year.

Dairy stock.—During the last half of the first term students receive instruction in regard to characteristics of the various breeds of dairy cattle, their origin and comparative adaptability for the dairy. Lectures are given upon the points essential in animals intended for the dairy. The students have practice work in judging dairy stock.

Feeding.—During the second term lectures are given covering both the scientific and practical phases underlying the principles of feeding. Practice work is given in compounding rations and estimating the comparative value of food stuffs.

DRAWING.

The student is taught the practical value of drawing for the purpose of designing and arranging buildings, machinery, etc. He makes drawings of the shop exercises then works from his own drawings, thereby learning the application.

Designs are made for dwellings, barns, out buildings, and machinery. As practical subjects for their designs students are requested to bring from home data for plans of buildings needed on their farms. Estimates are made of the amount of material required and cost of construction.

ENGLISH.

Course I. (C) The first year's work in English consists of almost daily practice in the simpler forms of composition and the study of the more important grammatical relations. Applicants for admission to the C class should be familiar with the inflections of nouns, pronouns and verbs, the definitions and classifications of phrases and clauses and the common case constructions.

Course II. (B) Once a month throughout the school year the members of the B class will prepare essays of about a thousand words, and submit them for criticism.

Course III. (A) During the year 1902-3 a series of literary programs will be presented in chapel by the members of the graduating class. The numbers will include abstracts of leading magazine articles, biographical sketches, book reviews and selections from fiction; special prominence will be given to authors depicting American life.

ENTOMOLOGY.

The class in entomology receives instruction of a practical nature. The course is divided as follows:

Classification of insects sufficient to enable the student to distinguish between useful and injurious insects and to apply remedies intelligently, as the remedies must be selected according to the kind of insect to be combated.

Insecticides and their application; the most approved methods of using arsenical poisons, kerosene emulsions, and other preparations,—are taught.

Natural remedies and nature's methods of preventing increase of injurious insects receive due attention so as to enable the student to apply their teachings. The relation of other animals to insects is also taught, so that the student may know both his friends and his foes. Special attention is given to injurious and useful insects of Minnesota.

GEOMETRY.

Geometry is offered in the second term of the third year, as an elective in place of civics to those who wish to prepare for a college course. This work covers the first two books of Wells' Essentials of Plane Geometry.

HOME ECONOMICS.

Course I. (C) Social culture.

A course of lectures is given on the usages of society including manners, behavior, the voice, conversation, form of address, invitations, etc. Personal fitness for society is shown to depend upon attention to the laws of health and to personal habits as well as upon the refinement of a cultivated mind and sympathetic spirit. Suggestions are made in reference to reading, literary taste and the choice of books. Especial stress is given to the thought that family life ought to be the highest expression of good society and that next to the power of thinking correctly is the power of approaching others with ease and speaking with tactful directness.

Course II. (B) Household art.

Lectures upon the house and grounds, noting the distinctive character of the country home and opportunity for embellishment found in the surroundings. The intention is to show that thought and energy can accomplish as much or more than money in making a farm home attractive; also to show the importance of acquiring correct knowledge and correct taste in order to secure every possible convenience together with harmonious forms, colors and styles in the plan, finishings and furnishings of the house. The relation of beauty to use and the influence of surroundings upon life and character are considered in connection with the possibilities for improvement that may be found in simple and inexpensive methods.

Course III. (B)—Home management.

The subject includes both housekeeping and home-making and the instruction is based upon the belief that housekeeping is a business as important as it is difficult and that home-making is the noblest form of human endeavor. The care of the house and household belongings, of the food and the clothing, as well as the ordering of family life are considered in their relation to an adequate plan for home management. To start the student in the right way of becoming mistress of the business of housekeeping and home-making is the end sought. The practical benefit to be derived from the knowledge students gain in the cookery, sewing, dairy, laundry and other classes, is emphasized and shown in its relation to an adequate plan for the daily program for the home.

Course IV. (A)—Home economy.

The lectures are a study not only of the just proportion between expenditure and income, but of the definite proportion in the expenditures made for existence, comfort, culture and philanthropy. A study is made of the sources of income, especially of the income from the farm in the form of house, food and luxuries; the purchase of clothing, household stores and furnishings is considered from the standpoint of the suitable. The relation of cash and credit to cost is also considered. Attention is given to savings and forms of investment, a bank account and the use of a check book. Students are required to submit an account setting forth in detail the use of a certain named income expended in the support of a family for one year, embracing not only every item of necessary home expense, but also an outlay made for travel, luxuries, accident, sickness, or other emergencies. The habit of keeping a household account is calculated to strengthen the judgement in the wise use of money.

Course V. (A)—Domestic hygiene.

Several lectures by a physician will be given upon maidenhood, maternity and infancy. These special lectures will be supplemented by the regular lectures which consider the health of the family as dependent upon pure food, pure water, personal cleanliness and proper habits as well as upon heredity. The aim is to impress the truth that a knowledge of and obedience to the laws of hygiene are essential to the preservation as well as the restoration of health.

HORTICULTURE AND FORESTRY.

Course I (B)—Fruit growing is taught with reference to raising fruit for market.

Course II (B)—Vegetable gardening embraces the study of garden tillage, irrigation, and rotation of crops; transplanting; formation and care of hotbeds; study of garden insects; and the growing of various vegetable crops.

Course III (A)—Forestry includes the consideration of the formation and care of wind breaks and shelter belts; the laying out and planting of home grounds; discussion of the hardiness, habits, and value of our native

and introduced trees; and the methods of propagating them.

Course IV (A)—Plant propagation—In this subject the principles underlying the development of cultivated varieties of plants and seed testing are taught; also the propagation of plants by seed, cuttings, grafting, and budding.

The work of the class room is illustrated by the orchards, nurseries, forest plantations, gardens and greenhouses on the grounds of the experiment station and by visits to commercial nurseries and greenhouses near by.

LAUNDERING.

In the first term of C year several lectures are given and practice work is provided in washing, ironing, starching, polishing, cleaning and pressing clothing.

MUSIC.

Instruction is given in this subject, not with the purpose of making trained musicians, but to introduce the students to the elementary principles of this art, and to develop in them a love for this most valuable factor in home and social life.

Illustrated lectures, in which music by the masters is used, are given at stated intervals.

PENMANSHIP AND ACCOUNTS.

In this department the student is taught to write a plain hand with rapidity and ease. The work in accounts is applied to the transactions which the student meets in the various duties on the farm. He is so taught to keep his accounts that he may know at any time the profit or loss of any department of his business, and is thus enabled to plan intelligently.

Attention is given to the different kinds of negotiable paper; the various forms of endorsements and their effect; business forms and correspondence. Everything is made plain and practical, and students can learn to keep accurately and neatly the accounts of an ordinary business.

PHYSICAL CULTURE.

The work in this department is particularly directed to the improvement of nutrition and the correction of faulty habits of carriage and posture, frequently the result of exercise taken in the performance of household tasks which have a tendency to produce overdevelopment of certain muscles, while leaving others almost unused. The course of study includes free gymnastics and the use of light apparatus, supplemented by movements taken from the Delsarte system of expression. There are two classes, one for elementary and the other for advanced work.

AGRICULTURAL PHYSICS.

The general principles of the science are taught, special stress being laid upon those which to the greatest extent enter into the business of the

farmer. About half the time is devoted to experimental work, which includes capillarity of soil; diffusion and osmosis of gases and liquids; heating, lighting, and ventilation; farm machinery in particular, pumps, eveners,—especially three and four horse, pulleys, milk-testers, centrifugals, incubators, wind-mills, steam and gasoline engines; friction and lubricants; tensile strength of wire and binding twine of different grades; lightning and lightning protection. The foregoing indicates the character of the work, the attempt being to give the student an acquaintance with the laws of nature that he may act with reason and work to advantage.

COMPARATIVE PHYSIOLOGY.

During the first year students take one term of applied physiology. This is an effort to connect technical physiology with the necessities of every day life. The work includes a study of the general plan and structure of the body and the various individual tissues of which it is composed; also sources of heat and energy, digestion, and the relation of food materials to the various tissues of the body. Considerable attention is given to diseased and innutritious foods, food adulterations and narcotics. The circulation is studied with especial reference to the relation of the blood and lymph to tissue nutrition and tissue waste.

Accidents, including poisoning, are studied for the purpose of giving a practical knowledge of what to do in emergencies. Considerable attention is given to the subject of clothing, the various materials in use being considered with reference to fitness for special purposes. Some time is also given to the study of common physiology, of the organs of circulation, digestion, respiration, nervous system, and the relation of bacteria to the common diseases, especially such diseases as consumption, typhoid fever, etc. A brief study is also given to the subject of digestion in the lower animals.

The class work is illustrated by means of large charts, skeletons, manikins and dissections. Important points of difference between human and animal physiology are pointed out in preparation for the third year's work in the veterinary class. Matters of home and personal hygiene are interwoven with the physiology work.

AGRICULTURAL BOTANY.

This subject is taught with special reference to its bearing upon the everyday problems that present themselves to the farmer and gardener. It is profusely illustrated with flowers and plants from the greenhouse and nursery. Some instruction is given in the use of the compound microscope. Students are thus enabled to study intelligently, in an elementary way, the tissues of plants. By this means they get a clear idea of the general principles of plant structure and vegetable physiology.

POULTRY.

In the instruction in this subject the following will be considered; history and characteristics of the leading breeds of poultry; breeding, feeding, and management of fowls for eggs and for the market; planning, building, and arrangement of poultry houses; managing incubators and brooders. A model poultry house, containing pens of the most improved breeds, incubator cellar, workroom, etc., has been provided, where experimental work and practical instruction are carried on.

SEWING.

The course in sewing consists of five terms' work. During the first term the student receives instruction in the elements of sewing, including different stitches, seams, hems, darning, etc., also practical talks on the use and care of all the implements belonging to the sewing basket. The second year's work consists of cutting and making plain garments, drafting of underwear, children's clothing, shirt waists and cotton dresses, taught by a very simple method, using only the tape line and square.

The third year the more difficult work of dressmaking is taken up; drafting patterns, cutting and fitting of dresses. Lectures are given on textiles, wearing and selection of materials. The study of harmony of color is given special attention.

The course is designed to make each graduate capable of doing all kinds of sewing required in the home.

VETERINARY SCIENCE.

During the A year the student takes up a course of study in veterinary medicine, the purpose of which is to fit them for intelligent care of their farm stock. In this course the teaching is done by means of lectures, distribution of mimeographed lecture notes after each lecture, reviews and clinical work at the hospital maintained for this purpose. Lectures are illustrated by means of charts, manikin of horse, skeleton of horse, and various other appliances.

The lectures consists of a series on each of the following subjects: Elementary anatomy; elementary pathology; cause and prevention of diseases; diagnosis and treatment of common diseases, examination for soundness; and a final short course on common medicines, studying their effects, uses and doses. At the hospital clinics students are enabled to examine and care for a variety of cases and to learn the elements of diagnosis for the more common diseases and forms of lameness.

ZOOLOGY.

Chiefly Minnesota animals are considered: (1) their classification; (2) their habits and food; (3) their relation to the farmer. To assist the students

in their work, a museum has been started in which is shown the relation of Minnesota animals, birds, reptiles, etc. to agriculture. Soils, minerals, fossils, plants—both useful and injurious are also on exhibition.

CLASSIFICATION OF STUDENTS.

No student with incomplete C or preparatory work will be classified as an A.

No student with incomplete preparatory work will be classified as a B.

No student with incomplete C or preparatory work will be made a commissioned military officer.

Dairy School.

THE FACULTY.

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

WILLIAM M. LIGGETT, *Dean.*

T. L. HAECKER, *Professor of Dairy Husbandry.*

HARRY SNYDER, B. S., *Dairy Chemistry.*

Bacteria in Dairy Products.

W. M. HAYS, M. Agr., *Forage and Pastures.*

M. H. REYNOLDS, M. D., V. M., *Diseases of the Dairy Cow.*

J. A. VYE, *Creamery Records and Accounts.*

WM. ROBERTSON, B. S., *Care of Boiler and Engine.*

C. R. ALDRICH, *Dairy Buildings.*

J. M. DREW, *Silo and Stable Conveniences.*

B. D. WHITE, *Instructor in Creamery Management.*

A. W. PARKIN, *Instructor in Cheese Making.*

WM. BOSS, *Instructor in Practical Engineering.*

H. L. SONDERGAARD, *Assistant Instructor in Butter Making.*

SAMUEL HAUGDAHL, *Instructor in Cultures and Starters.*

JACOB LEHNHERR, *Instructor in Sweet Curd Cheese Work.*

E. W. MAJOR, B. Agr., *Instructor in Dairy Laboratory.*

Assistant in Dairy Laboratory.

The next session of the Dairy School will begin November 24, 1902, and continue four weeks.

This course is designed to furnish persons who are actually engaged in the manufacture of butter and cheese, in creameries and cheese factories an opportunity to become more skilled in their work, and also to study the many problems which have a direct bearing upon the dairy industry. Recognizing the fact that such persons cannot be away from business for a long period, the term has been so arranged that the time of each student is fully occupied by lectures and actual work in the creamery training room every hour of every working day of the term.

The rapid growth of the dairy industry in the Northwest calls for a corresponding enlargement of the work in dairy instruction. To meet this want the dairy hall has been equipped with the latest and most improved machinery and all apparatus necessary to give instruction in the various lines of dairy work.

No pains will be spared to maintain the high standard which the school has attained. Each member of the faculty has special qualifications for the duties to which he has been assigned. The lecture course and practical instruction are arranged with special reference to giving the greatest amount of training and practice possible in a four weeks session.

Large additions have been made to the equipment of the dairy hall in both butter and cheese departments; in fact, it has everything needed for conducting the work by the most approved methods.

Instruction is divided into six courses:

- 1st. Lectures covering the entire field of dairy husbandry.
- 2d. Practical work daily in the butter room.
- 3d. Practical work daily in the cheese room, where the manufacture of flats, cheddars, Swiss, brick, Edam, and Gouda cheese will be carried on.
- 4th. Practice work in the laboratory examining milk, making daily composite tests, and the pasteurization of milk and cream.
- 5th. Practical engineering, steam fitting and plumbing.
- 6th. Practical work in factory bookkeeping.
- 7th. Practice work with cultures and starters.

I.—LECTURES.

The course of sixty lectures furnishes in a plain and concise form the most valuable information for those who are interested in any branch of agriculture, covering, as it does, the most important points in the breeding, rearing, feeding and general management of dairy stock, the economical production of milk, growing and preserving of forage and grain crops, the management of meadows and pastures, management of barns, stables and yards, construction of silos, co-operative dairying, creamery and cheese factory management, judging and marketing dairy products, the chemistry of milk, dairy bacteriology, engineering, animal hygiene and treatment of the common diseases of the dairy cow.

II.—BUTTER MAKING.

The running of separators; ripening and churning of cream; the proper acidity of cream to secure best flavor; how to churn wash and salt butter so as to avoid specks and mottles; to secure good grain and best methods of preparing for market—are some of the points which receive special attention. As all creamery men should be able to judge butter from a commercial standpoint, students are trained daily in the art of scoring butter by the score card.

III.—CHEESE MAKING.

The work in the cheese room is conducted on a large scale, including the manufacture of several brands of fancy cheese. The fact that there is a demand for these at highly remunerative prices has induced the Regents to provide the necessary means for carrying on this work.

A complete record of every step taken is required of each student. Here is a good opportunity for cheese makers to meet, investigate new methods, make experiments on doubtful points, compare notes, and thus gather in a few weeks knowledge that otherwise would take years to acquire.

IV.—MILK TESTING.

It has been found that the value of milk for both butter and cheese is measured by the per cent. of fat content, and nearly all our factories and creameries now base the payment for milk on the fat content. It is therefore necessary for every factoryman to familiarize himself with the best methods of milk testing. The chemist gives a general outline of the work, but in order that each student may have thorough training in milk testing, daily exercise is given. Steam, turbine and hand power machines and other apparatus are provided and operated in the laboratory.

The pure and wholesome milk and cream supply for our cities is a matter of vital importance, and there is great need for improved methods of handling milk intended for this purpose. To meet this, milk and cream pasteurizing apparatus of the latest and most approved makes have been provided for the dairy school, and a few advanced students will be given instruction in this work.

V.—MOTIVE POWER.

The work in engineering consists of practical talks on the construction, care and management of creamery engines and boilers, pumps, injectors, heaters, etc., and work in the practice room.

In the practice room is provided an eight horse power simple, slide-valve engine, three types of boiler feed pump, two types of deep well pumps, one injector, two milk pumps, and a steam gauge, which the students have the privilege of examining and operating. Instruction is also given in pipe fitting, placing shafting, babbiting bearings, soldering, etc.

It is the aim to make this work as practical as possible. Questions of interest on the subject are freely discussed.

VI.—FACTORY BOOKKEEPING.

All the essential features of factory accounting from the receipt of the milk to the returns in net proceeds are thoroughly considered. Paying for the milk according to the fat content, or otherwise, is fully explained. The students do, in books provided, the actual one month's accounting of a creamery.

REQUIREMENTS FOR ADMISSION.

Experience has shown that students who have had some practical training in the creamery or cheese factory before coming to the dairy school are, as a rule, the ones who are able to make the most of the course; it is therefore required that persons who intend to take this course shall have had at least one season's experience before coming to the school. No entrance examination is required.

EXPENSE.

A registration fee of \$15 is required of each student. Students can board in either city and reach the school by street car, or board can be secured near the school for from \$3.50 to \$4.00 per week. Each student is required to supply himself with two white suits, including caps, to be worn during working hours in the creamery and cheese rooms. The suits may be procured for about \$1 each.

DAIRY CERTIFICATES.

The Regents will grant dairy certificates to students who have taken the course and passed a satisfactory examination and in addition have demonstrated by at least one year's work in a factory that they have acquired special skill in the art of butter and cheese making, and are thoroughly qualified to take charge of a creamery or cheese factory.

To reach the school from either St. Paul or Minneapolis take the Como Interurban Harriet street car and get off at Dooley avenue.

Address applications for admission to T. L. Haecker, St. Anthony Park, Minn.

Short Course For Farmers.

FACULTY.

WM. M. LIGGETT, *Dean.*
 SAMUEL B. GREEN, B. S., *Horticulture, Forestry.*
 J. A. VYE, *Business Hints.*
 HARRY SNYDER, B. S., *Agricultural Chemistry.*
 T. L. HÆCKER, *Dairy Husbandry.*
 M. H. REYNOLDS, M. D., V. M., *Veterinary Science.*
 W. M. HAYS, M. Agr., *Agriculture.*
 THOMAS SHAW, *Live Stock.*
 J. M. DREW, *Poultry, Workshop Hints.*
 A. BOSS, *Dressing and Curing Meats.*
 WM. BOSS, *Farm Mechanics.*
 W. A. WHEELER, B. Agr., *Fungus Diseases.*
 F. L. WASHBURN, M. A., *Insect Enemies.*

JANUARY 6TH TO FEBRUARY 28TH, 1903.

To meet the needs of men of mature age who are busy with the farm the greater portion of the year, a special lecture course has been prepared. Farming is a progressive business. Investigation and experiments by scientific men and the application of scientific truth by practical men are uniting to produce great changes in the practice of agriculture and the management of live stock; therefore the enterprising farmer recognizes that he must bring himself into close relation to the best which is known about his business. The Experiment Station, the College, and School of Agriculture, are of great value to those who take a full course of study but the rapid changes in markets and methods, as well as the discoveries in sciences, render it necessary that even graduates shall continue to be students. The student who graduated five years ago finds that there new applications of principles entirely unknown when he left school. For these reasons it is believed a valuable service may be rendered to men of mature age and experience by a special course of lectures to be known as "The Special Course for Farmers in Horticulture and Livestock."

Agriculture: Judging the qualities of soils, the selection of farms, planning farms; developing the fields, drainage, roads, fences; developing the farmstead and its buildings; managing fields and growing, cultivating, harvesting and preserving forage and grain crops. The rotation of grain cultivated and grass crops, the use of live stock, and general farm management.

Dairy husbandry: In this division there is a course of sixteen lectures giving an outline of the origin and history of the various breeds of dairy cattle, the characteristic of each and conditions to which each breed is especially adapted. The conformation and type of cow specially adapted to economical dairy work. An outline of the fundamental principles feeding, the composition and character of the various feed stuffs with plain and practical instruction in rearing young stock and feeding dairy cows. Practice work will be given in judging dairy stock.

Animal husbandry: The course will embrace forty-eight lectures to be given in three series. The first will include twenty lectures, the second eight and third twenty.

The first series will treat of such breeds of cattle, sheep and swine as are now popular in the Northwest, or are likely to become more so. They will dwell upon such features as

approved form, the uses for which they ought to be kept, the soil and climate best suited to growing them in the best manner, and differences that obtain between them in form, function and adaptation.

The second series will discuss certain of the more practical phases of animal breeding. They will consider the chief laws that govern breeding and how to turn them to practical account on the farm or on the range, and also the selection of prepotent sires and dams. The place for cross breeding and grading up and the best methods of doing the work will be discussed, and also the nature and value of pedigrees. The value of in-and-in breeding will be dwelt upon and also its dangers.

The third series will discuss the feeding and management of beef cattle, sheep and swine on the farm. Foods suitable to each of these classes of animals will be discussed and the methods of preparing and feeding them to the best advantage. Pastures will also be discussed and out buildings and indeed all the more important features of managing animals from birth to maturity.

A portion of the period allotted to each lecture will be spent in judging animals brought into the class room. Hence forty-eight exercises will be given in the work of judging live stock.

Agricultural chemistry. Soils and foods are made prominent features of the work in agricultural chemistry. Four lectures are given on the chemistry and fertilizers, including the conversion of the fertility of the soil, the composition and use of farm manures, the draft of different farm crops upon the soil and the methods of making the fertility of the soil available as food by the rotation of crops and by other means so as to secure the necessary chemical changes in the soil to produce the highest degree of fertility. Four lectures are also given on the chemistry of foods. Some of the subjects discussed are: The composition and food value of the more important grain and forage crops and their uses as food so as to secure the largest amount of growth or animal products.

Farm mechanics. The instruction given on this subject will consist of lectures on farm mechanics, taking up such subjects as pumps, farm water systems, windmills, the general principles of steam and gasoline engines, placing shafting, pulleys and belts; pipe fitting, soldering, etc. Some instruction will also be given on sharpening and using hand tools, such as saws, planes, chisels, and other tools necessary in farm practice.

Farm implements. The lectures on farm implements will be illustrated, as far as possible, by samples. Stereopticon views will be made use of in illustrating machines that cannot well be taken to the class room. It is the aim in these lectures to bring out the line-covering the draft of implements and the objects attained by their use. Suggestions will be made on selection of implements adapted to various kinds of work. The care of implements when not in use will also be discussed, and an attempt made to give as fully as possible all information that will be beneficial in the care and handling of farm machinery.

Dressing and curing meats. The work in dressing and curing meats will be given in a course of demonstration lectures. In demonstrating these lectures, the animals will be dressed before the class and the reason for each operation fully explained. The methods of cutting up the dressed carcass for different purposes will also be shown before the class and the use and value of each cut explained. Sausage making, lard rendering, and the "working up" of all parts of the animals will be taught in a simple and direct way.

Farm horticulture. Lectures will be given on the care and management of the apple and plum in this climate, including such subjects as location of the orchard, selection of the trees, planting, cultivation, green manuring; preparation for winter; advantages and disadvantages of root grafting, budding, and top working; insects and diseases injurious to orchards.

Lectures on the care and management of small fruits will consider the subjects of the selection of varieties, planting and cultivation, origin of new varieties, propagation, marketing, winter protection, also the insects and diseases injurious to raspberries, blackberries, currants, gooseberries, strawberries and grapes.

Under vegetable gardening will be considered the growing of potatoes, tomatoes, celery, onions, squash and cucumbers.

Veterinary science: This work includes a series of lectures on elementary anatomy; animal foods and digestion; and causes, prevention and treatment of common diseases of

farm stock. An especial effort is made to have this work practical and helpful to men how are actually handling farm stock.

Fungous diseases and insects: This will be a study of the character, development and methods of treatment of fungous diseases upon cultivated crops, and of the habits and treatment of injurious insects.

Poultry: Twenty lectures will be given on this subject with special reference to the needs of the Minnesota farmer. The following subjects will be considered: Location and construction of poultry buildings and yards; a study of the breeds best adapted to the farmer's use; the hatching, rearing and management of the farmer's flock; feeding for eggs and for fattening; killing and dressing fowls, and packing for market; marketing eggs.

In addition to the above four lecture periods will be devoted to the farm, work-shop hints, such as splicing rope, making rope halters and rope belting, and tempering simple tools.

The above course will begin January 13, 1903, and continue for a term of eight weeks. Classes will be called at 9:00 a. m., and continue until 2:50 p. m. A part of the afternoon will be devoted to study and investigation. The University farm, live-stock, barns, green-houses, grounds and laboratories of the College and School of Agriculture afford ample opportunity for interesting study.

There will be no lecture course on Monday, but this day will be spent in visiting places of interest, in charge of some instructor, such as the stock yards, flouring and flax mills, green houses, stock farms, etc.

For this course a fee of \$10 will be charged.

Board may be secured within twenty minute's walk from the school, or in either of the Twin Cities at \$3.50 to \$4.50 per week.

The School is situated at St. Anthony Park, on the Como-Harriet car line, between St. Paul and Minneapolis. Get off at Dooley Avenue.

Farmers wishing to register for this course, or desiring further information, should write to

DEAN WM. M. LIGGETT,
St. Anthony Park, Minnesota.

Rural School Agriculture.

Wm. M. Liggett, Dean of Department.
Willet M. Hays, M. Agr., In Charge.

COMMITTEE ON EDITING.

Hays, Tucker, Green, Shepperd, Haecker.

Under an act of the legislature the Department of Agriculture of the University of Minnesota is charged with the preparation of leaflets and other material which will aid in introducing into rural schools studies calculated to build up country life and the business of farming. This work is done in co-operation with the State Department of Public Instruction. The Department of Agriculture is (1) undertaking the preparation of leaflets, charts and other school room helps; (2) the promulgation of plans for the use of teachers in leading the pupils to observe and experiment on the farm and in the home, requiring from them written or oral reports; (3) assisting in the utilization of the natural objects of the county for illustration in the rural school; (4) the decoration and use of the rural school grounds; (5) and correspondence with teachers and county superintendents to aid and encourage them in carrying out plans for bringing the county school more into unison with country life and rural affairs.

The Department of Agriculture will also co-operate with the State Department of Public Instruction in introducing the study of agriculture into the teachers' summer institutes and into other schools where teachers are being educated for service in rural schools.

The newness of this work makes it necessary that much experimenting be done; that personal work with teachers be regularly followed up; that every agency be enlisted to help, and that the best be chosen for future work. Co-operation with those interested in similar work in other states is contemplated. The Department of Agriculture earnestly solicits the co-operation of teachers, county superintendents, farmers, and all others who are in touch with the rural schools, and suggestions are invited from those who have had experience in rural school work.

The instructors in the Department of Agriculture of the University will provide much of the material for leaflets, charts, plans for school grounds, gardens, etc., while others in this and other states who are especially adapted to prepare such material will be employed as occasion demands. Efforts will be made to arouse rural youth to the advantages of country life; to show

them better ways of home making; to lead them to observe more closely the things they see daily; to arouse them to clearer thought; and in some measure to teach them facts and principles of nature and lead them to have faith in and knowledge of improved methods of farming and home making. There is no design to diminish the energies applied to teaching the elements of academic learning, but to enrich the course with interesting things of nature, of country life and of farming and farm home making that the rural school will have a larger influence in general education, as well as in preparing the boys and girls of the farm for advanced standards of country life. The work of the teachers of rural schools will become more interesting, more effective, and, if well done, will lead to longer engagements, better remuneration, greater satisfaction and a larger influence.

When the work of the rural school is brought more into line with country life and affairs, it will gain a closer connection with farmers' clubs; the literature of agriculture will come to its bookshelves; specialists in plant production, in animal production, in home making, and in other lines of rural affairs, will all desire to aid in placing in the rural schools the new and interesting things in their work. Students of nature will here find an avenue to promote nature study. The opportunity here afforded to teachers of agriculture, horticulture, animal husbandry, dairying, home economics, household science, and the sciences related to agriculture and home making, are very attractive. Many of the simple, yet important and fundamental facts, both old and new, can here be carried from the leaders of thought to hundreds of thousands of country boys and girls who are ready and eager to receive knowledge. Every teacher who aspires to write a leaflet, prepare a chart, plan a rural school garden or devise experiments or observation work should first sit again on the benches of the rural school and thus unite with the point of view of the mature teacher and experimenter, that of the boy or girl whose mental horizon is the farm and the rural school district. Every manuscript and every chart should be submitted for suggestions to those who fully understand the rural school.

The Agricultural Experiment Station.

OFFICERS OF THE STATION

- WM. M. LIGGETT, *Director.*
WILLET M. HAYES, M. Agr., *Agriculturist.*
SAMUEL B. GREEN, B. S., *Horticulturist.*
*OTTO LUGGER, Ph. D., *Entomologist and Botanist.* (Deceased.)
HARRY SNYDER, B. S., *Chemist.*
T. L. HÄECKER, *Dairy Husbandry.*
M. H. REYNOLDS, M. D., V. M., *Veterinarian.*
THOMAS SHAW, *Animal Industry.* (Resigned.)
FREDERICK L. WASHBURN, M. A., *Entomologist.*
ANDREW BOSS, *Associate in Agriculture, in Charge of Live Stock.*
T. A. HOVERSTAD, B. Agr., *Superintendent Sub-station, Crookston.*
R. S. MACKINTOSH, *Assistant in Horticulture, University Farm.*
HERMAN H. CHAPMAN, B. S., *Superintendent Sub-station, Grand Rapids.*
E. W. MAJOR, B. Agr., *Assistant in Dairy Husbandry.*
J. A. HUNNELL, B. Agr., *Assistant Chemist.*
COATES P. BULL, B. Agr., *Assistant in Agriculture, Rural Engineering.*
J. A. VYE, *Secretary.*

The Agricultural Experiment Station of the University of Minnesota is devoted to the discovery of facts and processes useful to the farmers of the state, and to widely disseminate knowledge of improvements in agriculture and home making. This station was established in 1887 under laws enacted by the state and national governments. It is supported in part by funds supplied through the University by the national congress, and in part by funds appropriated by the state legislature. It has also a small income from sales of products. It has published annual reports since 1892, seventy-three general bulletins, fourteen press bulletins, twelve class bulletins; and twenty-four press bulletins have been published by its sub-station at Grand Rapids.

The work of experiment stations embraces a wide range of agricultural subjects included under the headings of agriculture, horticulture, forestry, animal husbandry, dairying, agricultural chemistry, entomology and veterinary science.

Bulletins giving the results of experiments are published in editions of nearly 20,000 copies. These are sent free to all farmers in the state who ask to have their names placed on the station mailing list, and the post-office department carries them free under the director's franking privilege.

The experiment station is located at University farm, St. Anthony Park, where most of its officers also teach in the college and school of agriculture. It uses the larger part of University farm, containing 250

acres of land. It has the use of portions of several barns, laboratory buildings and storage rooms for seeds and feed stuffs. It utilizes many animals of the various breeds, also grades, in experiments in animal and dairy production.

The work at University farm is supplemented by the sub-station located at Grand Rapids, on land that is characteristic of the northeastern part of the state, and by the sub-station located at Crookston, on land that represents the soil of the Red River Valley. Each of these farms is equipped with buildings and machinery and is in charge of a competent superintendent. Experiments are also carried on at the farm of Supt. O. C. Gregg, in Lyon county (Coteau Farm), which is typical of the agricultural lands of the southwestern part of the state.

The experiment station deals with the problems most vital to agricultural production and life on the farm. Much effort is being devoted to increasing the yields and values per acre of our staple field crops. The crops themselves are nearly all under experimentation in the effort to so breed them that they will yield more, and new varieties have been secured in some instances which do materially increase yields. The soils and fields also receive attention and systems of rotation and of farm management are developed which increase the yields of the fields and result in larger net income from the farm, besides greater satisfaction from conducting business in a more systematic manner.

Improvements in the feeding, management and breeding of live stock are worked out, especially important work having been done in raising annual pasturage and thus improving summer feeding of sheep, hogs and cattle.

Dairy production and dairy manufacture have been greatly improved by the work of the station; the work in economical feeding and the selection of dairy cattle, and the assistance given to co-operation in creamery management having been especially productive of good to the state.

In horticulture many experiments with varieties and methods of propagation are under way.

The many visits made to the station grounds by horticulturists may be taken as evidence of the useful facts here demonstrated.

The possibilities of securing timber belts in the drier portions of western Minnesota have been amply illustrated in forestry experiments at Coteau farm.

The chemistry of food stuffs, grains, soils, and of human foods, also of feeding both animals and men is being worked out in the station laboratory in a manner which is of great value to the state.

The etomological researches made by the station are aiding farmers and horticulturists to combat many insects for which they formerly had no remedy.

In veterinary medicine and surgery various new means of preventing and curing diseases are sought, and improvements are made in surgical processes with the domestic animals.

The officers of the experiment station are ever ready to advise by letter or by personal interview, and the correspondence of the station increases annually.

The experiment station is in co-operation with the U. S. Department of Agriculture and with several experiment stations in other states. Besides the sub-stations mentioned above it is assisted by nearly a score of trial stations, associated with the State Horticultural Society. It has also enlisted several hundred farmers and seed growers as seed co-operators who are aiding the station in disseminating its newly originated and tested varieties of field seeds. Nearly fifty farmers are serving as statistical co-operators and are assisting joint agents of the station and of the U. S. Department of Agriculture in securing data as to the cost of growing crops, and of producing livestock products.

PUBLICATIONS OF THE DEPARTMENT OF AGRICULTURE.

BULLETIN OF THE EXPERIMENT STATION FOR 1901.

ANNUAL REPORT FOR 1901.

General Bulletins :

- No. 70 Influence of Wheat Farming on Soil Fertility.
- No. 71 Investigations in Milk Production.
- No. 72 Prairie Forestry and Horticulture at Coteau Farm.

Press Bulletins :

- 2 No. 11 Producing Silage and Fodder Corn.
- No. 12 The Rocky Mountain Locust.
- No. 13 The Hessian Fly.
- No. 14 The Feeding Value of Wheat.

Class Bulletins :

- No. 11 Smut in Oats and Wheat.
- No. 12 Outlines of Greenhouse Laboratory Work.

THE FARM STUDENTS REVIEW.

The Alumni Association of the School of Agriculture, with some aid by officers of the department, publishes a monthly agricultural paper, now in its seventh year. This paper keeps the graduates in touch with each other and with the department, and provides a medium through which they may relate their experiences in various lines of farming and home making. It has articles by graduates, students, members of the faculty and by others especially qualified to discuss agriculture, live stock, dairying, horticulture, agricultural chemistry, home economics, the rural school and other subjects relating to country life. It serves also as a semi-official organ of the Alumni Association and of the Farmers Club of Minnesota, (an organization made up of students and ex-students of all the courses of the department of agricultural.)

The College of Law.

FACULTY.

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

WILLIAM S. PATTEE, LL. D., *Dean and Professor of Law. Equity and International Law.*

A. C. HICKMAN, A. M., LL. B., *Professor of Law. Pleading and Practice.*

JAMES PAIGE, A. M., LL. M., *Professor of Law. Torts and Criminal Law.*

EDWIN A. JAGGARD, A. M., LL. B., of the Ramsey County Bench. *Taxation.*

HENRY J. FLETCHER, ESQ., of the Hennepin County Bar. *Contracts and Real Property*

HOWARD S. ABBOTT, B. L., of the Hennepin County Bar. *Corporations.*

ROBERT S. KOLLINER, LL. B., of the Hennepin County Bar. *Personal Property.*

LECTURERS.

GEORGE B. YOUNG, LL. B., St. Paul, Minn., (EX-Associate Justice of the State of Minnesota.) *Conflict of Laws.*

HON. JAMES O. PIERCE, Minneapolis, Minn., (EX-Judge of the Circuit Court of Memphis, Tenn.) *Constitutional Jurisprudence and History.*

HON. C. D. O'BRIEN, St. Paul, Minn. *Criminal Procedure.*

HON. JOHN DAY SMITH, LL. M., Minneapolis, Minn. *American Constitutional Law.*

HON. HERBERT R. SPENCER, Duluth, Minn., *Admiralty Law.*

JOHN COCHRANE SWEET, LL. M., Minneapolis, Minn. *Mortgage Foreclosure.*

JARED HOW, LL. B., St. Paul, Minn. *Landlord and Tenant.*

RANSOM J. POWELL, LL. M. *Instructor in Justice Practice.*

OBJECT.

It is the object of the College of Law of the University of Minnesota to educate its students by means of the study of jurisprudence, and at the same time so familiarize them with the fundamental principles of positive law that they will be able, at the end of their course, to safely enter upon the duties of the legal profession. Education, and not simply information, is the prime object. The power to think clearly, to reason cogently to perceive distinctions quickly, to investigate thoroughly, to generalize carefully and to express his thoughts accurately are the basal qualifications of the safe counsellor. To secure for the students these habits of thought and expression should be the aim of both the student himself and his instructor.

The method of work generally pursued in the college is three-fold. *First.* The reported cases, being the original repositories of the principles of law and equity, are read by the student and considered in the class-room.

To facilitate the work and save expense for the student, volumes of these cases are reprinted and put, free of charge, into the hands of the student during the continuance of the subject, and each subject is pursued daily until its completion. *Second.* Besides reading the cases, the student in most subjects is required to prepare a written analysis of each case, stating in his own words, the issue upon which the case turns, the law which governs it, a brief statement of the facts, and the conclusion which the law and facts logically necessitate. This practice has proved helpful in securing a greater thoroughness in reading, greater carefulness in reasoning and greater accuracy on the part of the student in the art of expression. *Third.* In addition to the student's investigation of the cases, and his presentation of them to his instructor, a systematic and orderly arrangement of each subject in the form of a summary and much additional information regarding the details of the law's application in particular instances, and a consideration of the exceptions, limitations and statutory modifications of general principles, and especially information regarding the art of practice, are indispensable, and are in most instances supplied by printed lectures prepared for that purpose, or by well written text-books upon the subject under consideration. *Information* as well as *education*, is necessary to prepare a student to begin the practice of law. So far as possible he should, at the end of his course, grasp the various subjects of law in the unity of a system, and to do this he must in many instances, take the generalizations of his instructor, or take them from some text-book, until he shall find time to investigate the subject for himself.

REQUIREMENTS FOR ADMISSION.

Graduates of universities or colleges, and students who have graduated from any normal school or State high school of Minnesota, or from similar institutions of equal grade in other states, are admitted without examination upon presentation of their diplomas.

All other applicants must pass an examination in the studies required for admission to the freshman class of the college of science, literature and the arts, which are as follows:

N. B.—Time element, as indicated with each subject, is essential.

A three years' course of reading in English classics.

English Composition, one year.

Algebra, elementary, one year.

Algebra, higher, one-half year.

Geometry, plane, one year.

Geometry, solid, one-half 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 **eight** year-credits, or their equivalent, to be chosen from the following list:

Latin.

- Grammar (one year-credit.)
- Cæsar, four books (one year-credit.)
- Cicero, six orations (one year-credit.)
- Vergil, six book (one year-credit.)

Greek.

- Grammar (one year-credit.)
- Anabasis, for books (one year-credit.)

German.

- Grammar (one year credit.)
- Literature, (one year-credit.)

French.

- Grammar (one year-credit.)
- Literature (one year-credit.)

English.

- Latin element (one year-credit.)
- Literature (one year-credit.)

History, Greece and Rome (one-half year-credit.)

- England (one-half year-credit.)
- Modern (one-half year-credit.)
- Medieval (one-half year-credit.)
- Senior American (one-half year-credit.)

Civics (one-half year-credit.)

Political Economy (one-half year-credit.)

Physics (one year-credit.)

Chemistry (one year-credit.)

Botany (one-half or one year-credit.)

Zoology (one-half or one year-credit.)

Astronomy (one-half year-credit.)

Geology (one-half year-credit.)

Physiography (one-half year-credit.)

N. B.—By a **year-credit** is meant, a full year's work upon one subject, five recitations per week, as given in an ordinary high school course.

Substantial equivalents may be substituted, and a business education, as well as experience in teaching may be accepted in lieu of some of the less important subjects.

Applicants who have diplomas entitling them to admission without examination, should present them to the dean of the college and those who are to take examinations or enter as special students, should present themselves to the dean, who will, upon proof of their qualification for admission, refer them to the registrar and accountant, where they pay their matriculation fee and the first term's tuition.

SPECIAL STUDENTS.

Persons who are not candidates for the degree may enter the college at any time as special students, without examination, and may pursue whatever subjects they desire, provided they possess such knowledge and ability as will, in the opinion of the faculty, enable them to pursue the subjects of law with profit to themselves. And all such students will be entitled to a certificate upon satisfactory examination in the subjects pursued by them, stating the time they have been members of the college and the subjects in which they have passed a creditable examination.

Such students, however, if they elect studies in both the day and evening courses, pursuing both at the same time, will be charged ten dollars per term additional tuition.

Students in the day or evening classes, will not be permitted to attend more than two courses of lectures daily unless in exceptional cases and then a card of admission must be procured from the faculty and ten dollars per term additional tuition must be paid.

Students who are regular members of one class, either day or evening, will not be permitted to pursue studies in any class in advance of that to which they belong, unless there are special circumstances requiring it, and only upon special permission granted by the faculty.

SENIOR ELECTIVES.

Students in the senior class of the college of science, literature and the arts, are permitted to elect as one subject 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 subjects will give the student a senior credit, and will entitle him to admission to the middle class of the college of law. No such student will be permitted to take more than one lecture each day in the college of law, without special permission of the faculty of the college of science, literature and the arts.

ADVANCED STANDING.

Should any person desire to enter the middle or senior class for a degree he must be at least nineteen years of age, must pass the required preliminary examination upon the subjects of the preceding year or years, or their equivalents, but no person will be allowed to receive his degree who has not spent one full year in this department. Attorneys at law, however, who have been admitted to practice in the state of Minnesota, may enter the senior class without examination upon presentation of their certificate of admission and shall be entitled to their degree upon a satisfactory showing at the final examination of the year.

FOUR COURSES OF STUDY.

FIRST.

THREE YEARS' DAY COURSE.

FIRST YEAR—JUNIOR.

FIRST TERM.

Contracts (including Statute of Frauds). Twelve weeks, six lectures a week.

SECOND TERM.

Domestic Relations. Four weeks, six lectures a week.

Common Law Pleading. Three weeks, six lectures a week.

Torts. Eight weeks, six lectures a week.

THIRD TERM.

Blackstone, (Second Book.) Four weeks, six lectures a week.

Criminal Law. Five weeks, six lectures a week.

Agency. Three weeks, six lectures a week.

Commercial Paper. Four weeks, six lectures a week.

SECOND YEAR—MIDDLE.

FIRST TERM.

Wills and Administration. Four weeks, six lectures a week.

Partnership. Four weeks, six lectures a week.

Code pleading. Eight weeks, six lectures a week.

SECOND TERM.

Carriers. Two weeks, six lectures a week.

Insurance. Three weeks, six lectures a week.

Private Corporations. Five weeks, six lectures a week.

Public Corporations. Three weeks, six lectures a week.

Bailments. Three weeks, six lectures a week.

Liens. Two weeks, six lectures a week.

Bankruptcy. Two weeks, six lectures a week.

Equity. (Jurisdiction and Maxims.) Four weeks, six lectures a week.

THIRD TERM.

Real Property. Twelve weeks, six lectures a week.

Easements. Two weeks, six lectures a week.

Covenants. Two weeks, six lectures a week.

Taxation. Two weeks, six lectures a week.

Landlord and Tenant. Two weeks, six lectures a week.

THIRD YEAR--SENIOR.

FIRST TERM.

Evidence. Six weeks, five lectures a week.
 Personal Property and Sales. Six weeks, five lectures a week.
 Minnesota Real Property. Four weeks, five lectures a week.
 College Court. Eight weeks.

SECOND TERM.

Equity. (Doctrines.) Seven weeks, five lectures a week.
 Constitutional Law. Five weeks, five lectures a week.
 College Court. Twelve weeks.

THIRD TERM.

Mortgages and Mortgage Foreclosure. Four weeks, five lectures a week.
 Criminal Procedure. Two weeks, five lectures a week.
 Conflict of Laws. Six lectures.
 International Law. Three weeks, five lectures a week.
 College Court. Twelve weeks.

SECOND.

THREE YEARS' EVENING COURSE.

To accommodate those who cannot attend the lectures during the day, there is offered an evening course comprising the same subjects as those above enumerated, extending over a period of three years, of nine months each. The students in this course, pursue the same subjects as those in the day courses and in the same order, except that the senior and middle classes are united, and the work of the two years is arranged to meet the demands of such a union.

FIRST YEAR—JUNIOR.

FIRST TERM.

Contracts (including Statute of Frauds.) Twelve weeks, five lectures a week.

SECOND TERM.

Domestic Relations. Four weeks, five lectures a week.
 Criminal Law. Five weeks, five lectures a week.
 Agency. Three weeks, five lectures a week.

THIRD TERM.

Torts. Eight weeks, five lectures a week.
 Commercial Paper. Four weeks, five lectures a week.

SECOND AND THIRD YEARS—SENIOR AND MIDDLE.

1902-1903.

FIRST TERM.

Evidence. Five weeks, five lectures a week.

Blackstone (Second Book). Four weeks, five lectures a week.

Code Pleading. Three weeks, five lectures a week.

College Court, seniors. Eight weeks.

SECOND TERM.

Code Pleading. Four weeks, five lectures a week.

Real Property. Eight weeks, five lectures a week.

College Court, seniors. Twelve weeks.

THIRD TERM.

Real Property. One week, five lectures a week.

Equity Jurisprudence. Eight weeks, five lectures a week.

Insurance. Three weeks, five lectures a week.

College Court, seniors. Twelve weeks.

THIRD.

SPECIAL COURSE.

For the benefit of those who do not care to pursue an extended course of legal instruction leading to the degree of bachelor of laws, (LL. B.), but desire such a knowledge of law as is of inestimable value to them in a business career, there is offered a special course.

This course extends over one year, and for the accommodation of business men the lectures are delivered in the evening.

The course embraces the following subjects: contracts, including statute of frauds; agency; commercial paper; partnership; Minnesota insolvency law; liens; bailments; master and servant; insurance; sales.

The subjects in this course may be varied upon consultation with the faculty, and other subjects in place may be substituted by those whose business life or whose preference render it desirable.

Those who complete the course and pass a satisfactory examination receive a certificate of proficiency.

FOURTH.

GRADUATE COURSE.

FIRST.

For the benefit of those students who wish to pursue their legal studies further than they are able to do in the undergraduate years, two graduate courses are offered, the first leading to the degree of master of laws (LL. M.), the second to the degree of doctor of civil law (D. C. L.)

The courses of lectures offered in the first year of graduate work are as follows:

- Philosophic basis of jurisprudence.
- Roman law.
- Political science.
- Constitutional jurisprudence and history.
- Theories of taxation.

Those who enter this course as a candidate 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. Any person who possesses the requisite legal learning may, however, enter this course as a special student and pursue any or all of the studies offered.

SECOND.

Students who have received the degree of LL. B., from this or some other law school requiring three years of 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 entrance 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.

TUITION.

UNDERGRADUATE STUDENTS.

A matriculation fee of ten dollars must be paid by every student entering the college. The tuition fee is sixty dollars a year, or twenty dollars per term payable in advance at the beginning of each term.

GRADUATE STUDENTS.

The tuition fee for graduate students is thirty dollars payable in advance as follows: Ten dollars each term. In addition a matriculation fee of ten dollars is due from each student entering upon the course who has

not previously matriculated in this college. A diploma fee of ten dollars is due from each student upon receiving his diploma.

FREE CASE BOOKS.

In order to protect the College, Bar Associations and State Libraries from the special injury incident to continual use and to facilitate the class work of the college, the Board of Regents has decided to furnish for the use of students free case books.

LIBRARIES.

The college has a good library containing those English and American reports most frequently cited, digests, dictionaries, and a full and excellent selection of standard text-books. To this collection additions are being constantly made.

Further facilities are afforded the college by the generous action of the Bar Association of Minneapolis in granting to the students the free use of its extensive and ample library located in Temple Court. It contains all the American reports, state and national, and also the English text-book, and reports, so necessary for the student in his study of fundamental jurisprudence.

Besides the University and Bar Association libraries, the State library containing all books which which a student would have occasion to consult, is located at the capitol, in St. Paul, and is thus within easy reach of the students.

The general library at the University contains about seventy-five thousand bound volumes, beside many thousand volumes of pamphlets, magazines, reports, etc. About one hundred and twenty periodicals are received regularly by the library, not inclusive of technical magazines and newspapers in English and other languages.

Besides the general library of the University, there are several special libraries, consisting mainly of books of reference and current periodicals relating to technical subjects in connection with the several departments of the engineering, biology and botany. These libraries are open during the entire day, and the University library is open also in the evening.

METHODS OF INSTRUCTION.

The sessions of the junior, middle and senior day classes will begin respectively at 9:00 and 10:00 o'clock a. m., and 2:00 p. m.; and those of the evening classes will begin at 7:20 o'clock p. m.

Each subject is continued daily until its completion, and when a class carries two subjects daily one recitation or lecture follows the other immediately in order to save the student the expense and time required in going to and returning from the University.

EXAMINATIONS FOR PROMOTION.

Examinations will be held at the close of each subject during the middle and junior years, and no student who fails to pass a satisfactory examination in any of his studies will be advanced to the next higher class.

A student thus failing, however, may have another examination during the first week of the next year upon those subjects wherein he failed, and if it proves satisfactory he will be advanced accordingly. Such student may, however, enter the advanced class if he has not been conditioned in more than two subjects, and provided he make up those subjects by taking them in the regular classes where they are taught.

STATE AND UNITED STATES COURTS.

The department is located within easy reach of both the federal and state courts. The United States courts are in session in St. Paul and Minneapolis during the greater part of the school year. The supreme court of Minnesota, the district courts of Ramsey and Hennepin counties, and and the municipal courts of St. Paul and Minneapolis are open and in session almost constantly, and afford all the opportunity for witnessing the trial of actual cases which the student will have either time or desire to improve.

COLLEGE COURTS.

As fast as the student becomes acquainted with the primary rights of persons, cases are prepared for his consideration, whereby he may apply the principles of law with which he has become familiar.

There is also established in the senior year a system of college courts corresponding to the justice, the district and the supreme courts of Minnesota, wherein the student may become familiar with the practice and the rules of the courts respectively.

It is the aim of the department to acquaint the student with the practice as well as the theory of law, and to this end the subjects of pleading, evidence, rules of practice adopted by our state courts, methods of securing provisional remedies, appeals from one court to another, the writs of habeas corpus, certiorari, and others of frequent use, conveyancing, drawing contracts and other like practices which comprise the daily work of the general practitioner, will, during the senior year, receive special and careful attention.

Some member of the faculty will preside over each of these courts, and the student is required to prepare appeal papers, bonds, paperbooks and to furnish the courts with his points and authorities according to requirements of law applicable to the various courts of the state.

THE LECTURERS.

All the lectures in the college are lawyers actively engaged in the practice of their profession. They come to the class-room direct from the

bar, bringing with them fresh experiences and the spirit of actual contest. They all possess a high ideal of what a lawyer should be and do, and the student who enters here is expected to come with the fixed purpose of attaining a high degree of excellence in the legal acquirements, and to respond in earnestness and with fidelity to the faithful efforts of his instructors in his behalf.

THE LITERARY SOCIETIES.

The students of the college have joined in organizing three literary societies for the purpose of general improvement and for cultivation in the practice of extemporaneous speaking. They hold weekly meetings and derive great benefit from their exercises.

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 rhetorical department, as evidenced finally by an oration in public.

THE DUNWOODY PRIZE.

Mr. Wm. H. Dunwoody, president of the St. Anthony and Dakota Elevator Co., offers \$100 to that student who shall earn the right to represent Minnesota in the Northern Oratorical League. This league is composed of the seven largest universities of the central states, viz: Minnesota, Iowa, Wisconsin and Michigan State Universities, and Oberlin, Chicago and Northwestern.

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.

ELECTIVES FROM OTHER DEPARTMENTS.

Students of this college will be admitted, under proper regulations, to work in other departments or colleges of the University, without extra charge and, so far as it does not interfere with their law studies, they are urged to avail themselves of this opportunity to attend lectures and recitations in the other departments. Such elections should be made only after consultation with the faculty. The following subjects are suggested as being particularly suitable: international law, constitutional history and and political science. Students who elect such work must complete it in a satisfactory manner before they shall be entitled to receive their law degree.

DEGREE OF BACHELOR OF LAWS.

The degree of bachelor of laws will be conferred upon students of good moral character who pursue the full course in this college and pass an approved examination, and the degree will also be conferred upon those who having attended another law school for the period of two years, shall also attend one year in this college and pass a like examination.

ADMISSION TO THE BAR.

The legislature of Minnesota in the year 1891, recognized the college of law of the University of Minnesota in the following enactment, whereby students graduating therefrom are entitled to admission to the bar without further examination.

AN ACT to establish a uniform standard of admission to the bar of this State and to punish persons violating the provisions of this act.

Be it enacted by Legislature of the State of Minnesota :

SECTION 1. As soon as possible after the passage and approval of this act the Justices of the Supreme Court of this State shall appoint from the members of the bar of Minnesota learned in law, one person from each congressional district now or hereafter created, to constitute a state board of examiners in law.

SEC. 2. The term of office of said board shall be as follows:

Three shall be appointed for one year, two shall be appointed for two years, and two shall be appointed for three years, and their successors shall receive their appointment in like manner for terms of three years each; but in case of a vacancy occurring by death or otherwise, there shall be appointed in a like manner a person to serve through the unexpired term of the member to whose place he is appointed.

SEC. 3 That said board shall elect a president, secretary and treasurer; shall have its headquarters at the Capital of the State; shall have a common seal; and the president and secretary shall have the power to administer oaths; the said board shall at least three times in each year, hold public examinations for admission to the bar of the State which examinations shall be both written and oral, in such place in this state as the Supreme Court shall direct, and at such times as the said board shall determine; the said board shall keep a record of all its proceedings, and also a record of all applications for admission to the bar and shall enroll in a book kept for that purpose, the name of each person admitted as an attorney at law.

SEC. 4. The said board shall as soon as practicable thereafter, report the result of all examinations to the Supreme Court, with such recommendations as to said board shall seem just, and the Supreme Court shall, after considering said report and said recommendations, enter an order in each case authorizing or directing said board to reject such applicant or to issue to him a certificate of admission to the bar.

SEC. 5. The said board shall receive from each person applying for examination the sum of five dollars (\$5.00) as a fee therefor, and all fees received by said board shall be deposited with the treasurer of said board and applied towards the expenses and compensation of the respective members of said board.

SEC. 6. There shall be paid out of the treasury of said board to each examiner appointed as aforesaid, a compensation not exceeding ten dollars (\$10.00) per day and his actual necessary expenses in going to, holding and returning from any such examinations.

SEC. 7. No person shall hereafter be admitted to practice as an attorney and counsel for at law; or commence, conduct or defend any action or proceeding in any of the courts of record of this State in which he is not a party concerned, either by using or subscribing his own or the name or names of any other person or persons, unless he has complied with and been admitted under and pursuant to such rules as the Supreme Court of this State shall prescribe; provided that the provisions of this act shall not apply to or affect persons admitted to the bar of this State under pre-existing laws.

Provided, THAT THE GRADUATES FROM THE LAW DEPARTMENT OF THE UNIVERSITY OF MINNESOTA SHALL, UPON PRESENTATION OF THEIR DIPLOMA FROM SAID UNIVERSITY TO THE SUPREME COURT, OR ANY DISTRICT COURT OF THIS STATE, AT ANY TIME WITHIN TWO (2) YEARS FROM THE DATE OF SUCH DIPLOMA, BE ENTITLED TO A CERTIFICATE OF ADMISSION TO THE BAR WITHOUT ANY EXAMINATION OR FEE WHATEVER, AND SUCH COURT SHALL THEREUPON ENTER AN ORDER AUTHORIZING AND DIRECTING THE CLERK OF SAID COURT TO ISSUE TO SUCH GRADUATE A CERTIFICATE OF ADMISSION TO THE BAR, UPON PROOF SATISFACTORY TO SAID COURT THAT SUCH GRADUATE IS A CITIZEN OF THE UNITED STATES, A CITIZEN AND RESIDENT OF THE STATE OF MINNESOTA; THAT HE IS TWENTY-ONE (21) YEARS OF AGE, OF GOOD MORAL CHARACTER, AND UPON HIS SUBSCRIBING SUCH OATH AS IS NOW PROVIDED BY STATUTE FOR PERSONS UPON ADMISSION TO THE BAR.

SEC. 8. Any person who shall appear as an attorney or counsellor at law in any action or proceeding in any court of record in this state to maintain or defend the same, except in his own behalf when a party thereto, unless he has been admitted to the bar of this State shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than fifty dollars (\$50) nor more than one hundred dollars (\$100), and it shall be the duty of the respective county attorneys in this state to prosecute violations of this act; but the District Courts of this State shall have sole original jurisdiction of this offense.

Provided, that any attorney or counsellor residing in any of the other States or Territories wherein he has been admitted to practice law, and who shall attend any term of the Supreme or District Courts of this State for the purpose of trying or participating in the trial or proceedings in such action or proceeding therein pending, may be permitted to try or participate in the trial or proceedings in such action or proceeding without being subject to the provisions of this act.

SEC. 9. Chapter ninety-three (93) of the general laws of one thousand eight hundred and eighty-nine (1889) and section three (3), four (4) and eight (8) of chapter eighty-eight (88) of the general statutes of one thousand eight hundred and seventy-eight (1878,) and chapter one hundred and four (104) of the general laws of one thousand eight hundred and eighty-three (1883) are hereby repealed.

SEC. 10. This act shall take effect and be in force from and after its passage.

EXPENSES.

These depend largely upon the tastes and habits of the individual. Students find no difficulty in obtaining board among the people of the city. Good board can be obtained for \$4.00 per week. Students board in clubs at less expense.

For further particulars write to the dean, W. S. Pattee, and all information necessary for the student will be furnished promptly. The Dean will be pleased to correspond with any one who is thinking of pursuing a course of legal study, and he will gladly aid any student in selecting the proper books. Letters addressed to him at Minneapolis, Minnesota, will receive prompt attention.

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, excepting in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in each course, are pursued by all the students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in four buildings situated upon the University campus, viz: Medical hall, the laboratory of medical science, the laboratory of chemistry and the laboratory of anatomy.

Medical hall contains the offices of the deans of the college of medicine and surgery, of the college of homeopathic medicine and surgery and of the college of dentistry; the large amphitheatre and lecture rooms of 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 laboratory of medical sciences is a building especially designed for laboratory uses. One 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 laboratories, the laboratory of organic chemistry, with preparation and stock rooms. The office of the secretary of the college of medicine and surgery, a large lecture amphitheatre, especially arranged for demonstrative work, the laboratories of physiology, physiologic chemistry and practical dietetics, and operative surgery are also situated in this wing.

The center and opposite wing are occupied by the departments of histology and embryology, pathology and bacteriology. Each of these branches has its well-lighted laboratories, preparation rooms and private study rooms.

Upon the basement floor are laboratory stock rooms and the animal rooms devoted to physiologic and bacteriologic purposes.

A large laboratory upon the first floor is assigned to the bacteriological work of the State Board of Health.

The laboratory of 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 assistant professor of chemistry.

The laboratory of anatomy is a new two-story and basement building, 35x60 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 are an amphitheatre seating one hundred and seventy-five students, the private offices of the professors and instructors, a private dissecting room and a small laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

A clinical building has been recently erected and equipped. It 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 several faculties, with the 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 centers of population. The location of the University near the interurban car line enhances the value and convenience of these clinical opportunities.

A medical library, containing some three thousand 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 of Medicine and Surgery.

THE FACULTY.

- CYRUS NORTHPROP, LL. D., *President.*
PARKS RITCHIE, M. D., *Dean and Professor of Obstetrics.*
CHARLES A. WHEATON, M. D., *Emeritus Professor of Surgery.*
THOMAS G. LEE, B. S., M. D., *Professor of Histology and Embryology and Librarian.*
CHARLES A. ERDMANN, M. D., *Professor of Anatomy.*
RICHARD OLDING BEARD, M. D., *Secretary and Professor of Physiology.*
CHARLES JOHN BELL, B. A., *Professor of Chemistry.*
HENRY MARTYN BRACKEN, M. D., L. R. C. S., Edin., *Professor of Materia Medica and Therapeutics.*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Professor of Pathology and Bacteriology.*
CHARLES H. HUNTER, A. M., M. D., *Professor of Theory and Practice of Medicine.*
EVERTON J. ABBOTT, A. B., M. D., *Associate Professor of Practice and Professor of Clinical Medicine.*
J. W. BELL, M. D., *Professor of Physical Diagnosis and Clinical Medicine.*
CHARLES LYMAN GREENE, M. D., *Clinical Professor of Medicine and Physical Diagnosis.*
HENRY L. STAPLES, A. M., M. D., *Professor of Clinical Medicine.*
JAMES H. DUNN, M. D., *Professor of Surgery.*
FREDERICK A. DUNSMOOR, M. D., *Professor of Operative and Clinical Surgery.*
JAMES E. MOORE, M. D., *Professor of Clinical Surgery.*
J. CLARK STEWART, B. S., M. D., *Professor of Principles of Surgery.*
JUSTUS OHAGE, M. D., *Professor of Clinical Surgery.*
JOHN T. ROGERS, M. D., *Professor of Clinical Surgery.*
ARTHUR J. GILLETTE, M. D., *Professor of Orthopedic Surgery.*
A. B. CATES, A. M., M. D., *Professor of Obstetrics.*
ALEX J. STONE, M. D.; LL. D., *Professor of Diseases of Women.*
AMOS W. ABBOTT, M. D., *Clinical Professor of Diseases of Women.*
A. McLAREN, A. B., M. D., *Clinical Professor of Diseases of Women.*
JOHN F. FULTON, Ph., D., M. D., *Professor of Ophthalmology and Otology.*
FRANK C. TODD, M. D., *Clinical Professor of Ophthalmology and Otology.*
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.*
THOS. S. ROBEPTS, M. D., *Professor of Diseases of Children.*
MAX P. VANDER HORCK, M. D., *Professor of Diseases of the Skin and of the Genito-urinary System.*
W. S. LATON, M. D., *Professor of Diseases of the Nose and Throat.*
ARTHUR SWEENEY, M. D., *Professor of Medical Jurisprudence.*
J. E. SCHADLE, M. D., *Clinical Professor of Diseases of the Nose and Throat.*

CORPS OF CLINICAL PROFESSORS AND INSTRUCTORS.

- BURNSIDE FOSTER, M. A., M. D., *Clinical Professor of Diseases of the Skin and Lecturer upon History of Medicine.*
JAMES T. CHRISTISON, M. D., *Clinical Professor of Diseases of Children.*
C. NOTHNAGEL, M. D., *Clinical Professor of Medicine.*
HERBERT W. DAVIS, M. D., *Clinical Instructor in Obstetrics.*
GEORGE M. COON, M. D., *Clinical Instructor in Genito-Urinary Diseases.*
L. A. NIPPERT, M. D., *Clinical Instructor in Medicine.*

- ANDREW M. HENDERSON, M. D., *Clinical Instructor in Medicine.*
 J. L. ROTHROCK, M. D., *Clinical Instructor in Pathology.*
 L. B. WILSON, M. D., *Senior Demonstrator in Pathology.*
 S. M. WHITE, B. S., M. D., *Assistant Professor of Pathology and Bacteriology.*
 WM. M. CHOWNING, B. A., M. D., *Junior Demonstrator of Pathology and Bacteriology.*
 GEORGE D. HEAD, B. S., M. D., *Instructor in Pathology and Clinical Microscopy.*
 H. C. CAREL, B. S., *Assistant Professor of Chemistry.*
 WINFIELD S. NICKERSON, Sc. D., *Assistant Professor of Histology.*
 MARGARET L. NICKERSON, M. A., *Instructor in Histology.*
 M. RUSSELL WILCOX, M. D., *Demonstrator in Physiology.*
 ELEANOR M. WILKINSON, *Instructor in Physiology and Dietetics.*
 J. WARREN LITTLE, M. D., *Clinical Instructor in Surgery.*
 GEO. E. SENKLER, M. D., *Clinical Instructor in Physical Diagnosis.*
 A. W. DUNNING, M. D., *Clinical Instructor in Nervous and Mental Diseases.*
 FREDERICK LEAVITT, M. D., *Clinical Instructor in Obstetrics.*
 *R. E. CUTTS, B. S., M. D., *Clinical Instructor in Gynecology.*
 A. E. BENJAMIN, M. D., *Clinical Instructor in Gynecology.*
 HALDOR SNEVE, M. D., *Lecturer in Mechano-Therapy.*
 H. K. READ, M. D., *Demonstrator of Anatomy.*
 F. A. KIEHLE, A. B., M. D., *Instructor in Medical Latin.*

CLINICAL AND LABORATORY ASSISTANTS.

- J. P. BARBER, M. D., *Assistant in Diseases of Children.*
 F. R. WRIGHT, M. D., *Assistant in Surgery and Dermatology.*
 A. A. LAW, M. D., *Assistant in Operative Surgery.*
 A. T. MANN, M. D., *Assistant in Surgery.*
 C. D. HARRINGTON, M. D., *Assistant in Surgery.*
 JUDD GOODRICH, M. D., *Assistant in Surgery.*
 WARREN DENNIS, B. S., M. D., *Assistant in Surgery.*
 A. R. COLVIN, M. D., *Assistant in Surgery.*
 R. A. CAMPBELL, M. D., *Assistant in Diseases of the Nose and Throat.*
 CHARLES R. BALL, M. D., *Assistant in Nervous and Mental Diseases.*
 HARRY P. RITCHIE, Ph. B., M. D., *Assistant in Gynecology.*
 E. F. REAMER, M. D., *Assistant in Ophthalmology and Otolary.*
 WM. R. MURRAY, B. A., M. D., *Assistant in Ophthalmology and Otolary.*
 E. V. APPLEBY, M. D., *Assistant in Ophthalmology and Otolary.*
 J. C. LITZENBERG, B. S., M. D., *Assistant in Obstetrics.*
 WALTER RAMSEY, M. D., *Assistant in Medicine.*
 DAVID LANDO, M. D., *Assistant in Medicine.*
 E. R. HARE, M. D., *Prosector in Anatomy.*
 W. H. CONDIT, B. S., M. D., *Assistant in Materia Medica.*
 L. H. FLIGMAN, M. D., *Assistant in Physiology.*
 S. P. REES, B. A., M. D., *Assistant in Physical Diagnosis and Obstetrics.*
 P. A. HOFF, M. D., *Assistant in Clinical Medicine.*
 HENRY L. WILLIAMS, M. D., *Assistant in Medicine.*
 LESTER W. DAY, M. D., *Assistant in Medicine.*

UNIVERSITY SCHOLARS.

GIVING INSTRUCTION AND ASSISTING IN LABORATORIES.

- In Anatomy*—J. A. Cameron, M. Field, E. Alger, W. B. McCreery.
In Histology and Embryology—F. J. Bomberger, J. W. George, Herbert Coulter and E. E. Olander.
In Bacteriology and Pathology—Chelsea Pratt, H. C. Arey, E. S. Judd, Ellen Fullerton
 B. S.; A. G. Liedloff, W. M. Brown.
In Surgical Pathology—I. C. McDonald.

*Deceased

Rules and Regulations.

COLLEGE YEAR.

The fifteenth annual course of study in this department will begin on September 16th, 1902, and will continue eight and one-half months, closing upon the first Thursday in June, 1903. The college of dentistry, in this department, will begin work on September 10th and the college of pharmacy October 1st.

The college year is divided into semesters; the first semester ending January 24th, 1903. The succeeding week will be devoted to mid-year examinations which will be conducted in many of the departments. The second semester will begin February 3rd, 1903, and will close May 16th, 1903, when the final examinations of the year will begin. Commencement exercises will occur in common with the other departments of the University, during the week ending June 4th, 1903.

ENROLLMENT.

It is desirable that students matriculate before September 9th.

Students will be assigned seats in the 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 will then present themselves for entrance examination, or for the approval of their evidences of preliminary qualifications, to a committee of the college of science, literature and the arts appointed for this purpose. Having received an entrance certificate from this committee they will report to the dean of the college which they desire to enter, for admission and classification. They will then be furnished with a record of their standing and of the studies to be taken and they will be required to present this record to the professors in charge of such studies within the first week of the term.

REQUIREMENTS FOR ADMISSION.

HIGH SCHOOL REQUIREMENTS.

Beginning with the session of 1902-1903 applicants for admission to the College of Medicine and Surgery of the University of Minnesota, must present to the dean of the faculty of this college, credentials properly signed, showing that the applicant has satisfactorily completed the branches of study, covered in a full four years' high school course and, in addition, the

branches covered in the freshman year of some approved college or university, according to the conditions herein stated.

The applicant who cannot present credentials must submit to an examination on the subjects, given in the schedule, herewith submitted, for which he has no credentials.

English Language. (a.) English Composition and Rhetoric.

Candidates are expected to show a familiarity with the principles and technical terms in ordinary high school 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 the main purpose of this subject is to teach the student to use language correctly and forcibly. To this end students should be given constant exercise in composition writing. A knowledge of the subject matter of the texts used will be considered of less importance than the demonstration of ability to write good English. A full year of work in the high school, five hours per week, should be devoted to this subject.

Mathematics (a.) Algebra, elementary (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 binomial theorem for positive integral exponents,) evolution, radical inequalities, ratio, proportion, progression, and quadratic equations with problems.

Geometry (b.) Plane, (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.

Latin (a.) Grammar, (one year.)

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.

(b) Caesar, 4 books (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 Cæsar and an account of his wars.

In addition to the above named subjects, which are required, and for which substitutes can not be accepted, applicants shall present evidence of preparation in *seven year-credits*, or their equivalent, to be chosen from the following list:

Latin—Cicero, four orations, one year; Vergil, 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.

English—Latin element, one year; Literature, one year.

History—Greece and Rome, one-half year; England, one-half year; Modern, one-half year; Medieval, one-half year; Senior American, one-half year.

Civics—One-half year.

Political Economy—One-half year.

Physics—One year.

Chemistry—One year or one-half year.

Botany—One-half year or one year.

Zoology—One-half year or one year.

Astronomy—One-half year.

Geology—One-half year.

Physiography—One-half year.

Solid Geometry—One-half year.

Higher Algebra—One-half year.

ADDITIONAL COLLEGE WORK REQUIRED.

In addition to the foregoing high school requirements for admission to the University of Minnesota, applicants for entrance to the College of Medicine and Surgery shall present evidence of having completed one year's work in a recognized college or university course. The following schedule presents the work of the first year in the college of science, literature, and the arts. Applicants who have credit for one year of college work but whose credits do not evidence such a course or its fair equivalent, will be permitted to enter but must make up such deficiencies during the first year in the college of science, literature and the arts.

1. *Mathematics*—A full year of college work, four recitation periods per week, including the subjects of higher algebra, plane and spherical trigonometry.

Higher algebra, including simple equations, inequalities, proportion, variation, progression, quadratic equations, simultaneous equations of the second degree, maxima and minima of functions, differentiation of algebraic functions, development of functions, logarithms, theory of equations and solution of numerical higher equations. Plane and spherical trigonometry, with numerous applications.

2. *Language*, one full year of college work, four recitation periods per week, in one of the following:—English, early English, including Chaucer and Spenser, Rhetoric, including some Shakspeare and practice in writing; Latin, one year of college work, in advance of four years work required for admission.

ENGLISH LANGUAGE AND LITERATURE.

Course I. (a) Chaucer, (b) Spenser.

or

Course II. Rhetoric.

This course includes two hours a week of rhetoric, the writing of compositions, and the study of prose masterpieces, and two hours a week of the study of Shakspeare's plays.

LATIN.

Course I. Cicero de Amicitia and de Senectute.

Exercises in Latin composition and a review of the syntax.

Course II. Livy.

Selections from Livy and one play of Plautus or Terence, rise and development of Roman institutions.

3. *Language*, one full year of college work, four recitation periods per week, in *one* of the following:—

German, 1st or 3rd year's work in the subject.

French, 1st or 3rd year's work in the subject.

Greek, 1st or 3rd year's work in the subject.

GERMAN.

Course I. German begun.

(a) Whitney's Brief German Grammar, Bernhardt's German composition and Buchheim's German Poetry.

(b) German prose selections. Leander's Traumerein, Heyse's L'Arrabbiata, von Hillern's Höher als die Kirche; grammar and composition completed.

(c) Scientific prose. Hodge's German Science Reader; grammar and composition completed.

Or Course III. Advanced classic prose and poetry.

(a) Goethe's Prosa and Gedichte, author's life and works, Spanhoofd's Deutsche Grammatik. Oral and written exercises based on text.

(b) Schiller's Belagarung von Antwerpen, Heine's Prosa and Buch der Lieder, life and works of the author.

(c) Brandt & Day's German Scientific Reading, Spanhoofd's Deutsche Grammatik completed, original letters and essays.

FRENCH.

Course I. French begun.

De Borde's Elements of French; Kuhn's French Reader; modern plays.

Or Course II. Advanced grammar and composition.

Fasnacht's Progressive French Course.

Paul Bercy's Selections for Translating English into French. The classical authors of the xvii and xviii centuries will be read. Fortier's Histoire de la Littérature Française.

GREEK.

Course I. Greek begun.

Brook's Introduction to Attic Greek.

Course II. Anabasis.

Prose composition based on the text.

Course III. Xenophon's Memorabilia.

Prose composition based on the text; collateral readings in history.

Course IV. Lysias and Demosthenes.

Prose composition based on the text; collateral readings in history antiquities.

4. *Science*, one full year of college work, four recitation periods per week, and four hours of laboratory work, in *one* of the following:—

Botany.

Chemistry.

Zoology.

BOTANY.

Course I. General botany.

This course comprises a general survey of the plant kingdom with laboratory work on the cell, on the algae, lichens, fungi, mosses and ferns, gymnosperms and flowering plants. Lectures and laboratory.

Or Course II. General plant morphology. First year.

This course comprises a thorough laboratory discipline in algae, fungi and lichens and is the introductory course for students specializing in botany. Lectures, laboratory work and collateral reading throughout the year.

CHEMISTRY.

Course I. (a) General chemistry.

Lectures and laboratory work. The course includes a detailed study of the chemical and physical properties of the non-metals and their more important compounds.

(b)

Lectures and laboratory work. A continuation of course (a) with an introduction to organic chemistry.

ANIMAL BIOLOGY.

Course I. General zoology. "Short course" or first year of the "long course".

Text-book, lectures, quizzes and laboratory work.

The course includes the elements of entomology, a general survey of the phyla of the animal kingdom and the elements of embryology. A collection of identified insects is required of each student.

A student may enter with two conditions in the foregoing entrance requirements, but must remove these conditions by the close of the first year. Blanks for certificates of credentials may be had upon application at the Dean's office.

CONDITIONS.

Examinations of conditioned students and of applicants for advanced standing, in the studies of the first, second and third years, will be held during the first week of the semester. In the common branches they occur upon the following dates.

September 18, 9 a. m. Anatomy, first year; Physiology, second year.

September 18, 2 p. m. Histology, first year; Chemistry, second year.

September 19, 9 a. m. Physiology, first year; Anatomy, second year.

September 19, 2 p. m. Chemistry, first year; Histology, second year.

Conditions may also be removed at the close of each semester.

No student will be eligible to final examinations in any branch who carries conditions of a previous year of that branch unremoved.

No student will be admitted to the fourth year who is conditioned in any of the studies of the first and second years.

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.

CLASSIFICATION.

September 20th and 22d will be devoted to the classification of students. The opening lecture of the course will be delivered at 8 p. m., September 22d.

STANDING.

The standing of students is determined by the results of recitations, written examinations and laboratory work. It is indicated by the terms "passed" or "conditioned." Conditions may be removed as indicated above. Incomplete work must be made up before the final examinations of the following year.

Students must pass a majority of the studies of their year in order to classify in the next succeeding year.

In the studies of the first and second years, the classes will recite in sections during hours regularly assigned for this purpose.

Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies and must present themselves at the above dates and pass the examinations in all branches in which they wish to be exempt.

No conditions of advanced standing will entitle the student to take the two years of any graded study coincidentally.

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.

Seniors in the college of science, literature and the arts, 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. Since the medical practice act of this State requires four full years of medical study, these students must elect this work in the department of medicine, in order that it may be contributive toward the degrees given in both colleges.

ATTENDANCE.

Students are required to attend four-fifths of the lectures in each course. This rule is not intended for the benefit of those who seek admission after

the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered, invariably, during the first week in which they begin.

TERMS OF TUITION.

The college of medicine and surgery has adopted a system of annual fees, in which are included all charges for matriculation, lecture courses, laboratory courses, dissections and graduation, except a rental fee for microscopes.* These fees are \$100 per annum for the full course.

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 3, 1903. 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 receive only a credit of five dollars upon his annual fee per semester of each laboratory course from which he may be exempt.

Students who are conditioned and fail to remove their conditions within one year will 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.

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.

*In each semester a fee of \$2.00 to \$4.00 will be charged for the rental of a microscope in each course 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,

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 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 lecture 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 eight and one-half 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 specialties and the application of scientific or laboratory methods to clinical experience.

GRADED SYSTEM OF STUDY.

FIRST YEAR.

Histology and embryology, anatomy, physiology, chemistry, materia medica.

SECOND YEAR.

Histology and embryology, anatomy, physiology, chemistry, general bacteriology and pathology.

THIRD YEAR.

Surgical anatomy, special pathology, and bacteriology, clinical microscopy, surgical pathology, operative surgery, practice of surgery, practice of medicine, diseases of children, obstetrics, physical diagnosis, therapeutics.

FOURTH YEAR.

Practice of surgery, operative surgery, practice of medicine, clinical obstetrics, surgical pathology, practical physical diagnosis, nervous and mental diseases, gynecology, ophthalmology and otology, therapeutics, genito-urinary diseases, orthopaedia, diseases of the skin, diseases of the nose and throat, hygiene, medical jurisprudence, practical case-taking and life insurance, and history of medicine.

ELECTIVE COURSES.

The following subjects, arranged in the fourth year, are electives: Operative surgery therapeutics, practical dietetics, case-taking and life insurance, history of medicine, mechano-therapy, medical jurisprudence, pathology of the nervous system, special course in practical pathology, applied anatomy of the nervous system, methods of microscopic work.

Senior students are required to elect three of these courses. They will be required to complete and to pass satisfactory examinations upon the subjects elected. The remaining subjects, with the exception of practical dietetics, they may follow at their pleasure, with out required examination.

HISTOLOGY AND EMBRYOLOGY

The laboratory of histology and embryology occupies most of the first floor and portions of the third floor and basement of the laboratory of medical sciences.

The general laboratory, 4x72 feet, extends across the north wing and is abundantly lighted by large windows on three sides and part of the fourth. Study tables accommodating seventy students are placed directly under the windows. A second tier of desks provides for twenty other students. Each student is provided with a separate locker for the storage of apparatus and material. The special laboratory, 2x35 feet, for research work by advanced students, adjoins the general laboratory. The next apartment, the library of the laboratory, contains a reference library consisting of a small but carefully selected collection of related 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 student access to the best publications among current periodicals and monographs. The rooms across the hall are devoted to the office and private laboratories of the professor and his assistant. On the third floor are located a preparation room, a small laboratory for special students, a dark room, a room for copying and enlarging, and a laboratory for photomicrography and projection. In the museum on this floor, are several cases containing series of embryos and histologic specimens. In the well-lighted basement are found a preparation room, 20x35 feet, for the hardening of tissues, &c., and an experimental laboratory and store room, 26x36 feet.

These laboratories are equipped with ninety Leitz' microscopes, each fitted with nose-piece and Abbé condenser, various forms of microtomes, such as freezing, Thoma, Minot, Schanze, &c., injection apparatus, aquaria, thermostats, incubators, water baths, chemical hoods, a great variety of technical glassware, Grüber's strains, 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. Collections of typical specimens, also, will be loaned to the students for study. 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 photo-micrographs, 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 of \$4 for first year courses, and \$2 for second year courses.

Course I. General morphology and histology.

Lectures, demonstrations and laboratory work. The course includes the structure and manipulation of the microscope, the structure and properties of protoplasm; the cell, its structure; cell division and reproduction. A detailed study of the structure and life history of certain typical unicellular animal and plant forms and of certain multicellular forms, 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. Lectures, etc., 4 hour a week. Laboratory work, 12 hours a week, first half, first semester, first year.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON.

Course II. Elements of embryology and histogenesis.

Lectures, demonstrations and laboratory work. A comparative study of reproduction; the ovum, the spermatozoon, fertilization, cleavage, formation of blastoder-

mic layers, the formation of the embryo, foetal envelopes, etc., with practical work on chick and frog embryos. The differentiation and histo-genesis of the tissues, etc. Lectures, etc., 4 hours a week; laboratory work, 6 hours a week, second half, second semester, first year. Open to those who have completed course I.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON

Course III. Human embryology and microscopic anatomy.

Lectures, demonstrations and laboratory work. Advanced methods of histological and embryological 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 system, etc. Lectures, etc., 4 hours a week; laboratory work, 18 hours a week. First half, first semester, second year. Open to those who have completed the course of first year in histology and embryology.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON

Course IV. Neurology and neurogenesis.

Lectures, demonstrations and laboratory work. The comparative study of the morphology, microscopic anatomy, origin and development of the central and sympathetic and central nervous systems and the organs of special sense. Lectures, etc., 4 hours a week; laboratory, 18 hours a week. First half, second semester, second year.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON.

The full courses given in histology and embryology of vertebrates in the college of science, literature and the arts will be accepted in lieu of the first year's work in histology and embryology, and in the department of medicine. See statement of fees, page 18.

The following elective courses are open to properly qualified senior students, and will consist of practical work in the laboratory, a prescribed course of reading, with reports of work, and of lectures and demonstrations to be given from time to time.

Course V. Methods of microscopical work.

The preparation and use of the various solutions employed in fixing, hardening and staining, methods of embedding, sectioning, reconstruction, etc.

Course VI. (a) Comparative histology and histogenesis of tissues.

The animal cell, the epithelial, connective, muscular, and nervous tissues, blood, etc. (b) *Comparative histology and histogenesis of the tissues.* The epidermal, respiratory and uro-genital systems of organs.

(c) *Comparative histology and histogenesis of the nervous system and sense organs.* Central nervous system, etc., after the methods of Weigert, Golgi, etc.

Course VII. Comparative embryology of vertebrates.

A detailed study of the various stages in the development of vertebrate types, as acanthias, petromyzon, trout, amblystoma, frog, chick, rat, pig and human embryos.

Course VIII. Research work in histology and embryology.

Opportunity will be offered for those desiring to pursue original investigation.

Elective Course V will be offered during the 2nd half of the 2nd semester in 1902-1903.

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, syndesmology and myology 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.

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 throughout 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; 4 hours each week, for 5 weeks of first semester.

Practical study of the skeleton, followed by recitations from the specimen, taken by the class, in sections; first semester. Required of all first year students.

Course II. Syndesmology.

Lectures, recitations and laboratory demonstrations, 4 hours each week, for 3 weeks first semester, first year. Open to those who have taken course i.

Course III. Myology.

Lectures and recitations, covering the entire muscular and arterial systems of the human body, with a supplementary study of comparative myology; 4 hours each week for 4 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, first semester, first year. Open to those who have taken course ii.

Course IV. Splanchnology and Angiology.

Lectures on the thoracic, abdominal and pelvic viscera, 4 hours each week, for 3 weeks. Open to those who have taken course iii. Lectures, recitations and demonstrating and dissecting the thoracic, abdominal and pelvic organs of the human subject or of the dog or sheep. First semester, first year.

PROFESSOR ERDMANN.

Recitations upon the subjects of the first year's work, conducted in sections by

DRS. H. K. READ AND E. R. HARE.

Course V. The nervous system.

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.

PROFESSOR ERDMANN.

Course VI. Dissections.

This work extends over a period of 7½ weeks, 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.

DRS. H. K. READ AND E. R. HARE.

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 years' course conducted in sections.

PROFESSOR ERDMANN, DRs. H. K. READ AND E. R. HARE.

Course VII. Surgical anatomy.

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. 4 hour a week, second half, second semester. Required of third year students. PROFESSOR ERDMAN

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.

PHYSIOLOGY.

The department of physiology occupies a suite of rooms in the laboratory of medical sciences, including the laboratory of experimental physiology, the laboratory of physiologic chemistry and practical dietetics, 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 with materials, glassware, digesters, water baths, ventilating hoods, etc., for the work in physiologic chemistry. Their outfit includes sets of vivisection instruments, an artificial respiratory machine, batteries; Du Bois-Reymond coils, galvanometers, rheostats, moist muscle chambers, recording drums, Ludwig's kymograph spring myograph, Burdon-Sanderson's stethometer, stethoscopes, phonendoscopes, Dudgeon's and Marey's sphygmographs, cardiographs, Runne's chronograph, Roy's tonometer, Gaskell's clamp, oncometers, hæmometers, hæmoglobinometers, hæmatocrits, plethysmograph, 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 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 the 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 and excretion.

In the second year, the work is made as practical as possible and includes the study of such advanced topics as metabolism, nutrition, dietetics, reproduction, the physiology of foetal life, of infancy, of maturity and of old age; and the functions of the brain, spinal cord, ganglionic and peripheral nerve systems. Eight 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 proteins, 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 func-

tional facts. Demonstrative work is combined with the individual experiments performed by the pupil.

In the fourth year, an elective course in practical dietetics is conducted during the second half of the first semester. It deals with the analysis of foods, with the general principles of food preparation and with selections of a suitable dietary for the several periods of life.

Practical talks upon the principles and means of food preparation, the serving of food, food selection, invalid and infant dietary, etc., are associated with this course. A trained instructor conducts the exercises in hygienic cooking.

A laboratory reference library is in process of collection, to which the advanced student will have access for collateral reading,

Course I. General physiology.

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. Five hours a week, second semester, first year. PROFESSOR BEARD.

Course II. Systemic physiology.

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. Five hours a week, second semester, first year. Open to those who have completed course i. PROFESSOR BEARD.

Recitations upon the subjects of the first year are conducted in sections of the class. PROFESSOR BEARD, DR. M. R. WILCOX AND MISS WILKINSON.

Course III. Advanced physiology.

Lectures, recitations and demonstrations. The course includes the discussion of the phenomena of metabolism; of nutrition; of temperature production, regulation and loss; of reproduction; of the physiologic changes incident to successive periods of life, and of the functions of the nervous system. Five hours a week, first semester, second year. Open to those who have completed the courses in physiology of the first year. PROFESSOR BEARD.

Recitations upon the subjects of this course are conducted in sections of the class. PROFESSOR BEARD AND DR. WILCOX.

Course IV. Physiologic chemistry and microscopy.

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 the process of fibrin formation. 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 and in the use of the polariscope. Nine hours a week, first half of first semester, second year. Open to those who have completed courses i and ii. PROFESSOR BEARD, DR. WILCOX AND MISS WILKINSON.

Course V. Experimental physiology.

Laboratory work and demonstrations. A study of physiologic apparatus, electrical stimuli and methods of experimentation; the demonstration of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems. Six hours a week second half of first semester, second year. Open to those who have completed course iv.

PROF. BEARD AND DR. WILCOX.

Course VI. Practical dietetics. (Elective.)

Lectures and laboratory exercises. A study of food analysis, food preparation and of the general principles of food selection, including a discussion of invalid and infant dietary. Six hours a week second half of first semester, fourth year.

PROFESSOR BEARD AND MISS WILKINSON.

Opportunity will be afforded, in the laboratories of physiology and physiologic chemistry, for the pursuit of special courses of study in both experimental and chemical physiology, under the direction of the chair.

CHEMISTRY.

The work in this subject is carried on in a building especially arranged for this work. The qualitative laboratory has a floor space of about 2300 square feet and accommodates 100 students at a time. It is used for instruction in general chemistry and analysis. It is well supplied with the usual apparatus. The quantitative laboratory has a floor space of about 1500 feet, and accommodates 68 students at one time. It is used for instruction in the analysis of the urine, quantitative analysis and organic chemistry.

Course I. General inorganic chemistry, including qualitative analysis.

Lectures and recitations. 3 hours a week, first semester; 2 hours a week, second semester, first year.

PROFESSOR BELL.

Laboratory work; qualitative analysis. 6 hours a week, first year.

PROFESSORS BELL AND CAREL.

Course II. Analysis of the urine; toxicology; chemistry of carbon compounds; chemistry of air, soil and water.

Lectures and recitations. 3 hours a week, first semester, second year.

PROFESSOR BELL.

Laboratory work; analysis of the urine. 6 hours a week, first semester, second year.

PROFESSORS BELL AND CAREL.

An optional course in experimental work is given during the second semester of the second year.

It includes work in toxicology, water analysis, food analysis, and the preparation of carbon compounds, according to the wishes and needs of the individual student.

No charge is made except for apparatus destroyed.

MATERIA MEDICA AND THERAPEUTICS.

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. It is supplied with crude drugs and botanical specimens. Samples of these the student is allowed to retain for private study. Pharmaceutical preparations are also placed before him and he is taught the method of their manufacture and their most eligible forms.

Course I. Pharmacology

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, first year.

PROFESSOR BRACKEN.

Course II. Therapeutics.

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, such as hydro-therapy, serum-therapy, dietetics, etc., are fully considered. Lectures and recitations. Four hours a week, first semester, third year.

PROFESSOR BRACKEN.

Course III. Therapeutics.

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.

PROFESSOR BRACKEN.

PATHOLOGY AND BACTERIOLOGY.

The laboratories of pathology and bacteriology occupy spacious quarters in the laboratory of medical sciences. A general laboratory, 44x70 feet, is well lighted by windows on three sides and on the fourth. Electric light for microscopic and general illuminating purposes is also provided. The arrangement is such that four students are grouped so as to have a sink, with gas and electric light, distilled and city water and waste connection, and ample desk space next the windows. Eight lockers, arranged beneath the table and on the walls, provide for apparatus, microscopes, etc., and are given at the beginning of the course to each quartette. Immediately behind and accessible to each student, are sterilizers, incubators, blow-pipes, etc. Cupboards, drawers, a large incubator, sinks, fume chambers, demonstration and distribution tables, complete the arrangement of the room.

Two private rooms of the demonstrators flank it on either side. Adjoining one of these are the department library and the office and private laboratory of the professor of pathology and bacteriology. Adjoining this is the private laboratory of the professor of surgical and clinical pathology. Specimens illustrative of surgical pathology are here prepared and diagnostic work done.

In the basement of the building, the department has store rooms and a room where pathological animals are housed. Here too are equipped laboratories for research in bacteriology and experimental pathology, as well as a room in which all the culture media are made.

In the third story, immediately above and of the same size as the large laboratory, is a museum for the storage and exhibition of pathological specimens. A preparation room for their reception and assorting adjoins it.

The hospitals of Minneapolis and St. Paul 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 frequently received.

MICROSCOPES.

An adequate equipment of microscopes with attachments, immersion lenses, etc., permits of the rental of an instrument to each student, at a cost of \$2.00 per course, whenever he is unprovided with one suitable for his purposes.

BACTERIOLOGY.

Course I. General bacteriology.

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. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. CHOWNING.

Course II. General pathology.

Lectures, demonstrations and laboratory work on the general processes involved in disease, to include the study of inflammation, the degenerations and tumors. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. WILSON.

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 on 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 of the important pathogenic bacteria, sown and kept under observation by each student. Fluids and tissues from clinical cases (human and animal) will be supplied for microscopic and cultural examination and an intimate relationship with clinical and 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 lesions in all the organs will be illustrated from clinical and autopsy material fresh and preserved and supplemented by experiment 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, ASST-PROFESSOR WHITE, DR. CHOWNING

2. Pathology of diseases of toxic and obscure origin. Under this are included the special degenerations, inflammations and other pathological conditions not already included under infectious diseases.

ASST-PROFESSOR WHITE, DR. CHOWNING.

3. Clinical microscopy. The microscopical and chemical study of such materials as pathological blood, sputum, urine, contents of the alimentary canal, etc., and the application of laboratory methods to clinical diagnosis.

DR. HEAD.

Course III. Pathology of special diseases.

Fifteen hours per week throughout the first semester of the third year.

Course IV.

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.

ASST-PROFESSOR WHITE AND DR. ROTHROCK.

Course V. Special pathology of the nervous system.

An elective course limited to twenty-five students.

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.

DR. WILSON.

Course VI. Special course in practical pathology.

An elective course limited to twenty-five students. Twelve hours per week second four weeks of the second semester, fourth year.

Course VII. Research work in one of the following lines:

(a) General pathology.

PROFESSOR WESBROOK.

(b) Special pathology and bacteriology and technique.

ASST-PROFESSOR WHITE.

Second semester of third and throughout the fourth year, hours assigned.

Course VIII. Surgical pathology.

(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 and 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 2 hours a week, second semester, fourth year. PROFESSOR STEWART.

PRACTICE OF MEDICINE.

The course in the principles and practice of medicine is graded in the third and fourth years. Examinations are held at the close of each of these years. The lectures and recitations are conducted by several members of the teaching staff, and the dispensary and bedside clinics by a large corps of instructors.

Course I. Infectious diseases and the phenomena of infection.

Parasites; intoxicants; ptomaines. Lectures and recitations. Two hours a week, second semester, third year. PROFESSOR HUNTER.

Course II. Local diseases; the thoracic viscera; heart, lungs and blood vessels. Lectures and recitations. One hour a week, third year. PROFESSOR ABBOTT.

Course III. Elementary case-taking. Four lectures and recitations. First semester, third year. PROFESSOR GREENE.

Course IV. Contagious and infectious diseases; nutritive results of infection; the relation of temperament and diathesis, the laws of heredity; medical statistics; the principles of nursing, and a minute study of the literature of the topics taken up. Lectures and recitations. One hour a week, fourth year. PROFESSOR HUNTER.

Course V. Diseases of nutrition, in general and in detail, including hæmatology, diabetes, rheumatism, gout, scurvy, lithæmia, Graves' and Hodgkins' diseases, etc. Lectures and recitations. Two hours a week, first half, first semester, fourth year. PROFESSOR HUNTER.

Course VI. Diseases of the abdominal viscera; stomach; intestines, liver; kidneys; disorders of digestion; diseases of old age. Lectures and recitations. One hour a week, fourth year. PROFESSOR ABBOTT.

Course VII. Case-taking and examination for life insurance. (elective.) Lectures and recitations. Two hours a week, second half, first semester, fourth year. PROFESSOR GREENE.

Course VIII. Clinical exercises in general medicine, consisting of clinical instruction to sections of the third and fourth year classes, in the dispensaries, by the bedside and in the amphitheatres of the several hospitals of St. Paul and Minneapolis, as follows:

- (a) City Hospital, Minneapolis, two hours a week, both years. Professors J. W. Bell, H. L. Staples and C. Nothnagel, and Dr. L. A. Nippert.
- (b) St. Barnabas' Hospital, Minneapolis, two hours a week, both years. Professor C. H. Hunter and Dr. Geo. D. Head.
- (c) City and County Hospital, St. Paul; St. Joseph's Hospital and St. Lukes' Hospital, St. Paul, three hours a week, both years. Professor E. J. Abbott.
- (d) City and County Hospital, St. Paul, two hours a week, both years. Professor C. L. Greene and Drs. Senkler and Henderson.
- (e) Free Dispensary, St. Paul, two hours a week, both years. Professor C. L. Greene and Drs. Senkler, Lando and Ramsey.
- (f) University Free Dispensary, Minneapolis, four hours a week, both years. Professor H. L. Staples, Dr. L. A. Nippert.

PHYSICAL DIAGNOSIS.

Course I. The thorax: its topography, methods of examination, applied to the normal and abnormal chest: disease of the respiratory organs; their physical signs and differential diagnosis. PROFESSOR J. W. BELL.

- Course II. The precordial region:* its topography, methods of examination, applied to the normal and abnormal heart; diseases of circulatory organs; their physical signs and differential diagnosis. PROFESSOR J. W. BELL.
- Course III. The abdomen:* its topography, methods of examination under normal and abnormal conditions; diseases of this region; their physical signs and differential diagnosis. Lectures and recitations. Three hours a week, first semester, third year. PROFESSOR J. W. BELL.
- Course IV. Clinical physical diagnosis.*
Practical clinical instruction given to small sections of the class. For this purpose the clinical material of the several hospitals and dispensaries in Minneapolis is utilized. Four hours a week, first semester, third year. PROFESSOR NOTHNAGEL.
- Course V. Clinical physical diagnosis.*
Practical clinical instruction given to small sections of the classes. For this purpose the clinical material of the several hospitals and dispensaries in Minneapolis is utilized. Two hours a week, fourth year. PROFESSOR J. W. BELL.
- Course VI. Clinical physical diagnosis, continued.*
The clinical material of the hospitals and dispensaries of the city of St. Paul is utilized in the form of clinics. Two hours a week, fourth year. PROFESSOR GREENE AND DR. G. E. SENKLER.

SURGERY.

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.*
Inflammation; traumatic fevers, suppurations; acute inflammations of joints; ulceration; gangrene; thrombosis and embolism; septicæmia; pyæmia; erysipelas; tetanus, surgical tuberculosis; actinomyces, anthrax and glanders. Lectures and recitations, two hours a week, first semester, third year. PROFESSOR STEWART.
- Course II. Operative surgery.*
Lectures upon the principles of operative procedure; the preparation of patient, operator and operating rooms; the principles of asepsis, antiseptics and sterilization; anaesthesia and anaesthetics; hæmorrhage, ligatures and sutures; dressings, bandages and the treatment of wounds. Two hours a week, first half, second semester, third year. PROFESSOR DUNSMOOR.
- Course III. The practice of surgery.*
Fractures and dislocations; injuries of joints; injuries and surgical diseases of the skin; of the lymphatics, blood vessels and nerves; of the tendons, fasciæ and bursa; of the face, mouth, tongue, jaws, excepting the study of tumors and plastic surgery. Lectures and recitations. Four hours a week, first half, second semester, third year. PROFESSOR DUNN.
- Course IV. The practice of surgery.*
Surgery of the head, neck, chest, back, breast, abdomen, including hernia, anus, rectum and urinary tract. Lectures and recitations. Four hours a week, second half, first semester, fourth year. PROFESSOR DUNN.
- Course V. Operative surgery.*
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. Nine hours a week, first half of first semester, fourth year. PROFESSOR DUNSMOOR AND DR. LAW.

Course VI. Orthopedic surgery: including diseases of bones, joints, synoviae and bursae, 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. Surgical pathology: Tumors.

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. Lectures and recitations, two hours a week, second semester, fourth year. PROFESSOR STEWART.

Course VIII. Bandaging and dressings.

A practical course of instruction, by means of demonstrations and drill, under the supervision of the chair of operative surgery. Eight hours, first half, first semester, fourth year. PROFESSOR DUNSMOOR AND DR. LAW.

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 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 the class weekly, by Prof. 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 Asbury Hospital or the City Hospital, Minneapolis, weekly, by Professor F. A. Dunsmoor and Dr. J. Warren Little.

At St. Mary's Hospital, or the City Hospital, Minneapolis, weekly, by Professor J. H. Dunn.

At St. Barnabas' Hospital, or the City Hospital, Minneapolis, weekly by Professor J. E. Moore and Dr. A. T. Mann. At the University Free Dispensary, by Drs. Dunsmoor, Law, Stewart and Mann.

OBSTETRICS.

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. The obstetric service of the City Hospital in St. Paul and a large part of the service of the Minneapolis City Hospital are 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 sequelae. Lectures and recitations, three hours a week, second semester, third year. PROFESSOR CATES

Course II. The theory and practice of obstetrics.

The mechanism and conduct of normal labor, with its complications; abortions. Lectures and recitations. Two hours a week first semester, third year.

PROFESSOR RITCHIE.

Course III. Course of demonstrations, by charts and upon the manikin, associated with the course lectures.

Course IV. Clinical obstetrics. The study of and participation in two or more deliveries in the fourth year, under the personal direction of Professors Ritchie and Cates, Drs. H. W. Davis, Frederick Leavitt, Harry P. Ritchie, J. C. Litzenberg and S. P. Rees.

GYNECOLOGY.

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.

Two hours a week, first semester, fourth year.

PROFESSOR STONE.

Course II. Clinical course, at the City and other hospitals in Minneapolis and St. Paul. Observations and examinations of patients, methods of examination, diagnosis and treatment. Two operations at least, weekly, at which the student is required to assist. PROFESSORS A. W. ABBOTT AND A. McLAREN, AND DR. A. E. BENJAMIN. Instruction is given at the University and St. Paul Free Dispensaries in methods of examination, diagnosis, use of instruments, etc.

OPHTHALMOLOGY AND OTOTOLOGY.

Course I. Diseases of the eye and its appendages: refraction and its errors.

Lectures and recitations. Two hours a week, first half, second semester, fourth year.

PROFESSOR TODD.

Course II. Diseases of the ear.

Lectures and recitations. Two hours a week, first half, second semester, fourth year.

PROFESSOR FULTON.

Course III. Clinical lectures will be given and operations performed at St. Joseph's Hospital, St. Paul, every Saturday. Fourth year.

Clinical lectures will be given every Wednesday at the St. Paul City Hospital during the months of January, February and March, and occasionally clinics will be given at St. Luke's Hospital. Fourth year.

PROFESSOR FULTON.

Course IV. Clinical lectures will be given and operations performed at Asbury Hospital, Minneapolis, every Thursday. Fourth year.

Clinics will be given at the Minneapolis City Hospital occasionally during October, February, March and April. Fourth year.

PROFESSOR TODD.

Course V. Clinical instruction will be given at the University Free Dispensary 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 application of remedies, etc. Fourth year.

PROFESSORS FULTON AND TODD, AND DRs. MURRAY AND APPLEBY.

Other free dispensaries in St. Paul and Minneapolis are open daily in this branch, where students have the privilege of attendance.

NERVOUS AND MENTAL DISEASES.

The required courses of lectures and recitations in this department will be given in the fourth year. Instructions will be by recitations and the "casemethod." Elective courses in clinical neurology, psychiatry, medical electricity and neuropathology will be offered in the fourth year.

Course I. Neurology.

Lectures, recitations and demonstrations. Two hours a week, twelve weeks, first semester, fourth year.

PROFESSORS RIGGS AND JONES (Alternating.)

Course II. Psychiatry.

Lectures, recitations and demonstrations. Two hours a week, five weeks, first and second semesters, fourth year.

PROFESSORS RIGGS AND JONES (Alternating.)

Course III. Electro-therapeutics, (elective.)

Fourth year.

DR. A. W. DUNNING.

Course IV. Clinical neurology and psychiatry.

Fourth year.

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.

Course V. Laboratory course, (elective.)

Fourth year.

DR. L. B. WILSON.

DISEASES OF THE SKIN.

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 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 fourth year.

PROFESSORS VANDER HORCK AND BURNSIDE FOSTER AND DR. F. R. WRIGHT.

DISEASES OF THE NOSE AND THROAT.

Course I. Anatomy and physiology of the nose and throat; pathology, diagnosis and treatment.

Lectures and recitations. Two hours a week, eight weeks, fourth year.

PROFESSOR LATON.

Course II. Clinical instruction, given at the University Free Dispensary, in the diagnosis 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.

PROFESSOR LATON

Course III. 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.

DISEASES OF CHILDREN.

Course I. Didactic 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.

PROFESSOR T. S. ROBERTS.

Course II. An auxiliary course of lectures will be given in this branch, to the students of the fourth year, at special hours to be announced in the future.

PROFESSOR J. T. CHRISTISON.

Course III. Clinical instruction will be given at the St. Paul Free Dispensary and the St. Paul City Hospital four hours weekly throughout the fourth year.

PROFESSOR J. T. CHRISTISON.

Course III. Clinical instruction will be given in Minneapolis at the contagious wards of the City Hospital, St. Barnabas Hospital, the Children's Home, the University Free Dispensary and other specially designated places at such times as opportunity presents. Fourth year. PROFESSOR T. S. ROBERTS AND DR. J. P. BARBER.

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 physiology of foods, beverages, clothing, bathing and exercise; public sanitation (including sewage and garbage disposal, applied and school disinfection, regulations of quarantine, the disposal of the dead, the development of vital statistics, the care of slaughter houses, etc.), the bacterial diagnosis of infectious diseases, and some practical phases of sanitary engineering. The examinations in this branch are conducted by the lecturers jointly. The course includes thirty lectures and recitations, which are given during the second half of the second semester of the fourth year.

PROFESSORS BEARD, WESBROOK. BRACKEN AND EDDY.

MEDICAL JURISPRUDENCE.

An elective course of lectures and recitations, in the legal relations of medicine. Three hours a week, first half, second semester, fourth year.

PROFESSOR SWEENEY.

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. Three hours a week, second half, second semester, fourth year.

PROFESSOR BURNSIDE FOSTER.

MECHANO-THERAPY.

Courses of illustrated lectures and clinical demonstrations in gymnastics, massage and hydrotherapy. The principles of the physiology, technique and therapeutics are discussed. Two hours a week, first half, second semester, fourth year.

DR. HALDOR SNEVE.

TEXT-BOOKS AND COLLATERAL READING.

The following text-books are preferred by the faculty. Reference works are suggested, also, for collateral reading:

Medical dictionaries:

Gould's Medical Dictionary.
Dunglison's Medical Dictionary.
Duane's Medical Dictionary.
Dorland's Medical Dictionary.

Histology:

First year—
Wilson's The Cell.
Piersol's Histology.
Böhm-Davidoff-Huber's Histology.
Stohr's Histology.
Quain's Anatomy, 10th Ed. Vol. I, Pt. II.
Schäfer's Histology.
Parker's Biology.

Second year—

Piersol's Histology.

Quain's Anatomy, Vol. III. Pts. I, III and IV.

Collateral reading—Kölliker's Gewebelehre Pts. I and II; Duval's Précis d'Histologie; Ranvier's Traite d' Histologie; Weyesse's Histology; Behren's Kossel u Schiefer-decker's Gewebelehre; Klein's Histology; O. Hertwig's The Cell; Lee's Micro-tomist's Vade Mecum; Stirling's Practical Histology; Willey's Amphioxus, etc.; Thompson's Zoology; Huxley & Martin's Biology; Davenport's Experimental Morphology; Barker's Nervous System; Erlich and Lazarus on Blood; Ewing on Blood.

Embryology.

Minot's Embryology.

Hertwig-Mark's Embryology.

Marshall's Vertebrate Embryology.

Collateral reading—Kölliker's Enllwicklungsgeschichte; Prenant's Embryologie; Schenk's Embryologie; O. Schultze's Embryologie; Heisler's Embryology.

Anatomy.

First year—

Gray's Descriptive and Surgical Anatomy, revised American edition.

Morris' Text-book of Human Anatomy.

Quain's Anatomy, 10th edition, Vol. II, Pts. I and II.

Gerrish's Anatomy.

Second and third years—

Gray's Anatomy, revised American edition.

Quain's Anatomy, 10th edition.

Morris' Text-Book of Anatomy.

Gerrish's Anatomy.

Spaltchaltz' Atlas of Human Anatomy.

Holden's Practical Anatomy.

Erdmann's Manual of Dissections of the Human Body.

Weiss' Practical Anatomy.

Hayne's Manual of Anatomy.

Owen's Manual of Anatomy.

Treve's Applied Anatomy.

Collateral reading—Flower's Osteology of Mammals; Gegenbauer's Elements of Com-parative Anatomy; Chauveau's Comparative Anatomy; Wiedersheim's Elements of Comparative Anatomy; McClellan's Regional Anatomy; Meynert's Psychiatry. Part I: anatomy, physiology and chemistry of the brain; Deaver's Surgical Anatomy; Edin-ger's Anatomy of the Nervous System; Hildebrand's Chirurgisch Topographische Ana-tomie.

Physiology.

First and second years—

Foster's Physiology, sixth edition.

Howell's American Text-Book of Physiology.

Stirling's Practical Physiology.

Waller's Human Physiology.

Collateral reading—Landois and Stirling's Handbook of Physiology; Chapman's Phy-siology; Stewart's Practical Physiology; Leo's Physiology; Blyth's Foods; Raymond's Physiology.

Chemistry.

Second year—

Tyson's Examination of Urine.

Reese's Toxicology.

Materia medica and therapeutics.

Bracken's Outlines of Materia Medica and Pharmacology.

Collateral reading—The Pharmacopeia of the U. S.: The National Dispensatory; Sayre's Organic Materia Medica and Pharmacognosy; Culbreth's Materia Medica and Pharmacology; Foster's Practical Therapeutics; Hare's System of Practical Therapeutics; Allen's Handbook of Local Therapeutics.

Pathology.

American Textbook of Pathology.
Ziegler's General and Special Pathology.
Coplin's Manual of Pathology.
Dürck-Hektoen: Special Pathologic Histology.
Jakob: Nervous System.
Coat's Manual of Histology.
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-Hirschfeld, Pathologische Anatomie; Clifford Allbutt's System of Medicine; Leukhart's die Thierische Parasiten des Menschen; Bouchard, Traite de Pathologie Generale; Eichorst, Pathologie u Therapie; Gaylord and Aschoff, Pathological Histology; Nothnagel, Encyclopedia of Practical Medicine.

Surgical Pathology.

Tillman's Principles of Surgery and Surgical Pathology. Bland Sutton, Tumors, Innocent and Malignant.

Collateral reading—Park's Surgery, Vol. I; Warren's Surgical Pathology, Senn on Tumors; Bowly's Surgical Pathology; Nancrede's Lectures upon the Principles of Surgery; Watson Cheyne's Tuberculosis of Bones and Joints.

Bacteriology.

Muir and Richie's Manual of Bacteriology.
Levy and Klemperer-Eshner Clinical Bacteriology.
Lehmann-Neumann-Weaver, Atlas and Textbook of Bacteriology.
Abbott, The Hygiene of Transmissible Diseases.
Park, Bacteriology in Medicine and Surgery.

Collateral reading—Sternberg's Manual of Bacteriology; Fraenkel's Bacteriology; Woodhead's Bacteria and their products; Dutlocq, Lecons sur les Bacteries Pathogenes; Flügge, die Mikroorganismen; System de Bakterien; Duclauxs, Traite de Microbiologie. Hueppe (Jordan) Principles of Bacteriology; Novy, Laboratory Work in Bacteriology.

Clinical Microscopy.

Von Jaksch's Clinical Diagnosis.
Simon's Clinical Diagnosis.
Cabot's Clinical Examination of the Blood.
Ewing, Clinical Pathology of Blood.
Da Costa, Clinical Pathology of Blood.
Cabot's Serum Diagnosis of Disease.

Collateral reading—Lenhartz Mikroskopie u Chemie am Krankenbett; von Limbeck Klinische Pathologie der Blutes; Rieder's Atlas of Urinary Sediments.

Practice of medicine.

Osler's Practice of Medicine.
Collateral reading—Allbutt's System of Medicine; Eichhorst's Internal Medicine. The College Library; Thompson's Practice of Medicine.

Case-taking and life insurance.

Greene: The Examination for Life Insurance and its Associated Clinical Methods.

Physical diagnosis.

Cabot's Physical Diagnosis.

Flint's Auscultation and Percussion.

Musser's Medical Diagnosis.

Butler's Medical Diagnosis.

Collateral reading—Bramwell's Heart and Thoracic Aorta; Fox on the Lungs; Sansom's Heart and Aorta; Roger's Introduction to Study of Medicine.

Surgery.

Park's Surgery.

Tillman's Principles of Surgery and Surgical Pathology.

Kocher's Operative Surgery.

Warren's Surgical Pathology and Therapeutics.

Senn's Principles of Surgery.

American Text-Book of Surgery.

Jacobson's or Zuckerkandl's Operative Surgery.

Robert's Modern Surgery.

Wharton and Curtiss' Practice of Surgery.

Collateral reading—International Text-Book of Surgery; Agnew's Practice of Surgery.

Dennis' Practice of Surgery; Stimson's Fractures and Dislocations; Hamilton's Fractures and Dislocations.

Genito-urinary diseases.

Thomson's Diseases of Urinary Organs.

Collateral reading—Taylor's Genito-Urinary and Venereal Diseases.

Orthopaedia.

Moore's Orthopædic Surgery.

Bradford's and Lovett's Orthopædic Surgery.

Whitman's Orthopædic Surgery.

Obstetrics.

Jewett, Lusk, Hirst and the American Text-Book of Obstetrics.

Gynecology.

Dudley's Diseases of Women.

Garrigue's Diseases of Women.

Byford's Diseases of Women.

Collateral reading—American System of Gynecology; Emmett's Diseases of Women;

Thomas and Munde's Gynecology.

Ophthalmology and Otology.

American Text-Book of Diseases of the Eye, Ear, Nose and Throat.

May's Diseases of the Eye.

Dench's Diseases of the Ear.

Collateral reading—Berry's Diseases of the Eye; Fuch's Diseases of the Eye; Howell's

Diseases of the Ear and Naso-Pharynx; Norris and Oliver's Ophthalmology; Noyes' Diseases of the Eye; Savage's Ophthalmic Myology.

Nervous and Mental Diseases.

Dana's Nervous Diseases.

Church and Peterson's Nervous and Mental Diseases.

Berkeley's Mental Diseases.

Collateral reading—Clouston's Lectures on Mental Diseases; Collin's Treatment of

Nervous Diseases; Edinger's Anatomy of the Central Nervous System; Gordinier's; Anatomy of the Central Nervous System; Collin's Aphasia; Mills' Nervous Diseases.

Diseases of Children.

Rotch's Pediatrics.

Holt's Diseases of Children.

American Text-Book of Diseases of Children.

Collateral reading—Osler's Practice of Medicine; Keating's Cyclopædia of Diseases of Children. Corlett's Acute Infections Exanthemata.

Diseases of Skin.

Hyde's Diseases of the Skin.

Jackson's Diseases of the Skin.

Taylor's Venereal Diseases.

Collateral reading—Crocker's Diseases of Skin; Morris' Diseases of the Skin; Hayden's Diseases of the Skin; Lydston's Genito-Urinary, Venereal and Sexual Diseases.

Diseases of Nose and Throat.

Shurley's Diseases of the Nose and Throat.

Ingall's Diseases of the Nose, Throat and Lungs.

Kyle's Diseases of the Nose and Throat.

Coakley's Diseases of the Nose and Throat.

Hygiene.

Coplin and Bevan's Practical Hygiene.

Park's Hygiene.

Collateral reading—Richardson's Preventive Medicine; Buck's Hygiene and Public Health; Winter Blyth's Foods and their Composition.

Medical Jurisprudence.

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.

Mechano-therapy.

Wide's Handbook of Medical Gymnastics.

Baruch's Principles and Practice of Hydro-therapy.

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 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 other recognized colleges of medicine.
- (5) Satisfactory examinations passed in all branches in accordance with the foregoing rules.

DISPENSARY AND HOSPITAL CLINICS.

DISPENSARIES.

The University free dispensary is located in the new clinical building. Several rooms are devoted to the reception of patients and to their examination and treatment. Its service is a growing one and is utilized for the teaching of the classes of the third and fourth years. The faculty and a corps of assistants manage the dispensary. Dispensaries at Asbury Hospital and the City Hospital are also open to the students of the University. They are largely attended by members of the faculty.

The St. Paul Free Dispensary is centrally situated and offers its clinics to the students of this college. It owns the building formerly used by the

St. Paul Medical College—a twenty-room building, which has been equipped for its occupancy. It centralizes the clinical opportunities of St. Paul and its staff is, similarly, made up largely of faculty members.

HOSPITALS.

The hospitals of the cities 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 CITY HOSPITAL, of Minneapolis, occupies spacious buildings and affords a large mass of clinical material which members of the faculty upon its staff are permitted to utilize during their terms of service.

ST. MARY'S HOSPITAL has a staff upon which this faculty is represented by four members. Its management has seconded the efforts of the staff to make the hospital useful to medical students by providing an amphitheatre of modern construction, in which seventy-five spectators can be accommodated. The hospital also opens its wards for the bedside study of disease. Surgical and medical clinics are held here upon the weekly clinic days.

ST. BARNABAS' HOSPITAL has also generously equipped an amphitheatre, within which a class of fifty students can be gathered. Bedside instruction is given freely in its wards to the students of this college. Clinics are usually conducted in this amphitheatre on Saturdays. Its staff, also numbers upon it several members of this faculty.

ASBURY METHODIST HOSPITAL offers its clinical opportunities to the college. Wednesday and Saturday clinics are held in its wards and amphitheatre. Its service is, in part, manned by faculty members.

THE CITY AND COUNTY HOSPITAL, of St. Paul, occupies a large building, of modern construction and generously equipped with clinical conveniences. Its management has spared neither effort nor means to make it a model of its class. It contains a large amphitheatre for teaching purposes. It enters some two thousand patients annually, a large proportion of whom are of the emergency order or suffer from acute forms of disease. This college is represented upon its staff by a majority of the members.

ST. JOSEPH'S HOSPITAL has always contributed generously to the clinical advantages of the University. It contains a spacious amphitheatre, built and equipped for the students of this college. It has faculty members upon its staff who conduct weekly clinics in the hospital. Its service is large, its capacity being upwards of one hundred beds.

ST. LUKE'S HOSPITAL possesses all the most desirable features of modern hospital architecture and has a large clinical service. It is furnished with an amphitheatre for the benefit of students and has a thoroughly equipped operating room, in which clinics are frequently conducted.

MINNEAPOLIS CLINICS.**1902-1903.****THURSDAY.**

9-10:30...	Medicine.....	Prof. Bell.....	½ Class.	City Hospital.
10:30-12..	Medicine.....	Prof. Nothnagel.....	½ Class.	City Hospital.
9-11.....	Gynecology.....	Prof. Abbott.....	½ Class.	St. Barn and City Hos.
11:12....	Eye and Ear....	Prof. Todd.....	½ Class.	Asbury Hospital.

NOON RECESS.

1-2...	Laryngology.....	Prof. Laton.....	Sections.	Clinical Building.
1-2...	Medicine.....	{ Prof. Nothnagel } { and Dr. Nippert }	Sections.	Clinical Building.
1-2...	Gynecology.....	{ Prof. Abbott and Dr. } { Benjamin. }	Sections.	Clinical Building.
1-2...	Surgery.....	{ Prof. Moore and } { Dr. Wright. }	Sections.	Clinical Building.
1-2...	Eye and Ear.....	{ Prof. Todd and } { Drs. Reamer and } { Litzenberg. }	Sections.	Clinical Building.
1-2...	Dermatology.....	Prof. Vander Horck....	Sections.	Clinical Building.
1-2...	Nervous Diseases.	Prof. Jones.....	Sections.	Clinical Building.
1-2...	Children.....	Prof. Roberts.....		
2-3...	Nervous Diseases.	Prof. Jones..	Class....	City Hospital.
3-4...	Dermatology.....	Prof. Vander Horck....	Class....	City Hospital.
4-6...	Autopsy.....	Prof. Stewart.....	Sections.	City Hospital.

SATURDAY.

9-11.....	Surgery.....	Prof. Dunsmoor.....	½ Class.	Asbury Hospital.
9-11.....	Surgery.....	Prof. Moore.....	½ Class.	N. W. and City Hos.
11-12....	Surgery.....	Prof. Dunn.....	½ Class.	St. Mary's and City Hos.
11-12....	Children.....	Prof. Roberts.....	½ Class.	City Hospital.

NOON RECESS.

1-2:30 ...	Medicine.....	Prof. Hunter.....	½ Class.	St. Barnabas Hospital.
1-2:30 ...	Medicine.....	Prof. Staples.....	½ Class.	City Hospital.
2:30-4 ...	Medicine.....	Dr. Head.....	Sections.	City Hospital.
4-6.....	Autopsies.....	Prof. Stewart.....	Sections.	City Hospital.

Clinical Building open daily from 12 to 2 for seniors, and for juniors at the same hour on their Thursday clinic in Minneapolis.

ST. PAUL CLINICS.
1902-1903.

THURSDAY.

8:30-9:30.	Orthopedia	Prof. Gillette	Class	St. Luke's or City Hos.
10-12	Surgery	{ Prof. Ohage... }	1/2 Class	St. Luke's, St. Joseph's or City Hospital.
	Gynecology	Dr. Rogers .		
		Prof. McLaren.. }	1/2 Class	

NOON RECESS.

1:30-2:30.	Medicine	Dr. Senkler	2	Section's	Dispensary.
	Medicine	Dr. Henderson	2	"	Dispensary.
	Surgery	{ Dr. Warren Dennis... }		Section	Dispensary.
	Eye and Ear	Dr. H. P. Ritchie		"	Dispensary.
	Nose and Throat..	Prof. Fulton		"	Dispensary.
	Nervous Diseases.	Prof. Schadle		"	Dispensary.
2:30-3:30.	Medicine	Dr. Dunning		"	Dispensary.
4:00-5:30.	Medicine	Prof. Greene		Class	Dispensary.
	Dis. of Children...	Prof. Abbott		Section	City Hospital.
	Medicine	Dr. Christison		"	City Hospital.
	Medicine	Dr. Senkler		"	City Hospital.
	Pathological Anat.	Dr. Henderson		"	City Hospital.
		Dr. Rothrock		"	City Hospital.

SATURDAY.

8:30-9:30.	Nervous Diseases.	Prof. Riggs	Class	Free Dispensary.
10-12	Surgery	Prof. Rogers	"	City Hospital.

NOON RECESS.

1:30-2:30.	Medicine	Prof. Greene		Section	Dispensary.
	Medicine	Dr. Senkler		"	Dispensary.
	Medicine	Dr. Henderson		"	Dispensary.
	Nose and Throat..	Prof. Schadle		"	Dispensary.
	Eye and Ear	Prof. Fulton		"	Dispensary.
	Nervous Diseases.	Dr. Dunning		"	Dispensary.
	Skin and Venereal.	Prof. Foster		"	Dispensary.
	Genito-Urinary ...	Dr. Coon		"	Dispensary.
3:00-4:00.	Medicine	Prof. Abbott		Class	City Hospital.
4:00-5:00.	Medicine	Prof. Abbott		Section	City Hospital.
	Dis. of Children...	Dr. Christison		"	City Hospital.
	Medicine	Dr. Senkler		"	City Hospital.
	Medicine	Dr. Henderson		"	City Hospital.
	Pathological Anat.	Dr. Rothrock		"	City Hospital.

College of Homeopathic Medicine and Surgery.

THE FACULTY.

- CYRUS NORTHROP, LL. D., *President.*
ALONZO P. WILLIAMSON, LL. B., M. D., *Dean and Professor of Mental and Nervous Diseases and Medical Jurisprudence.*
WILLIAM E. LEONARD, A. B., M. D. *Professor of Materia Medica and Therapeutics.*
GEORGE E. RICKER, A. B., M. D., *Professor of Clinical Medicine and Physical Diagnosis.*
ROBERT D. MATCHAN, M. D.,
A. E. COMSTOCK M. Sc., M. D., } *Professors of Principles and Practice of Surgery.*
WARREN S. BRIGGS, B. S., M. D., } *Professors Clinical and Orthopaedic Surgery.*
MARSHALL P. AUSTIN, M. D., }
B. HARVEY OGDEN, A. M., M. D., *Professor of Obstetrics.*
EUGENE L. MANN, A. B., M. D., *Professor of Diseases of Nose, Throat and Ear.*
FREDERIC M. GIBSON, M. D., O. et. A. Chir., *Professor of Ophthalmology.*
GEORGE E. CLARKE, Ph. B., M. D., *Professor of Theory and Practice of Medicine.*
GEORGE F. ROBERTS, M. D., *Professor of Diseases of Women.*
HARRY M. LUFKIN, M. D., *Professor of Diseases of Children.*
————— *Professor of History and Methodology of Medicine.*
ROBERT R. ROME, M. D., *Professor of Clinical Obstetrics.*
————— *Professor of Skin and Genito-urinary Diseases.*
O. K. RICHARDSON, B. S., M. D., *Lecturer on Life Insurance Examination.*
EDWARD M. FREEMAN, B. S., *Instructor in Botany.*
GOTTFRIED SCHMIDT, B. S., } *Dispensary Assistants.*
CHARLES ARPHUR DAWSON, }
A. E. BOOTH, M. D., *Lecturer on Surgical Emergencies.*
W. H. CAINE, M. D., *Lecturer on Clinical and Orthopaedic Surgery.*

Instruction in the following branches is received in common with the students of the other colleges in the department of medicine.

- CHARLES A. ERDMANN, M. D., *Professor of Anatomy.*
RICHARD O. BEARD, M. D., *Professor of Physiology.*
CHARLES J. BELL, A. B., *Professor of Chemistry.*
THOMAS G. LEE, B. S., M. D., *Professor of Histology and Embryology.*
F. F. WESBROOK, M. A., M. D., C. M., *Professor of Bacteriology and Pathology.*

Rules and Regulations.

COLLEGE YEAR.

The fifteenth annual course of study in this department will begin on September 16th, 1902, and will continue eight and one-half months, closing upon the first Thursday in June, 1903. The college of dentistry, in this department, will begin work on September 10th and the college of pharmacy October 1st.

The college year is divided into semesters; the first semester ending January 24th, 1903. The succeeding week will be devoted to mid-year examinations which will be conducted in many of the departments. The second semester will begin February 3rd, 1903, and will close May 16th, 1903, when the final examinations of the year will begin. Commencement exercises will occur in common with the other departments of the University, during the week ending June 4th, 1903.

ENROLLMENT.

It is desirable that students matriculate before September 9th.

Students will be assigned seats in the 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 will then present themselves for entrance examination, or for the approval of their evidences of preliminary qualifications, to a committee of the college of science, literature and the arts appointed for this purpose. Having received an entrance certificate from this committee they will report to the dean of the college which they desire to enter, for admission and classification. They will then be furnished with a record of their standing and of the studies to be taken and they will be required to present this record to the professors in charge of such studies within the first week of the term.

REQUIREMENTS FOR ADMISSION.

HIGH SCHOOL REQUIREMENTS.

Beginning with the session of 1902-1903 applicants for admission to the College of Medicine and Surgery of the University of Minnesota, must present to the dean of the faculty of this college, credentials properly signed, showing that the applicant has satisfactorily completed the branches of study, covered in a full four years' high school course and, in addition, the

branches covered in the freshman year of some approved college or university, according to the conditions herein stated.

The applicant who cannot present credentials must submit to an examination on the subjects, given in the schedule, herewith submitted, for which he has no credentials.

English Language. (a.) English Composition and Rhetoric.

Candidates are expected to show a familiarity with the principles and technical terms in ordinary high school 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 the main purpose of this subject is to teach the student to use language correctly and forcibly. To this end students should be given constant exercise in composition writing. A knowledge of the subject matter of the texts used will be considered of less importance than the demonstration of ability to write good English. A full year of work in the high school, five hours per week, should be devoted to this subject.

Mathematics (a.) Algebra, elementary (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 binomial theorem for positive integral exponents,) evolution, radical inequalities, ratio, proportion, progression, and quadratic equations with problems.

Geometry (b.) Plane, (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.

Latin (a.) Grammar, (one year.)

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.

(b) Caesar, 4 books (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 Cæsar and an account of his wars.

In addition to the above named subjects, which are required, and for which substitutes can not be accepted, applicants shall present evidence of preparation in *seven year-credits*, or their equivalent, to be chosen from the following list:

Latin—Cicero, four orations, one year; Vergil, 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.

English—Latin element, one year; Literature, one year.

History—Greece and Rome, one-half year; England, one-half year; Modern, one-half year; Medieval, one-half year; Senior American, one-half year.

Civics—One-half year.

Political Economy—One-half year.

Physics—One year.

Chemistry—One year or one-half year.

Botany—One-half year or one year.

Zoology—One-half year or one year.

Astronomy—One-half year.

Geology—One-half year.

Physiography—One-half year.

Solid Geometry—One-half year.

Higher Algebra—One-half year.

ADDITIONAL COLLEGE WORK REQUIRED.

In addition to the foregoing high school requirements for admission to the University of Minnesota, applicants for entrance to the College of Medicine and Surgery shall present evidence of having completed one year's work in a recognized college or university course. The following schedule presents the work of the first year in the college of science, literature, and the arts. Applicants who have credit for one year of college work but whose credits do not evidence such a course or its fair equivalent, will be permitted to enter but must make up such deficiencies during the first year in the college of science, literature and the arts.

1. *Mathematics*—A full year of college work, four recitation periods per week, including the subjects of higher algebra, plane and spherical trigonometry.

Higher algebra, including simple equations, inequalities, proportion, variation, progression, quadratic equations, simultaneous equations of the second degree, maxima and minima of functions, differentiation of algebraic functions, development of functions, logarithms, theory of equations and solution of numerical higher equations.

Plane and spherical trigonometry, with numerous applications.

2. *Language*, one full year of college work, four recitation periods per week, in one of the following:—English, early English, including Chaucer and Spenser, Rhetoric, including some Shakespere and practice in writing; Latin, one year of college work, in advance of four years work required for admission.

ENGLISH LANGUAGE AND LITERATURE.

Course I. (a) Chaucer, (b) Spenser.

or

Course II. Rhetoric.

This course includes two hours a week of rhetoric, the writing of compositions, and the study of prose masterpieces, and two hours a week of the study of Shakspeare's plays.

LATIN.

Course I. Cicero de Amicitia and de Senectute.

Exercises in Latin composition and a review of the syntax.

Course II. Livy.

Selections from Livy and one play of Plautus or Terence, rise and development of Roman institutions.

3. *Language*, one full year of college work, four recitation periods per week, in *one* of the following:—

German, 1st or 3rd year's work in the subject.

French, 1st or 3rd year's work in the subject.

Greek, 1st or 3rd year's work in the subject.

GERMAN.

Course I. German begun.

(a) Whitney's Brief German Grammar, Bernhardt's German composition and Buchheim's German Poetry.

(b) German prose selections. Leander's Traumerein, Heyse's L'Arrabbiata, von Hillern's Höher als die Kirche; grammar and composition completed.

(c) Scientific prose. Hodge's German Science Reader; grammar and composition completed.

Or Course III. Advanced classic prose and poetry.

(a) Goethe's Prosa and Gedichte, author's life and works, Spanhoofd's Deutsche Grammatik. Oral and written exercises based on text.

(b) Schiller's Belagerung von Antwerpen, Heine's Prosa and Buch der Lieder, life and works of the author.

(c) Brandt & Day's German Scientific Reading. Spanhoofd's Deutsche Grammatik completed, original letters and essays.

FRENCH.

Course I. French begun.

De Borde's Elements of French; Kuhn's French Reader; modern plays.

Or Course II. Advanced grammar and composition.

Fasnacht's Progressive French Course.

Paul Bercy's Selections for Translating English into French. The classical authors of the xvii and xviii centuries will be read. Fortier's Histoire de la Littérature Française.

GREEK.

Course I. Greek begun.

Brook's Introduction to Attic Greek.

Course II. Anabasis.

Prose composition based on the text.

Course III. Xenophon's Memorabilia.

Prose composition based on the text; collateral readings in history.

Course IV. Lysias and Demosthenes.

Prose composition based on the text; collateral readings in history antiquities.

4. *Science*, one full year of college work, four recitation periods per week, and four hours of laboratory work, in *one* of the following:—

Botany.

Chemistry.

Zoology.

BOTANY.

Course I, General botany.

This course comprises a general survey of the plant kingdom with laboratory work on the cell, on the algae, lichens, fungi, mosses and ferns, gymnosperms and flowering plants. Lectures and laboratory.

Or Course II, General plant morphology. First year.

This course comprises a thorough laboratory discipline in algae, fungi and lichens and is the introductory course for students specializing in botany. Lectures, laboratory work and collateral reading throughout the year.

CHEMISTRY.

Course I. (a) General chemistry.

Lectures and laboratory work. The course includes a detailed study of the chemical and physical properties of the non-metals and their more important compounds.

(b)

Lectures and laboratory work. A continuation of course (a) with an introduction to organic chemistry.

ANIMAL BIOLOGY.

Course I, General zoology. "Short course" or first year of the "long course".

Text-book, lectures, quizzes and laboratory work.

The course includes the elements of entomology, a general survey of the phyla of the animal kingdom and the elements of embryology. A collection of identified insects is required of each student.

A student may enter with two conditions in the foregoing entrance requirements, but must remove these conditions by the close of the first year. Blanks for certificates of credentials may be had upon application at the Dean's office.

CONDITIONS.

Examinations of conditioned students and of applicants for advanced standing, in the studies of the first, second and third years, will be held during the first week of the semester. In the common branches they occur upon the following dates.

September 18, 9 a. m. Anatomy, first year; Physiology, second year.

September 18, 2 p. m. Histology, first year; Chemistry, second year.

September 19, 9 a. m. Physiology, first year; Anatomy, second year.

September 19, 2 p. m. Chemistry, first year; Histology, second year.

Conditions may also be removed at the close of each semester.

No student will be eligible to final examinations in any branch who carries conditions of a previous year of that branch unremoved.

No student will be admitted to the fourth year who is conditioned in any of the studies of the first and second years.

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.

CLASSIFICATION.

September 20th and 22d will be devoted to the classification of students. The opening lecture of the course will be delivered at 8 p. m., September 22d.

STANDING.

The standing of students is determined by the results of recitations, written examinations and laboratory work. It is indicated by the terms "passed" or "conditioned." Conditions may be removed as indicated above. Incomplete work must be made up before the final examinations of the following year.

Students must pass a majority of the studies of their year in order to classify in the next succeeding year.

In the studies of the first and second years, the classes will recite in sections during hours regularly assigned for this purpose.

Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies and must present themselves at the above dates and pass the examinations in all branches in which they wish to be exempt.

No conditions of advanced standing will entitle the student to take the two years of any graded study coincidently.

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.

Seniors in the college of science, literature and the arts, 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. Since the medical practice act of this State requires four full years of medical study, these students must elect this work in the department of medicine, in order that it may be contributive toward the degrees given in both colleges.

ATTENDANCE.

Students are required to attend four-fifths of the lectures in each course. This rule is not intended for the benefit of those who seek admission after

the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered, invariably, during the first week in which they begin.

TERMS OF TUITION.

The college has adopted a system of level fees, in which are included all charges of matriculation, lecture courses, laboratory courses*, dissections and graduation. These level fees are as follows:

For the first year.....	\$100.00
For the second year.....	100.00
For the third year.....	80.00
For the fourth year.....	80.00

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 3, 1903. 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 receive only a credit of five dollars upon his annual fee per semester of each laboratory course from which he may be exempt.

Students who are conditioned and fail to remove their conditions within one year will 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.

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.

*In each semester a fee of \$2.00 to \$4.00 will be charged for the rental of a microscope in each course 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.

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 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 lecture 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 period of four years of collegiate study, each year representing eight and one-half 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 specialties and the application of scientific or laboratory methods to clinical experience.

DEGREES.

The degree of doctor of medicine is conferred by the Board of Regents upon students who are commended, 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 examinations passed in all branches in accordance with the foregoing rules.

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 in 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. The claim once made that homeopathic medicine could be mastered in a few months study of *materia medica* and *symptomatology*, no longer meets the demands of an intelligent patronage.

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 the "heir of all the 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 this result implies as provided in the college of homeopathic medicine, and surgery, in a real University course of study in, first: history of medicine, 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 or dissecting rooms; in the last two in 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.

Especial emphasis is placed upon clinical instruction in both dispensary and hospital practice. Senior students will have 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 has now fairly passed the formative experiences incident to the early life of institutions and has become an integral part of the educational and professional forces of the state. Its alumni now at work in the state, 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 state work.

The college proposes to stand for a broad catholic, scientific, and therefore homeopathic, education in medicine and surgery.

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.

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 prescription shaving been made during the past year), and are assigned to particular departments according to the nature 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. The college clinics are conducted throughout the entire year. Students and practitioners are invited to attend them at all times.

DISPENSARY CLINICS.

SUBJECTS	CLINICIAN	DAYS IN ATTENDANCE	HOURS
DISEASES OF WOMEN	DR. F. L. BECKLEY	Monday	1 to 2
	PROF. R. R. ROME	Thursday	1 to 2
NERVOUS DISEASES	PROF. WILLIAMSON	Monday and Friday	1 to 2
DISEASES OF THE EYE	PROF. GIBSON DR. E. E. HURD	Tuesday and Saturday	1 to 2
DISEASES OF THE SKIN.	PROF. LEONARD	Tuesday	1 to 2
DISEASES OF THE NOSE THROAT AND EAR	PROF. MANN DR. ANNAH HURD	Wednesday and Saturday	1 to 2
OBSTETRICS	H. J. TUNSTEAD	Wednesday	1 to 2
SURGERY	DR. H. C. ALDRICH	Monday	1 to 2
	PROF. MATCHAN	Tuesday	1 to 2
	DR. P. A. HIGBEE	Wednesday	1 to 2
	PROF. AUSTIN	Thursday	1 to 2
	DR. BOOTH	Friday	12 to 1
	PROF. A. E. COMSTOCK	Saturday	1 to 2
INTERNAL MEDICINE	DR. O. K. RICHARDSON	Monday and Thursday	1 to 2
	DR. P. A. HIGBEE	Tuesday	1 to 2
	PROF. RICKER	Friday	1 to 2
	DR. D. W. HORNING	Saturday	1 to 2
DISEASES OF CHILDREN	DR. H. J. TUNSTEAD	Tuesday and Thursday	1 to 2
	PROF. LUFKIN	Saturday	1 to 2

HOSPITAL CLINICS.

The College has unusual advantages in hospital clinics. In addition to the 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 hospitals in St. Paul. Each Monday is devoted to clinics held in one of these hospitals by a member of the faculty.

MINNEAPOLIS.

October 6th and 20th, 1902.
November 3d and 17th, 1902.
December 1st, 15th, and 29th, 1902.
January 5th and 19th, 1903.

February 2nd and 16th, 1903.
March 2d and 16th, 1903.
April 5th and 20th, 1903.
May 4th and 18th, 1903.

ST. PAUL.

October 13th and 27th, 1902.
November 10th and 24th, 1902.
December 8th and 22d, 1902.
January 12th and 26th, 1903.

February 9th and 23d, 1903.
March 9th and 23d, 1903.
April 13th and 28th, 1903.
May 11th and 25th, 1903.

CITY HOSPITAL, MINNEAPOLIS.

The faculty of the college of homeopathic medicine and surgery is largely represented on the staff of this institution, where one-third of all the patients admitted are placed under their 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 in on duty two months of the year and has charge of all cases coming into his department during that time and uses suitable ones for clinical purposes.

HOSPITAL APPOINTMENTS.

Graduates for 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.

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 the 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.

ACKNOWLEDGEMENTS.

In continuance of the custom established six years ago, an invitation was extended to members of the profession, not connected with the college, serving upon the staffs of the several hospitals of the two cities, to lecture or present clinical demonstrations to the students. The faculty desire to express its appreciation to the following physicians and surgeons for their generous acceptance of the invitation: Drs. Adele S. Hutchison, Pearl M. Hall and H. C. Aldrich, of the City Hospital staff, Minneapolis, and Drs. Henry Hutchinson and O. M. Hall, of the staff of the City and County Hospital, St. Paul, and St. Luke's Hospital, St. Paul.

COURSE OF INSTRUCTION.

The extension of the course of instruction to four years enables the faculty to present to the students a more thorough and practical training in the practice of medicine than has heretofore been possible. The schedule of study is so arranged that the student reaches the practical work of his profession by gradual steps through theoretical and laboratory course. There are also offered lectures upon subjects which have been omitted in previous years, because of lack of time.

FIRST YEAR.

History and methodology of medicine.
Medical terminology.
Medical botany.
Inorganic chemistry—laboratory.
Histology and embryology—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.

THIRD YEAR.

Surgical anatomy.
Bacteriology, general pathology.
Materia medica and therapeutics.
Practice of medicine, organon 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.

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.
Paedology.
Electro therapeutics.
Life insurance examinations.
Clinics, medical and surgical.

MATERIA MEDICA AND THERAPEUTICS

The course upon this topic is graded to cover four years' study. Lectures, daily quizzes and daily demonstrations of materials and methods are held regularly throughout the year, pains being taken to fit each student for the actual practical application of his knowledge

FIRST YEAR.

One lecture each week for the first half of the year, is 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 Prof. 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.

Lectures and quizzes twice each week upon the toxicological and physiological action of a few drugs, each typical of a class of remedies, thus furnishing the ground work for a more detailed study of symptoms in later years. As far as possible, actual experiments in testing drugs upon members of the class will be made, the blanks used and methods being under Prof. 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 symptomology, full practical comparison being made with other allied remedies. The endeavor in these studies and those of the following year will be to present only such usage of drugs as is practical and fully corroborated, little, if any time be spent upon their minor and less fully proven applications.

FOURTH YEAR.

Three lectures and quizzes each week upon the mineral, animal and nosological remedies of the 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 toxicological and physiological action, where this has a direct bearing upon their homeopathic application to chronic diseases, in as much as the drugs of this course are more often applied thereto.

Examinations 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.

THEORY AND PRACTICE.

Lectures on the theory and practice of medicine will be delivered to students of the third and fourth year. It will be the purpose to thoroughly acquaint the student with the description, course and diagnosis of disease, and the method of treating such disease in accordance with the homeopathic law of cure.

The cardinal principles of the philosophy of homeopathy will be clearly presented in didactic and clinical lectures. Students are familiarized with accurate methods of investigation, records of symptoms and history of cases, with the use of the repertory to assist in accurately affiliating the indicated remedy.

THIRD YEAR.

The course of the students of the third year consists of twenty-six didactic lectures, mainly on the diseases of the mouth, stomach and bowels. Eight lectures will be given on the philosophy of homeopathy. Frequent selections of cases from private practice will be given to better set forth the various lectures, as well as methods employed in the record of cases and selection of the remedy. One-half of the time allowed will be employed in frequent quizzes and review of the work gone over.

FOURTH YEAR.

The course to students of the fourth year consists of twenty-two didactic lectures on pulmonary and hepatic affections, with such of the important continued fevers as fall to this chair. The organon work will take the form of frequent "class-room talks," chiefly on the subjects of the following sections, viz: 272-274; 247; 245-251; 252-255; 167-168; 204-205.

In addition, students will be required to present written reports of the history and symptoms of cases treated, the repertory work in selecting the remedy, and dose, repetition and results. Much time and attention will be given to this feature of the course as tending in the highest manner to perfect the pupil in the art of *accurate prescribing*.

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 twice a week, and in the City Hospitals of Minneapolis and St. Paul, where the 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 in 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 Ricker 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 Ricker, thus enabling the student to acquire the self-reliance and confidence so necessary to the beginning practitioner.

SURGERY.

Two years ago the work in surgery was greatly enlarged. It now occupies two full years, the third and fourth, and includes the labors of four members of the college faculty. The work is divided into clinical and didactic surgery.

CLINICAL SURGERY.

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. The second year students receive thorough practical instruction in bandaging two hours each week, two semesters.

The diagnosis, prognosis and homeopathic treatment and the operations for surgical diseases and accidents are taught practically.

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, of Minneapolis, are demonstrated the value of antiseptic and aseptic 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 anæsthetics and are required to attend a number of surgical patients at their homes, carrying out post-operative detail under the direction of the professor.

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 year 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, dislocation and amputation.

The lectures to 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.

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 causes, care and removal, is carefully considered in detail. The mechanical apparatus used in the treatment of such cases is exhibited and rules are 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.

The subjects discussed include functional and organic diseases of the bony spine, the several forms of club-foot, joint inflammations, both simple and tuberculous, and their sequela, cleft-palate, hair-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 the 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 conduct of normal labor and the management 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 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 presentations, and position of the child and 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 the 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 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 the labor the student will be required to keep a record of the following facts:

No. of the case, date, name, address, condition of the os uterus, height of presenting part, pulse rate and quality (ante and post partum), rapidity of foetal heart beats and where heard most clearly, presentation, 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, cervix and perineum.

An operative course on the female cadaver will also be given, demonstrating the operative technique in symphysiotomy and Cæsarean section.

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 prescribed. 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 during 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 gynaecology will be covered in the lecture room. As cases present themselves in the city hospitals of St. Paul and Minneapolis, the subjects thus described will be demonstrated on the living subjects.

DISEASES OF CHILDREN.

The course on this subject will consist of one lecture each week and two 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 feeding, 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, rachitis and diseases of the skin.

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.

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 for the personal care in each disease is especially elaborated.

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 to diseases will be practically demonstrated.

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.

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 a study of the diseased processes in the nose—the various forms of acute and chronic catarrhal inflammation, their causes, 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 naso-pharynx are treated with special references 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 pharyngeal and tonsillar conditions incident to the exanthemata, diphtheria, typhoid fever, etc.

In the laryngeal disorders we become more closely associated with respiratory 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 the external canal and pinna, dermoid inflammation; diseases of the middle ear, mucous inflammations; and diseases of the internal ear, serous 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.

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 disease of the skin, syphilis and all genito-urinary diseases, including the kidneys.

The first semester will be devoted to a study of genito-urinary and kidney diseases, the second to diseases of the skin and syphilis. The dispensary clinics will be especially valuable in supplementing the work of the professor in the lecture room by familiarizing the students with the appearance of the various forms of skin diseases so essential to a correct diagnosis of the same.

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.

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 the *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 a 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 a 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, Indochinese, Hebrews, Greeks, Arabians and of Europe down to the present.

One lesson each week during the freshman year.

HISTOLOGY AND EMBRYOLOGY

The laboratory of histology and embryology occupies most of the first floor and portions of the third floor and basement of the laboratory of medical sciences.

The general laboratory, 44x72 feet, extends across the north wing and is abundantly lighted by large windows on three sides and part of the fourth. Study tables accommodating seventy students are placed directly under the windows. A second tier of desks provides for twenty other students. Each student is provided with a separate locker for the storage of apparatus and material. The special laboratory, 24x35 feet, for research work by advanced students, adjoins the general laboratory. The next apartment, the library of the laboratory, contains a reference library consisting of a small but carefully selected collection of related 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 student access to the best publications among current periodicals and monographs. The rooms across the hall are devoted to the office and private laboratories of the professor and his assistant. On the third floor are located a preparation room, a small laboratory for special students, a dark room, a room for copying and enlarging, and a laboratory for photomicrography and projection. In the museum on this floor, are several cases containing series of embryos and histologic specimens. In the well-lighted basement are found a preparation room, 20x35 feet, for the hardening of tissues, &c., and an experimental laboratory and store room, 26x36 feet.

These laboratories are equipped with ninety Leitz' microscopes, each fitted with nose-piece and Abbé condenser, various forms of microtomes, such as freezing, Thoma, Minot, Schanze, &c., injection apparatus, aquaria, thermostats, incubators, water baths, chemical hoods, a great variety of technical glassware, Grüber's strains, 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. Collections of typical specimens, also, will be loaned to the students for study. 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 photo-micrographs, 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 of \$4 for first year courses, and \$2 for second year courses.

Course I. General morphology and histology.

Lectures, demonstrations and laboratory work. The course includes the structure and manipulation of the microscope, the structure and properties of protoplasm; the cell, its structure; cell division and reproduction. A detailed study of the structure and life history of certain typical unicellular animal and plant forms and of certain multicellular forms, 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. Lectures, etc., 4 hour a week. Laboratory work, 12 hours a week, first half, first semester, first year.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON.

Course II. Elements of embryology and histogenesis.

Lectures, 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 frog embryos. The differentiation and histogenesis of the tissues, etc. Lectures, etc., 4 hours a week; laboratory work, 6 hours a week, second half, second semester, first year. Open to those who have completed course i.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON

Course III. Human embryology and microscopic anatomy.

Lectures, demonstrations and laboratory work. Advanced methods of histological and embryological 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 system, etc. Lectures, etc., 4 hours a week; laboratory work, 18 hours a week. First half, first semester, second year. Open to those who have completed the course of first year in histology and embryology.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON

Course IV. Neurology and neurogenesis.

Lectures, demonstrations and laboratory work. The comparative study of the morphology, microscopic anatomy, origin and development of the central and sympathetic and central nervous systems and the organs of special sense. Lectures, etc., 4 hours a week; laboratory, 18 hours a week. First half, second semester, second year.

PROFESSORS LEE AND NICKERSON AND M. L. NICKERSON.

The full courses given in histology and embryology of vertebrates in the college of science, literature and the arts will be accepted in lieu of the first year's work in histology and embryology, and in the department of medicine. See statement of fees, page 18.

The following elective courses are open to properly qualified senior students, and will consist of practical work in the laboratory, a prescribed course of reading, with reports of work, and of lectures and demonstrations to be given from time to time.

Course V. Methods of microscopical work.

The preparation and use of the various solutions employed in fixing, hardening and staining, methods of embedding, sectioning, reconstruction, etc.

Course VI. (a) Comparative histology and histogenesis of tissues.

The animal cell, the epithelial, connective, muscular, and nervous tissues, blood, etc. (b) *Comparative histology and histogenesis of the tissues.* The epidermal, respiratory and uro-genital systems of organs.

(c) *Comparative histology and histogenesis of the nervous system and sense organs.* Central nervous system, etc., after the methods of Weigert, Golgi, etc.

Course VII. Comparative embryology of vertebrates.

A detailed study of the various stages in the development of vertebrate types, as acanthias, petromyzon, trout, amblystoma, frog, chick, rat, pig and human embryos.

Course VIII. Research work in histology and embryology.

Opportunity will be offered for those desiring to pursue original investigation.

Elective Course V will be offered during the 2nd half of the 2nd semester in 1902-1903.

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, syndesmology and myology 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.

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 throughout 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; 4 hours each week, for 5 weeks of first semester. Practical study of the skeleton, followed by recitations from the specimen, taken by the class, in sections; first semester. Required of all first year students.

Course II. Syndesmology.

Lectures, recitations and laboratory demonstrations, 4 hours each week, for 3 weeks first semester, first year. Open to those who have taken course i.

Course III. Myology.

Lectures and recitations, covering the entire muscular and arterial systems of the human body, with a supplementary study of comparative myology; 4 hours each week for 4 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, first semester, first year. Open to those who have taken course ii.

Course IV. Splanchnology and Angiology.

Lectures on the thoracic, abdominal and pelvic viscera, 4 hours each week, for 3 weeks. Open to those who have taken course iii. Laboratory work in demonstrating and dissecting the thoracic, abdominal and pelvic organs of the human subject or of the dog or sheep. First semester, first year.

PROFESSOR ERDMANN.

Recitations upon the subjects of the first year's work, conducted in sections by

DRS. H. K. READ AND E. R. HARE.

Course V. The nervous system.

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, 5½ hours each week, for 4 weeks, first half, second semester, second year.

PROFESSOR ERDMANN.

Course VI. Dissections.

This work extends over a period of 7½ weeks, 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. DRs. H. K. READ AND E. R. HARE

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 years' course conducted in sections. PROFESSOR ERDMANN, DRs. H. K. READ AND E. R. HARE.

Course VII. Surgical anatomy.

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. 4 hour a week, second half, second semester. Required of third year students. PROFESSOR ERDMANN.

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.

PHYSIOLOGY.

The department of physiology occupies a suite of rooms in the laboratory of medical sciences, including the laboratory of experimental physiology, the laboratory of physiologic chemistry and practical dietetics, 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 with materials, glassware, digesters, water baths, ventilating hoods, etc., for the work in physiologic chemistry. Their outfit includes sets of vivisection instruments, an artificial respiratory machine, batteries; Du Bois-Reymond coils, galvanometers, rheostats, moist muscle chambers, recording drums, Ludwig's kymograph spring myograph, Burdon-Sanderson's stethometer, stethoscopes, phonendoscopes, Dudgeon's and Marey's sphygmographs, cardiographs, Runne's chronograph, Roy's tonometer.

Gaskell's clamp, oncometers, hæmometers, hæmoglobinometers, hæmatocrits, plethysmograph, 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 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 the 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 and excretion.

In the second year, the work is made as practical as possible and includes the study of such advanced topics as metabolism, nutrition, dietetics, reproduction, the physiology of foetal life, of infancy, of maturity and of old age; and the functions of the brain, spinal cord, ganglionic and peripheral nerve systems. Eight 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.

In the fourth year, an elective course in practical dietetics is conducted during the second half of the first semester. It deals with the analysis of foods, with the general principles of food preparation and with selections of a suitable dietary for the several periods of life.

Practical talks upon the principles and means of food preparation, the serving of food, food selection, invalid and infant dietary, etc., are associated with this course. A trained instructor conducts the exercises in hygienic cooking.

A laboratory reference library is in process of collection, to which the advanced student will have access for collateral reading.

Course I. General physiology.

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. Five hours a week, second semester, first year. PROFESSOR BEARD.

Course II. Systemic physiology.

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. Five hours a week, second semester, first year. Open to those who have completed course i. PROFESSOR BEARD.

Recitations upon the subjects of the first year are conducted in sections of the class. PROFESSOR BEARD, DR. M. R. WILCOX AND MISS WILKINSON.

Course III. Advanced physiology.

Lectures, recitations and demonstrations. The course includes the discussion of the phenomena of metabolism; of nutrition; of temperature production, regulation and loss; of reproduction; of the physiologic changes incident to successive periods of life, and of the functions of the nervous system. Five hours a week, first semester, second year. Open to those who have completed the courses in physiology of the first year. PROFESSOR BEARD.

Recitations upon the subjects of this course are conducted in sections of the class.

PROFESSOR BEARD AND DR. WILCOX.

Course IV. Physiologic chemistry and microscopy.

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 the process of fibrin formation. 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 and in the use of the polariscope. Nine hours a week, first half of first semester, second year. Open to those who have completed courses i and ii.

PROFESSOR BEARD, DR. WILCOX AND MISS WILKINSON.

Course V. Experimental physiology.

Laboratory work and demonstrations. A study of physiologic apparatus, electrical stimuli and methods of experimentation; the demonstration of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems. Six hours a week second half of first semester, second year. Open to those who have completed course iv.

PROF. BEARD AND DR. WILCOX.

Course VI. Practical dietetics. (Elective.)

Lectures and laboratory exercises. A study of food analysis, food preparation and of the general principles of food selection, including a discussion of invalid and infant dietary. Six hours a week second half of first semester, fourth year.

PROFESSOR BEARD AND MISS WILKINSON.

Opportunity will be afforded, in the laboratories of physiology and physiologic chemistry, for the pursuit of special courses of study in both experimental and chemical physiology, under the direction of the chair.

CHEMISTRY.

The work in this subject is carried on in a building especially arranged for this work. The qualitative laboratory has a floor space of about 2300 square feet and accommodates 100 students at a time. It is used for instruction in general chemistry and analysis. It is well supplied with the usual apparatus. The quantitative laboratory has a floor space of about 1500 feet, and accommodates 68 students at one time. It is used for instruction in the analysis of the urine, quantitative analysis and organic chemistry.

Course I. General inorganic chemistry, including qualitative analysis.

Lectures and recitations. 3 hours a week, first semester; 2 hours a week, second semester, first year.

PROFESSOR BELL.

Laboratory work; qualitative analysis. 6 hours a week, first year.

PROFESSORS BELL AND CAREL.

Course II. Analysis of the urine; toxicology; chemistry of carbon compounds; chemistry of air, soil and water.

Lectures and recitations. 3 hours a week, first semester, second year.

PROFESSOR BELL.

Laboratory work; analysis of the urine. 6 hours a week, first semester, second year.

PROFESSORS BELL AND CAREL.

An optional course in experimental work is given during the second semester of the second year.

It includes work in toxicology, water analysis, food analysis, and the preparation of carbon compounds, according to the wishes and needs of the individual student.

No charge is made except for apparatus destroyed.

PATHOLOGY AND BACTERIOLOGY.

The laboratories of pathology and bacteriology occupy spacious quarters in the laboratory of medical sciences. A general laboratory, 44x70 feet, is well lighted by windows on three sides and on the fourth. Electric light for microscopic and general illuminating purposes is also provided. The arrangement is such that four students are grouped so as to have a sink, with gas and electric light, distilled and city water and waste connection, and ample desk space next the windows. Eight lockers, arranged beneath the table and on the walls, provide for apparatus, microscopes, etc., and are given at the beginning of the course to each quartette. Immediately behind and accessible to each student, are sterilizers, incubators, blow-pipes, etc. Cupboards, drawers, a large incubator, sinks, fume chambers, demonstration and distribution tables, complete the arrangement of the room.

Two private rooms of the demonstrators flank it on either side. Adjoining one of these are the department library and the office and private laboratory of the professor of pathology and bacteriology. Adjoining this is the private laboratory of the professor of surgical and clinical pathology. Specimens illustrative of surgical pathology are here prepared and diagnostic work done.

In the basement of the building, the department has store rooms and a room where pathological animals are housed. Here too are equipped laboratories for research in bacteriology and experimental pathology, as well as a room in which all the culture media are made.

In the third story, immediately above and of the same size as the large laboratory, is a museum for the storage and exhibition of pathological specimens. A preparation room for their reception and assorting adjoins it.

The hospitals of Minneapolis and St. Paul 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 frequently received.

MICROSCOPES.

An adequate equipment of microscopes with attachments, immersion lenses, etc., permits of the rental of an instrument to each student, at a cost of \$2.00 per course, whenever he is unprovided with one suitable for his purposes.

BACTERIOLOGY.

Course I. General bacteriology.

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. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. CHOWNING.

Course II. General pathology.

Lectures, demonstrations and laboratory work on the general processes involved in disease, to include the study of inflammation, the degenerations and tumors.

Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. WILSON.

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 on 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 of the important pathogenic bacteria, sown and kept under observation by each student. Fluids and tissues from clinical cases (human and animal) will be supplied for microscopic and cultural examination and an intimate relationship with clinical and 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 lesions in all the organs will be illustrated from clinical and autopsy material fresh and preserved and supplemented by experiment 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, ASST-PROFESSOR WHITE, DR. CHOWNING.

2. Pathology of diseases of toxic and obscure origin. Under this are included the special degenerations, inflammations and other pathological conditions not already included under infectious diseases.

ASST-PROFESSOR WHITE, DR. CHOWNING.

3. Clinical microscopy. The microscopical and chemical study of such materials as pathological blood, sputum, urine, contents of the alimentary canal, etc., and the application of laboratory methods to clinical diagnosis.

DR. HEAD.

Course III. Pathology of special diseases.

Fifteen hours per week throughout the first semester of the third year.

Course IV.

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.

ASST-PROFESSOR WHITE AND DR. ROTHROCK.

Course V. Special pathology of the nervous system.

An elective course limited to twenty-five students.

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.

DR. WILSON.

Course VI. Special course in practical pathology.

An elective course limited to twenty-five students. Twelve hours per week second four weeks of the second semester, fourth year.

Course VII. Research work in one of the following lines:

(a) General pathology.

PROFESSOR WESBROOK.

(b) Special pathology and bacteriology and technique.

ASST-PROFESSOR WHITE.

Second semester of third and throughout the fourth year, hours assigned.

Course VIII. Surgical pathology.

(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 and 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 2 hours a week, second semester, fourth year. PROFESSOR STEWART.

TEXT-BOOKS AND COLLATERAL READING.

The following text-books are preferred by the faculty. Reference works are suggested also, for collateral reading:

Medical dictionaries:

Gould's Medical Dictionary.
Dunglison's Medical Dictionary.
Duane's Medical Dictionary.
Dorland's Medical Dictionary.

Histology:

First year—

Wilson's The Cell.
Piersol's Histology.
Böhm-Davidoff-Huber's Histology.
Stöhr's Histology.
Quain's Anatomy, 10th Ed. Vol. I, Pt. II
Schæfer's Histology.
Parker's Biology.

Second year—

Piersol's Histology.
Quain's Anatomy, Vol. III, Pts. I, III and IV.
Collateral reading—Kölliker's Gewebelehre Pts. I and II; Duval's Précis d'Histologie; Ranvier's Traite d' Histologie; Weyesse's Histology; Behren's Kossel u Schiefferdecker's Gewebelehre; Klein's Histology; O. Hertwig's The Cell; Lee's Microtomist's Vade Mecum; Stirling's Practical Histology; Willey's Amphioxus, etc.; Thompson's Zoology; Huxley & Martin's Biology; Davenport's Experimental Morphology; Barker's Nervous System; Erlich and Lazarus on Blood; Ewing on Blood.

Embryology.

Minot's Embryology.
Hertwig-Mark's Embryology.
Marshall's Vertebrate Embryology.
Collateral reading—Köliker's Enwicklungsgeschichte; Prenant's Embryologie; Schenk's Embryologie; O. Schultze's Embryologie; Heisler's Embryology.

Anatomy.

First year—

Gray's Descriptive and Surgical Anatomy, revised American edition.
Morris' Text-book of Human Anatomy.
Quain's Anatomy, 10th edition, Vol. II, Pts. I and II.
Gerrish's Anatomy.

Second and third years—

Gray's Anatomy, revised American edition.
Quain's Anatomy, 10th edition.
Morris' Text-Book of Anatomy.
Gerrish's Anatomy.
Spaltchaltz' Atlas of Human Anatomy.
Holden's Practical Anatomy.
Erdmann's Manual of Dissections of the Human Body.
Weiss' Practical Anatomy.
Hayne's Manual of Anatomy.

Owen's Manual of Anatomy.

Treve's Applied Anatomy.

Collateral reading—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; Meynert's Psychiatry. Part I: anatomy, physiology and chemistry of the brain; Deaver's Surgical Anatomy; Edinger's Anatomy of the Nervous System; Hildebrand's Chirurgisch Topographische Anatomie.

Physiology.

First and second years—

Foster's Physiology, sixth edition.

Howell's American Text-Book of Physiology.

Stirling's Practical Physiology.

Waller's Human Physiology.

Collateral reading—Landois and Stirling's Handbook of Physiology; Chapman's Physiology; Stewart's Practical Physiology; Yeo's Physiology; Blyth's Foods; Raymond's Physiology.

Chemistry.

Second year—

Tyson's Examination of Urine.

Reese's Toxicology.

Pathology.

American Textbook of Pathology.

Ziegler's General and Special Pathology.

Coplin's Manual of Pathology.

Dürck-Hektoen: Special Pathologic Histology.

Jakob: Nervous System.

Coat's Manual of Histology.

Mallory and Wright's Pathological Technique.

Collateral reading—Hamilton's Text-Book of Pathology; Delafield and Pruddens Handbook of Pathological Anatomy and Histology; Woodhead's Practical Pathology; von Kahliden's Pathological Histology; Thoma's Text-Book of General Pathology; Lubarsch Ostertag, Ergebnisse der Pathologie u Anatomie; Orth, Pathologische Anatomie; Birch-Hirschfeld, Pathologische Anatomie; Clifford Allbutt's System of Medicine; Leukhart's die Thierische Parasiten des Menschen; Bouchard, Traite de Pathologie Generale; Eichorst, Pathologie u Therapie; Gaylord and Aschoff, Pathological Histology; Nothnagel, Encyclopedia of Practical Medicine.

Bacteriology.

Muir and Richie's Manual of Bacteriology.

Levy and Klemperer-Eshner Clinical Bacteriology.

Lehmann-Neumann-Weaver, Atlas and Textbook of Bacteriology.

Abbott, The Hygiene of Transmissible Diseases.

Park, Bacteriology in Medicine and Surgery.

Collateral reading—Sternberg's Manual of Bacteriology; Fraenkel's Bacteriology; Woodhead's Bacteria and their products; Duflocq, Lecons sur les Bacteries Pathogenes; Flügge, die Mikroorganismen; System de Bakterien; Duclauxs, Traite de Microbiologie. Hueppe (Jordan) Principles of Bacteriology; Novy, Laboratory Work in Bacteriology.

Clinical Microscopy.

Von Jaksch's Clinical Diagnosis.

Simon's Clinical Diagnosis.

Cabot's Clinical Examination of the Blood.

Ewing, Clinical Pathology of Blood.

Da Costa, Clinical Pathology of Blood.

Cabot's Serum Diagnosis of Disease.

Collateral reading—Lenhartz Mikroskopie u Chemie am Krankenbett; von Limbeck
Klinische Pathologie der Blutes; Rieder's Atlas of Urinary Sediments.

Materia medica and therapeutics.

First year—

Pharmacopœa of the American Institute of Homeopathy.

Second year—

Hughes' 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*, Herring's *Condensed*.

Materia Medica, Dunham's *Lectures*.

Practice of Medicine.

Goodno's *Practice*.

Raue *Therapeutics*.

Lippe's *Repertory*.

Knerr's *Repertory*.

Pepper's *System of Medicine*.

DaCosta's *Diagnosis*.

Ander's *Practice of Medicine*.

Physical Diagnosis.

Lillenthal's *Therapeutics*,

Lippe's *Repertory*.

Farrington's *Clinical Materia Medica*.

Vierodt's *Medical Diagnosis*.

Abrams' *Manual of Clinical Diagnosis*.

DaCosta's *Diagnosis*.

Surgery.

Park's *Surgery*.

Homeopathic *Text-book of Surgery*.

Moulin's *American Text-book of Surgery*.

Bradford & Lovett, *Orthopaedic Surgery*

Pye's *Surgical Handicraft*.

Skin and Genito-urinary Diseases.

Skin—Kippax, Hyde, Pye-Smith.

Genito-Urinary—Doughty, Carlton.

Obstetrics.

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*.

Gynecology.

Wood, *Text-book of Gynecology*.

Ophthalmology.

Norton, Buffum, Swanzy, Noyes.

Collateral reading—Fuch's *Diseases of the Eye*.

Otology and Rhinology.

Ear; Barr.

Nose and Throat; Kyle, Bosworth, Ivins, McDonald.

Nose, Throat and Ear; Veshlaget & Hallett, McBride, Burnett.

Nervous and mental diseases.

Talcott's Mental Diseases.

Clouston 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 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; Horsley's Brain and Spinal Cord.

Diseases of Children

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.

Hygiene.

Coplin and Bevan's Practical Hygiene.

Park's Hygiene.

Collateral reading—Richardson's Preventive Medicine; Buck's Hygiene and Public Health.

Medical Jurisprudence.

Taylor's Medical Jurisprudence.

Chapman's Medical Jurisprudence.

Collateral reading—Hamilton's American System of Legal Medicine; Withaus' and Becker's Medical Jurisprudence and Toxicology; Wharton and Stille's Medical Jurisprudence.

All communications pertaining to the college of homeopathic medicine and surgery should be addressed to the Dean, A. P. Williamson, M. D., No. 602 Nicollet Avenue. Minneapolis, Minn.

The College of Dentistry

FACULTY

- CYRUS NORTROP, LL. D., *President.*
WILLIAM P. DICKINSON, D. D. S., Andrus Building. *Dean and Professor of Materia Medica.*
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OSCAR A. WEISS, D. M. D., 505 Masonic Temple. *Professor of Prosthetic Dentistry and Orthodontia.*
ALFRED OWRE, D. M. D., M. D., C. M., 401 Masonic Temple. *Professor of Operative Dentistry and Metallurgy.*
CHARLES A. VAN DUZEE, D. D. S., St. Paul. *Clinical Professor of Operative Dentistry.*
CHARLES A. ERDMANN, M. D., 802 Pillsbury Building. *Professor of Anatomy.*
RICHARD O. BEARD, M. D., 812 Pillsbury Building. *Professor of Physiology.*
CHARLES J. BELL, A. B., University of Minnesota. *Professor of Chemistry.*
H. C. CAREL, B. S., *Assistant Professor of Chemistry.*
THOMAS G. LEE, A. M., M. D., University of Minnesota. *Professor of Histology and Embryology.*
WINFIELD S. NICKERSON, Sc. D. *Assistant Professor of Histology.*
FRANK F. WESBROOK, M. A., M. D., C. M., 328 Tenth Ave. S. E. *Professor of Bacteriology and Pathology.*
S. M. WHITE, B. S., M. D., *Assistant Professor of Bacteriology and Pathology.*
FRANK R. WRIGHT, D. D. S., M. D., 403 Pillsbury Building. *Lecturer on Anæsthesia and Chief of Anæsthesia Clinic.*
MARY V. HARTZELL, D. M. D., 9 Snyder Block. *Instructor in Comparative Dental Anatomy.*
H. M. REID, D. D. S., 423 Medical Block. *Instructor in Prosthetic Dentistry.*
E. FRANKLYN HERTZ, D. M. D., Andrus Building. *Instructor in Prosthetic Dentistry, and Dental Anatomy.*
JAMES O. WELLS, A. M., D. M. D., Masonic Temple. *Instructor in Crown and Bridge Work, and Operative Technics.*
MARGARET L. NICKERSON, M. A. *Instructor in Histology.*
H. K. READ, M. D. *Demonstrator of Anatomy.*
M. RUSSELL WILCOX, M. D. *Demonstrator in Physiology.*

Announcement.

The College of Dentistry of the University of Minnesota offers a progressive course of study which covers three terms in three separate calendar years, beginning early in September and closing the last week in May following. Classes are graded as first, second and third year. Students who successfully pursue this course are given the degree D. M. D. (doctor of dental medicine), which entitles them to come before any state board of dental examiners for a license to practice dentistry in that state.

Commencing with the session of 1903-1904 the course will be extended to four school years.

The central idea upon which this institution was founded, is that dentistry is a branch of the healing art, and that the practitioner should possess a medical education, hence the curriculum has been broadened so as to include the fundamental principles that underlie the practice of medicine. In this connection special attention is called to the fact that while a thorough course is required, practical work is not neglected. The technical courses are very complete and the clinical facilities are unsurpassed.

Another special feature of this institution is that in laboratory work and infirmary practice, students at all times operate under competent instructors, the professors themselves serving as demonstrators, and every stage of each operation receives due criticism and marking.

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.

Course of Instruction.

FIRST YEAR.—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. 3 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.

Text-books required:

Quain's Anatomy, tenth addition, Vol. II, parts 1 and 2. Morris' Anatomy.

DENTAL ANATOMY.

The subject is taught by a thorough laboratory course, in which the student studies the teeth by dissection, modelling, 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 a 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.

Text-book required—Black's Dental Anatomy.

Collateral reading—American Text-book (Thompson); Comparative Dental Anatomy (Thompson); Dental Anatomy, human and comparative (Tomes').

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. Text-book, Thompson. Collateral reading, Tomes.

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.

Text-book required—Foster's Physiology.

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 *amœba*, paramœcium, yeast, *spirogyra*, etc., simple metazoa, as *hydra*, etc.; a 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.

First semester, recitations, four hours per week; laboratory, six hours per week.

Text-book required—Stohrs' Histology.

CHEMISTRY.

- (a) Lectures on the chemistry of the elements.
- (b) Laboratory work in general inorganic chemistry of non-metallic and metallic elements.
- (c) Lectures on qualitative analysis with special attention to the examination of alloys.
- (d) Laboratory work corresponding to course (c) and including the qualitative determination of bases and acids. In this course several alloys are analyzed by each student.
- (e) Recitations are carried on throughout the year to test the individual knowledge of each student.
- (f) Optional courses are offered in quantitative analysis, water analysis, etc.

Text-books required—Inorganic Chemistry Syllabus and Laboratory Notes on Qualitative Analysis, prepared by the department.

PROSTHETIC DENTISTRY.

The work in this 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 counter-dies; 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.

SECOND YEAR.

ANATOMY.

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 week.

Text books required.

Morris' Anatomy. Edinger's Anatomy of Brain and Cord.

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.

MATERIA MEDICA.

Pharmacology. This course includes the study of the general characteristics of drugs and their physiological action, with a comprehensive classification and description of remedies employed in dentistry. Lectures, recitations and laboratory work.

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 detention, pyorrhœa 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.

Text-book required—Burchard.

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 receives due attention.

OPERATIVE DENTISTRY.

Didatic. Lectures and recitations illustrated by lantern slides, charts, heroic models and physical apparatus will be given on cavity classification and nomenclature, instrument nomenclature and instrumentation, removal of deposits, rubber dam and exclusion of moisture; cavity preparation, the enamel in its relation to cavity margins; sensitive dentine and pulp treatment, conservative and radical; including discoloration, its cause and treatment; canals, their cleansing and filling; matrices; separating teeth and correcting interproximate space; preparation and insertion of filling materials, including inlays; finishing fillings; clinical operations in their relation to vital tissue, including a review of the technic of conservative operations; the conduct of a practice.

Both junior and senior classes attend these lectures and stand quiz. The questions to each class vary according to their work. An examination will be held at the close of each subject.

Technical. The course of technics which is given at the beginning of this year includes the formation of typical cavities in plaster models, vulcanite and ivory teeth; protecting nearly exposed pulps, and capping exposed pulps; gaining access to canals; cleansing and

filling canals with various materials, subsequently examining them to note results; application and retention of the rubber dam; preparing and inserting the various filling materials, gutta percha, cements, amalgams, tin and gold. *This work must be completed in the first semester*

Clinical. Students enter the infirmary at the beginning of the second semester if their *technic work is complete*. No student will be assigned patients until his work is completed.

Before beginning work upon patients, students are given an "infirmary drill" in which they are taught to meet patients, adjust the chair, make examinations, remove deposits and cleanse the teeth, and apply the rubber dam. In the Infirmary, students are under the immediate supervision of the instructors of this branch, who teach them how to diagnose, treat, and prognose cases, beginning with those requiring the simplest service and progressing as their skill increases. This intimate association of the technical and clinical enhances the value of the former and facilitates progress in the latter. Each operation is first presented to the student by a demonstration given by the instructor.

Text books required. American Text Book Operative Dentistry. Reference, Johnson's Principles and Practice of Filling Teeth.

PROSTHETIC DENTISTRY.

Didactic. Lectures and recitations will cover the preparation of the month 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 lower swaged metal plate with 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 this year upon completion of the technic course, and puts into practice the principles there acquired.

Text-book required. Essig's American Text-book of Prosthetic Dentistry.

ORTHODONTIA.

The work in this year 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 bands 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.

Text-book required. Guilford's Orthodontia.

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 view-points.

Technical. The technics are arranged so that each student is required to construct in the laboratory, one of the more important forms of crowns and dummies, with root preparation for the former, and to assemble the same in bridges.

The completed technics illustrate the following types of crowns and dummies; the shell crown; the shell crown with porcelain face; the Richmond crown; the same with removable porcelain face; the Logan crown, with and without band; partial crowns for lingual attachment; porcelain crowns for incisors and cuspids, and the same for bicuspid and molars. Porcelain-faced dummies for bicuspid and molars, and the same with removable facings. Solid metal dummies for bicuspid and molars, and porcelain-faced saddle dummies for incisors and cuspids, and the same with removable facings.

THIRD YEAR.

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 microorganisms, 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 preparations of pure culture, and both cultivation from and microscopic examination of infected tissues and fluids of the body, by the students themselves.

Text-book. Muir & Ritchie.

Pathology. Lectures, recitations and laboratory work. Special study of inflammations and the histological changes occurring in the tissues and fluids, constitutes 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.

ORAL SURGERY.

The subject of oral surgery will be taught clinically and didactically. The large amount of clinical material presenting 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 maxillæ; cleft palate and hare-lip; caries and necrosis of the jaws from constitutional causes; adenoid growth and nasal polypi in their relation to oral surgery; suppuration of the antrum; ulitis; epulis growths; fungoid pulp; ranula; exostosed teeth; ankylosis and dislocations, 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 or 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 condition of the antrum; pyorrhœa-alveolaris; dislocations and ankylosis; facial neuralgias; tumors of the mouth and associate parts, hare-lip; cleft-palate; implantation cases and fractures.

Text-book required. Marshall's Oral Surgery,

ORTHODONTIA.

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.

Text-book. Guilford's Orthodontia.

OPERATIVE DENTISTRY.

Didactic. The lectures on operative dentistry are delivered to both second and third year classes. All will be required to attend and stand "quiz." The questions to the senior class will bear more upon the application of principles in practice. An examination will be held at the conclusion of each subject.

Clinical. Many clinics demonstrating advanced operations and peculiar methods are given in this year. The student has ample opportunity to put these methods into practice; he will also give special attention to the different forms of pathological lesions that pertain to daily office practice, and will carry cases to completion, including the restoration of the teeth to usefulness by filling, crowning or bridging, as the case may require. All operations will be marked and record so made, together with a written examination on the didactic work, will form the final test in this branch.

Text-book required. Kirk's Operative Dentistry.

Reference. Johnson's Principles and Practice of Filling Teeth.

PROSTHETIC DENTISTRY

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 excellent 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.

Text-book. Essig's American Text-Book of Prosthetic Dentistry.

PORCELAIN INLAYS.

Didactic. Lectures and recitations will be given on the indication for inlays the character and manipulation of the porcelain bodies, cavity preparation, forming the matrix, baking and setting the inlay.

Technical. Each student will be required to make at least one inlay in an extracted tooth.

METALLURGY.

Didactic. This subject will be treated in the following order: Metallurgical terms processes, and the principles upon which they are based; the various metals and their ores; process of extraction and refining; their properties and application in the arts, especially

in dentistry; alloys, general, and those used in dental amalgams. Lectures and recitations once a week throughout the year, written quizzes monthly.

Technical. Refining of gold and silver, producing pure metals from scraps and filings. Making alloys for plate, crown and bridge-work, solders and alloys for dental amalgams.

Special attention is given to the melting, casting, cutting, annealing and testing of dental amalgam alloys. Each student will be required to provide metal scraps for refining and metals for amalgam alloys, with which to produce by the processes named, metals and alloys which shall be retained by him for future use.

Text-book required. Hodgen's Practical Dental Metallurgy.

CROWN AND BRIDGE-WORK.

Technical. The construction of porcelain crowns and bridges, and crowns with attachments for the rigid retention of the same.

Clinical. The student in this year will preform practical operation in the mouth, covering all forms of crown and bridge-work.

Text-book required. Essig's American Text-book of Prosthetic Dentistry.

PHYSICAL DIAGNOSIS AND ANÆSTHESIA.

The subject of physical diagnosis will be taught didactically and practically, and will have direct bearing upon the subject of anæsthesia and will be as complete as its importance demands. A course of urinalysis will be given in connection with this course.

The technics of anæsthetics, both general and local, receive full consideration. All anæsthetics 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.

Text-books required. Tyson, Physical Diagnosis and Turnbull's Manual of Anæsthetics.

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.

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 Xrays, will be made clear by laboratory demonstrations and practical application.

RECAPITULATION.

STUDENTS' DENTAL SOCIETY.

In this year a society is organized, which is under the direct supervision of the faculty, and is made a part of the course of instruction. Every third year student is required to prepare an original paper upon some dental, or allied topic, to be read before and discussed in open meeting. The meetings will commence the first week in October.

FIRST YEAR.

Anatomy—Lectures and recitations.

Physiology—Lectures and recitations.

Histology and embryology—Lectures and laboratory.

Chemistry—Lectures and laboratory.

Dental anatomy—Lectures and laboratory.

Prosthetic technics—Laboratory.

SECOND YEAR.

Anatomy—Lectures and laboratory.
 Pathology—Lectures and recitations.
 Materia medica—Lectures and laboratory.
 Therapeutics—Lectures, recitations and clinical.
 Operative dentistry—Lectures, technical and clinical.
 Prosthetic dentistry—Lectures, technical and clinical.
 Orthodontia—Technical.
 Crown and bridge-work—Lectures, recitations and technical.

THIRD YEAR.

Bacteriology and pathology—Lectures, recitation and laboratory.
 Oral surgery,
 Physical diagnosis, } Lectures and clinical.
 Anæsthesia, }
 Orthodontia—Lectures, technics and clinical.
 Operative dentistry—Lectures and clinical.
 Prosthetic dentistry—Lectures, technical and clinical.
 Crown and bridge-work—Technical and clinical.
 Metallurgy—Lectures and technical.
 Students' Dental Society.

GENERAL INFORMATION.

THE COLLEGE YEAR.

The fifteenth annual session of this college opens Wednesday, September 16th, 1902, and closes on Thursday, May 28th, 1903.

The college year will be divided into semesters, the first ending January 25th, 1902. The succeeding week will be devoted to the midwinter examinations. The second semester begins February 3d. The lecture courses will close May 16th, when the final examinations of the year begin.

Practical work for both the senior and junior classes will continue until May 28th.

The technic and laboratory courses begin immediately upon the opening of the school, the classes being called Wednesday, September 16th. The lecture courses commence Tuesday, September 23d.

Commencement exercises will occur in common with the other departments of the University, on Thursday June 4th, 1903.

All statements in this announcement as to courses of study, conditions, requirements or fees, have reference to or binding force only upon the session of 1902-1903, unless otherwise definitely stated.

QUALIFICATIONS FOR MATRICULATION.

The requirements for admission to the College of Dentistry are, credit certificates showing the satisfactory completion of two years high school work, or its equivalent, and a credit in manual training. Failing to have the latter, the prospective student will be required to demonstrate the possession of mechanical capability.

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.

Regulation blanks, upon which to make out these certificates, will be sent upon request.

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 the arts, of the University.

Examinations are held only in the English language.

ENROLLMENT.

The last day of enrollment for the session of 1902 1903, will be Tuesday, September 16th.

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, in the library building. Students will then present themselves for examination; or for the approval of their evidence of preliminary qualification. Having received an entrance certificate from this committee, they will report to the dean of the college for admission and classification.

Seats in the amphitheatre, laboratory benches and lockers, as well as chair and lockers in the infirmary, are assigned to students in the order of their matriculation, and when so assigned must not be exchanged for others without permission and registration.

Lockers and drawers are provided for the convenience of students, but the college will not be responsible for any personal losses of students.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents.

They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies and must present themselves upon the dates following, and pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge of the various departments.

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.

No conditions of advanced standing will entitle the student to take the two years of any graded study coincidentally.

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 in the department, appointed by the chair and approved by the faculty. Examinations in such private laboratory work will be conducted by the chair.

Seniors in the college of science, literature and the arts 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. This election will be contributive toward the degrees given in both colleges. Reciprocally the college of dentistry accepts full courses, taken in the college of science, literature and the arts, in histology, physiology and chemistry in lieu of its first year's work in these branches.

CONDITIONS.

Examinations of conditioned students and of applicants for advanced standing, in the common studies of the first and second year, are held in these branches, upon dates as published in the annual bulletin.

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.*

Conditions may also be removed at the close of each semester, at examinations held previous to the "mid-year," for this purpose.

No one can be classed as a junior or senior with more than two conditions.

Students will not be permitted to take advanced work in any graded study, until they have passed the lower branch.

Students will not be permitted to take examinations in the second year's work in any graded branch; until they have removed conditions in the first year's work of the same.

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 a previous year, must remove these conditions at the end of the first semester in order to be eligible for final examination.

Examinations of conditioned students and of applicants for advanced standing, in the common studies of the first and second years, will be held in these branches, upon the following dates:

September 18, 9 a. m.—Anatomy, first year.

September 18, 2 p. m.—Histology, first year.

September 19, 9 a. m.— { Physiology, first year.
 { Anatomy, second year.

September 19, 2 p. m.—Chemistry, first year.

Conditions may also be removed at the close of each semester.

ATTENDANCE AND DISCIPLINE.

The college hours are from 8:30 a. m. to 12:30 p. m., and from 1:30 to 5:30 p. m.

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.

All laboratory courses must be taken in full and must invariably be entered during the first week in which they begin.

Habitual absence, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension.

The practice of dentistry by students, except under the direct supervision of a preceptor, is prohibited by a 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.

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 the established rules.

BREAKAGE AND LOSS.

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 accountant each year when the student matriculates.

In the chemical laboratory course, the student is assigned a certain amount of apparatus and material, for which a receipt is required.

For apparatus and material attaching to his laboratory desk, he is 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.

All apparatus lost or damaged in any laboratory, and all injury to, or destruction of university property, by any student, will be charged to him and must be paid for before he can receive credit for his course. A statement of these charges will be submitted to the accountant, and such breakage and loss fees will be deducted by him from the breakage and loss deposit.

In cases when the damage to college or university property cannot be placed upon an individual, or when the student is shielded by his class, the charge will be assessed to the class.

TECHNICS.

One issue for each piece of work will be made by the college, which, in case of failure, loss, damage or destruction, must be replaced by the student.

The completed work may be retained by the student, upon payment of cost of materials.

No student can take advanced work in operative dentistry, prosthetic dentistry or orthodontia, until the technic work of the branch is completed,

INSTRUMENTS, BOOKS, TOOLS AND MATERIALS.

All students are required to provide themselves with instruments, books, tools and materials as prescribed by the college. These can be obtained in the city, with the usual discount to students. The first installment must be procured and be approved by the instructor before seats can be assigned to the technic laboratories.

COLLEGE MUSEUM.

Members of the dental profession, and others interested, are invited to contribute pathological specimens, casts of malformations, irregularities of the teeth, models, charts, drawings, etc., which may be useful as illustrative matter in the lecture rooms.

ALUMNI ASSOCIATION.

An association of the graduates of the college has its annual meeting during commencement week.

CLINICAL FACILITIES.

The opportunities for acquiring a practical knowledge of both operative and prosthetic procedures is unsurpassed, the material presenting in the infirmary clinic being more than ample for all purposes of instruction.

GRADUATION.

At the close of the third year, a student who has passed all examinations satisfactorily, receives the degree of Doctor of Dental Medicine (D. M. D.) upon the following conditions:

He must be twenty-one years of age.

He must have attended three full courses of instruction, the last of which must have been in this college.

He must have passed the full requirement in dissections and must have performed satisfactorily in the college all the required operations in operative and prosthetic dentistry.

Immorality, disorderly conduct, or a failure to conform to the rules of the college, will be deemed a sufficient bar to any student receiving his degree.

Under no circumstances are degrees *in absentia* conferred by this college.

Students failing to graduate will be required to pay a fee for completing unfinished work.

FEES AND EXPENSES.

The annual fee, which includes all charges for matriculation, lecture and laboratory courses, and dissections is, one hundred dollars, (\$100.00.)

One-half of this fee will be payable when the student matriculates. The accountant's receipt 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.

There is no fee for diploma upon graduation.

A breakage and loss deposit of five dollars (\$5.00) is required, when the fee for the first semester is paid.

If the applicant fails to pass the entrance examinations, his fee will be returned by the accountant.

In addition to the college fee, there is a rental fee of \$2.00 for a microscope, in each semester when its use is required, provided the student is not supplied with a satisfactory instrument.

There is also a rental fee of \$1.00 for microscope in the course of bacteriology in the third year. It is an advantage for the student to possess his own microscope, and assistance in the selection of one will be given when desired.

There are no free scholarships, and no students are received for less than the regular fee.

No student will be permitted to take final examinations until after all fees and charges have been paid.

After having entered upon the course of study, fees are not returnable, 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.

Senior students failing to graduate, will be required to pay a fee of ten dollars (\$10.00) for each subject examined in, subsequent to the close of the session in which the failure occurred. A fee of \$10.00 will also be charged for the completion of each branch of unfinished laboratory or practical work.

Rooms and board convenient to the college can be obtained at prices ranging from \$3.00 to \$5.00 per week, according to accommodations.

Furnished rooms without board, from \$5.00 to \$10.00, and unfurnished rooms from \$4.00 to \$7.00 per month.

A list of rooms and boarding places is kept by the secretary of the University Y. M. C. A., to whom inquiries or applications may be addressed.

From one hundred and fifty to one hundred and seventy-five dollars are necessary to defray the expenses of the first month. These include tuition, for first semester, board and room for the month, and books, instruments, tools and materials for the year, which must be purchased before commencing work. In order to avoid embarrassment the student should bring sufficient funds to cover these first expenses.

For blank forms, relating to admission, or further information, address Dr. W. P. DICKINSON, Andrus Building, Minneapolis, Minn.

The College of Pharmacy.

THE FACULTY.

- CYRUS NORTROP, LL. D., *President.*
FREDERICK JOHN WULLING, B. S., Ph. G., Phm. D., LL. M., *Dean: Professor of Pharmacology, Pharmaceutical Chemistry and Pharmaceutical Jurisprudence.*
HENRY MARTYN BRACKEN, M. D., *Professor of Materia Medica.*
.....*Professor of Pharmacognosy.*
CHARLES JOHN BELL, A. B., *Professor of Chemistry; General, Medical, Analytical and Organic.*
CONWAY MACMILLAN, M. A., *Professor of Botany.*
FREDERIC K. BUTTERS, M. S., *Instructor in Botany and Practical Pharmacognosy.*
FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Professor of Bacteriology.*
GEORGE B. FRANKFORDER, M. A., Ph. D., *Professor of Organic Chemistry (Post-graduate)*
GEORGE DOUGLAS HEAD, B. S., M. D., *Instructor in Clinical Microscopy.*
RICHARD OLDING BEARD, M. D., *Professor of Physiology.*
M. RUSSELL WILCOX, M. D., *Instructor in Physiology.*
JOHN F. FULTON, Ph. D., M. D., *Professor of Hygiene.*
F. A. KIEHLE, A. B., M. D., *Instructor in Medical and Pharmaceutical Latin.*
.....*Instructor in Mineralogy.*
.....*Instructor in Pharmacy and Laboratory Assistant.*
II. C. CAREL, B. S., *Instructor in Chemistry.*
W. H. CONDIT, M. D., *Instructor in Materia Medica.*

ANNOUNCEMENT.

In the organization of this college the Board of Regents has aimed to secure the co-operation of the pharmacists of the state. The character of instruction is of high order and every effort is made to comply with the demands of the profession in the Northwest, or elsewhere, in the maintenance of a course of instruction of the highest grade. The college is located on the University campus, in the new building, and is one of the colleges of the department of medicine, but is distinct in the government of its affairs. The building and laboratories are on a par with the best and their equipment is complete.

The work of the college, as outlined in the following pages, is conducted by means of lectures, quizzes and laboratory exercises. Students will find their time fully occupied. The work is of such a nature that no student can accomplish it in the short term of five or six months. Students who feel unable to complete the work in two years may divide it in a manner to complete it in three years. Practicing pharmacists who desire to take certain branches of study, may avail themselves of any of the college facilities, but their studies and time will be subject to regulation as special students.

COURSES OF INSTRUCTION.

PHARMACY—*General*—Metrology; nomenclature; pharmaco-technology; dispensing.

Inorganic—Non-metals; metals; gravimetric analysis; alkalimetry; acidimetry; pharmaceuticals.

Organic—Organic drugs; assays; pharmaceuticals.

CHEMISTRY—*Inorganic*—General, complete though non-metals and metals; chemical philosophy; pharmaceutical; analytical; qualitative; quantitative; (volumetric and gravimetric); toxicological; inorganic poisons.

Organic—General, elementary, descriptive and experimental; pharmaceutical; qualitative quantitative (volumetric, gravimetric); toxicological, organic poisons.

MATERIA MEDICA—*Inorganic*—Non-metals; salts of metals; new remedies.

Organic—Vegetable drugs; new remedies.

PHARMACOGNOSY—*Organic*—Descriptive; microscopical.

PHYSIOLOGY—*Human*—Elementary; descriptive.

BACTERIOLOGY—*Elementary*—Descriptive; practical—optional.

MATHEMATICS—*Pharmaceutical*—*Chemical*.

URINALYSIS—*Complete*—Chemical; microscopical.

LATIN—*Elementary*—Medical; pharmaceutical.

HYGIENE—*Lectures*.

PHARMACAL JURISPRUDENCE—*Lectures*.

MINERALOGY—*Elementary*—Pharmaceutical.

PHYSICS—*Pharmaceutical*—*Chemical*.

TOXICOLOGY—*Lectures*.

DISPENSING—*Practical*.

THERAPEUTICS—*Lectures*.

HOMEOPATHIC PHARMACY—*Lectures*.

MICRO-CHEMISTRY—*Lectures and laboratory*.

The courses are comprehensive and thorough, especially adapted to the higher education of pharmacists. In most cases the instruction enters into minute details, and the most effective modern methods of teaching are employed, including laboratory work. The studies are graded and progressive throughout.

FIRST YEAR.

General pharmacy.
Metrology,
Nomenclature,
Pharmaco-technology,
Inorganic pharmaceutical
chemistry,
Inorganic elementary,
chemistry,
Qualitative chemistry,
Pharmaceutical mathematics,
Physiology,
Botany,
Materia medica,
Physics,
Pharmacognosy,
Microscopy,
Pharmacopœia,
Latin.

SECOND YEAR.

Advanced pharmacology,
" pharmaco-technology
" inorganic pharmaceuti-
cal chemistry,
" organic pharmaceutical
chemistry,
" inorganic general chem-
istry,
" qualitative chemistry,
" pharmacognosy,
" microscopy,
" materia medica,
Quantitative chemistry,
Pharmaceutical jurispru-
dence,
Bacteriology,
Toxicology,
Urinalysis,
Mineralogy,
Hygiene,
Pharmacopœia,
Unofficial pharmacy.

THIRD YEAR.

Students who divide their
work among three years will
take the following studies in
the first year and divide the
remaining subjects equitably
among the remaining two
years:
Inorganic general chemistry,
Inorganic pharmaceutical
chemistry,
Qualitative chemistry,
Physiology,
Botany,
Latin.

PHARMACY, THEORETICAL AND PRACTICAL.

The *junior course* begins with preliminary lectures considering the history and development of pharmacy, the rank which pharmacy occupies among other professions, text-books and works of reference. The pharmacopœia and dispensatories receive attention. Measures and weights; the balance—its construction and varieties, and methods of weighing; specific gravity, in detail, follow.

The pharmaceutical laboratory is under the direct charge of the dean. The time of instruction is so arranged that the student becomes familiar with the subjects of the lectures from practical work immediately following and relating to them, thereby fixing facts and scientific principles in the student's mind in a manner that does not depend upon his capacity for remembering merely stated facts.

Among the practical subjects that receive attention are the following: Drug grinding and powdering, comminution, contusion, trituration, elutriation, levigation, sifting fineness of powders according to the United States Pharmacopœia, etc.

Collection of drugs, drying, curing, cutting, garbling, etc.

Heat, its sources and uses in pharmacy, its determination, latent and sensible heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids and gases in various kinds of furnaces, stoves and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, desiccators, blow-pipes, crucibles; baths for controlling and equalizing heat; water-salt-oil-glycerine-paraffine-hot-air-baths; evaporation—spontaneous, rapid, slow, in vacuo; ebullition—boiling points, fusion; sublimation, calcination, granulation, dehydration, torrefaction, roasting, reduction, oxidation, carbonization, deflagration, ignition, etc.

Solutions—chemical, pharmaceutical, simple, complex, saturated; circulatory, displacement.

Dialysis—construction of dialyser, osmosis, endosmosis, exosmosis, crystalloids and colloids.

Maceration—expression, infusion, decoction.

Percolation—history, theories, various methods and forms of percolators, exhaustion, repercolation, continuous percolation, etc.

Filtration—filtering media, filtration of chemical solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, colation.

Decantation—the syphon and its uses; guiding rods.

Distillation—simple, fractional, destructive, kinds and varieties of stills.

Crystallization—water of crystallization, deliquescence, efflorescence.

Granulation—methods of affecting, etc.

Precipitation—separation, weighing, drying precipitate.

Practical pharmacy—The preparation of pills, solutions, mixtures, cachets, ointments, plasters, suppositories, powders, emulsions, lozenges, etc. Arrangement and appliances of dispensing department.

Inorganic, U. S. P.

Senior course—This course begins with the consideration in detail of the pharmacy of organic and inorganic drugs. It embraces a careful study of every important galenic preparation with the method of preparation, physical characteristics, reactions, impurities, adulterations and sophistications, etc.

A study of incompatibility is one of the special features of this course; it is viewed from a pharmaceutical and chemical standpoint.

Among the important subjects that will be treated, are the following:

Plant exudations, gums, resins, balsams, gum-resins, oleo-resins, etc.

Cellulin and its various products.

Destructive distillation of wood, acetic series.

Carbohydrates; their relationship and characteristics.

Fermentation products, alcohols, ethers, chloroform, nitrous ether, chloral, spirituous liquors, etc.

Organic acids—The official salts and preparations, of tartaric, salicylic, benzoic, citric acid and others.

Fixed oils and fats—Their preparation, composition and purification; various methods of examination; chemical properties and relations; liquid and solid fats.

Waxes and animal fats.

Volatile oils—Their preparation, physical and chemical properties, composition; adulterations and their detection; botanical and chemical classification.

Alkaloids—Physical and chemical properties; the various methods of extraction and identification; classification, alkaloidal reagents, etc.

Glucosides—Difference from alkaloids; full consideration of properties.

Animal drugs and products; all the animal drugs are taken up in detail.

The prescription; the study of the prescription, of incompatibilities, reactions, solubility, etc. New remedies are studied, and an exposition of their chemistry and pharmacy is presented.

The laboratory work in pharmacy follows each lecture, and has direct reference to the subjects treated at the lecture. The preparation of the official standard solutions is fully illustrated. The course includes a thorough study of the pharmacy of the following metals and their salts and preparations: Sodium, potassium, ammonium, lithium, barium, calcium, zinc, magnesium, lead, copper, aluminum, mercury, silver, arsenic, antimony, bismuth, iron, manganese, gold, platinum, etc. The course includes a thorough application of the U. S. P. tests for identity, impurities, and strength of official preparations. Considerable time is given to quantitative work, volumetric and gravimetric.

Text-books—U. S. P., U. S. D., Remington's Pharmacy, National Dispensatory, Caspari's Pharmacy.

PHARMACOGNOSY.

This important subject is taught in the senior year.

The vegetable drugs of the United States Pharmacopœia are taken up in the following order: Roots, rhizomes, tubers and bulbs, woods, barks, leaves, herbs and flowers, fruits, seeds, plant exudations, resins, gum-resins, waxes and starches. Each drug is carefully examined, both macroscopically and microscopically. Students are also provided with specimens for home study. The lectures give, in compact form, the history and important features of each drug, with consideration of its importance to the pharmacist. About a month's time is devoted to the examination of powdered drugs, especially those most liable to sophistication. The quizzes include careful drill on the constituents, action and dose and official preparations of each drug considered. Identification receives careful attention, and there are weekly tests of the student's ability. A short course is given in the microscopic examination of some of the more important alkaloids and glucosides, and of certain emulsions and inorganic salts, if time permits.

Text-book—Sayre's Organic Materia Medica and Pharmacognosy.

Reference books—U. S. P., U. S. D., Flückiger and Handbury's *Pharmacographia*, Tschirch's *Atlas der Pharmacognosie*, etc.

The drugs are considered in the following order:

Roots—Sarsaparilla (Mexican, Para and Honduras), senega, gentiana, taraxacum, pyrethrum, inula, lappa, apocynum, stillingia, sumbul, asclepias, phytolacca, althæa, belladonna, bryonia, calumba, rheum, glycyrrhiza (Spanish and Russian), ipecacuanha, gelsemium, pareira, krameria, rumex.

Rhizomes—Aspidium, zingiber (Jamaica, East Indian and African), calamus, veratrum, iris versicolor, cyripedium, convallaria, sanguinaria, geranium, podophyllum, valeriana, arnica, serpentaria, spigelia, hydrastis, caulophyllum, cimicifuga, leptandra, menispermum, berberis, triticum.

Tubers and Bulbs—Jalapa, aconitum, colchicum, scilla, allium.

Twigs and Woods—Quassia, hæmatoxylo, santalum rubrum and album, guaiacum, dulcamara.

Barks—Cinchona (Rubra and Flava), prunus virginiana, viburnum prunifolium, viburnum opulus, rubus, quercus, granatum, aspidosperma, frangula, cascara sagrada (false and true), juglans, xanthoxylum, mezereum, gossypii radix, euonymus (of root and stem), quillaja, ulmus, sassafras, cascarilla, cinnamomum (Ceylon, Saigon and cassia).

Leaves and Leaflets—Pilocarpus, eucalyptus, uva-ursi, senna (Alexandria and India), erythroxyton (Bolivian and Truxillo), belladonna, stramonium, hyoscyamus, tabacum, digitalis, matico, salvia hamamelis, castanea, eriodictyon, chimaphila, buchu (long and short), rhustoxicodendron.

Herbs and Flowers—Santonica, carrophyllus, sambucus, calendula, cusso, arnica, matricaria, anthemis, rosa gallica, rosa centifolia, crocus, zea, chondrus, cetraria, cannabis indica, pulsatilla, scoparius, eupatorium, grindelia, tanacetum, artemisia, absinthium, lobelia, mentha piperita, mentha viridis, melissa, thymus, hedeoma, marrubium, chirata sabina, chelidonium.

Fruits—Juniperus, humulus, piper (longum, nigrum et album), cubeba, pimenta, rhus glabra, capsicum, colocynth, cassia fistula, chenopodium, xanthoxylum, illicium, cardamomum, coriandrum, conium, anisum, carum, feniculum (Roman and German), macis, aurantii amari cortex, aurantii dulcis cortex, limonis cortex, prunum, tamarindus (East and West Indian), phytolacca, ficus, rubus idæus.

Seeds—Physostigma, amygdalus, (dulcis et amara), pepo, theobroma, sinapis (alba et nigra); nux vomica, delphinium, staphisagria, ricinus, t'glum, stramonium, colchicum, cardamomum, strophanthus, linum.

Miscellaneous—Guarana, lactucarium, alce (Socotrina, Barbadosensis, et Capensis), catechu, gambir, kino (Malabar et Pallas), opium, elastica, manna, saccharum lactis, acacia, tragacantha, mastiche, sandaraca, colophonium, mel, gualaicum, benzoinum, cambogia, galbanum, asafoetida, copaiba, terebinthina, pix (Burgundica et liquidia), styrax, balsamum peruvianum, balsamum toluantum, camphora, thymol, menthol, ammoniacum scammonium, myrrha, ergota, (Spanish and German), sassafras medulla, galla (Aleppo et Chinensis), kamala, lupulinum, lycopodium, amyllum, cetaceum, cera, cantharis, coccus, ichthyocolla, moschus.

Besides the foregoing a number of the more important unofficial drugs will also be discussed.

GENERAL CHEMISTRY.

This is a course in general chemistry given in the department of medicine. In the presentation of the subject, practical work in the chemical laboratory follows the lectures. The system is one which gives the student confidence in his work from the beginning and enables him to keep step with the rapid progress of the instruction.

The course is graded through the junior and senior years, with three lectures and two afternoons' laboratory work weekly during the entire first year, and during half of the second year. The second half of the senior year is devoted to lecture work only, the laboratory work concluding in the first half.

Text-books—Remsen's Inorganic Chemistry; Wulling's Chemistry.

QUANTITATIVE CHEMISTRY.

The course in quantitative analysis is given during the senior year. It is graded and begins with simple gravimetric determination of certain acids and metals, followed by determinations of several ingredients of the same compound, and by complex analysis. Volumetric methods are next learned and applied, then gravimetric and volumetric are employed together. The course is didactic and pract cal.

Text-books—Schimpl's Volumetric Analysis.

ORGANIC CHEMISTRY.

The course is given in the senior year. It includes both descriptive and experimental lecture and laboratory work. The organic chemistry of pharmacy is taught in connection with the course in pharmacy and pharmaceutical chemistry.

PHARMACEUTICAL CHEMISTRY.

Inorganic and organic pharmaceutical chemistry is taught in both the first and second years. As it is so important a part in the curriculum it receives attention both in special lectures and in the laboratory. The principles of chemistry acquired in the other course in

chemistry are here applied directly to pharmacy. The chemistry necessary to the thorough comprehension of the Pharmacopœia is expounded and applied in this course.

Text-books—Wulling's Pharmaceutical Chemistry; U. S. P.; Sadtler & Trimble's Pharm. and Med. Chemistry.

TOXICOLOGICAL CHEMISTRY.

The study of this subject follows the course of general chemistry in the senior year. The course includes the chemistry of organic and inorganic poisons. Toxicology proper is included in the course in materia medica.

Text-books—Reese's Toxicology; Taylor on Poisons.

BOTANY AND MICROSCOPY.

The course in botany receives careful attention. It is a junior study and occupies four hours weekly of the student's time throughout the college year. The course is a thorough one, including microscopy and a large amount of laboratory work.

The course is chiefly devoted to a study of the morphology and anatomy of the higher seed plants with special attention to the microscopic characters of roots, rhizomes, barks, fruits and seeds. The formation and occurrence of carbohydrates, glucosides, alkaloids, organic acids, resins and gums are carefully studied. Students receive practical training in the preparation and staining of microscopic sections and in the use of micro-chemical reagents. Laboratory work precedes, whenever possible, the lectures on each branch of the subject. Frequent quizzes, both oral and written, serve to fix the salient points in the students' minds.

Text-books—Strassburger, Noll, Schenck, and Schimper, Porter's Translation.

Reference books—Bastin, Bessey, Vines, Bergen.

MATERIA MEDICA AND THERAPEUTICS.

The work in organic and inorganic materia medica, which includes some therapeutics and toxicology, extends throughout the two years, and occupies from two to four hours weekly. It is taught by lectures, frequently illustrated with specimens belonging to the collection of the college. Pharmaco-dynamics, including the study of the identity, quality and characteristics of drugs, which is usually included in materia medica, shares fully attention in the courses of pharmacognosy.

Text-books—U. S. Pharmacopœia; Bracken's Materia Medica; Maisch's Materia Medica; U. S. Dispensatory and National Dispensatory.

ELEMENTARY PHYSIOLOGY AND ANATOMY.

This subject is taught to the juniors in the latter part of the junior year in a special course of eighteen lectures. The study of the action of drugs and their effects upon the system cannot be intelligently carried on without some knowledge of the structure and functions of the various organs.

Text-book—Martin's Human Body.

BACTERIOLOGY.

The course bacteriology is given to the seniors, and consists of lectures and recitations illustrated by microscopic preparations and culture of various bacteria. Opportunity is afforded in the laboratory for special research work. This course is optional with students in pharmacy.

MATHEMATICS.

Students in this college receive careful drill in the application of mathematics to pharmacy and chemistry.

URINALYSIS.

This course comprehends both qualitative and quantitative determination of the constituents of normal and pathological urine, and a microscopical examination of deposits. Seniors attend in the latter half of the year. The instruction is given partly in the chemical and partly in the pharmaceutical laboratory.

Text-book—Tyson's Examination of the Urine; Hoffmann and Ultzmann.

HYGIENE AND SANITARY SCIENCE.

A course of from six to ten lectures is provided in this subject, if time permits. For seniors.

Text-books—Parks.

HOMEOPATHIC PHARMACY.

A course in homeopathic pharmacy has been added to the curriculum. It comprises both lectures and laboratory work and is given in the senior year.

Text-book—Homeopathic Pharmacopœia.

MICRO-CHEMISTRY

A brief course is provided for seniors, if time permits.

MEDICAL AND PHARMACEUTICAL JURISPRUDENCE.

A course of lectures in this subject is provided and seniors are required to attend. The lectures are delivered by the dean of the college.

LATIN.

A special course is provided in medical and pharmaceutical Latin, which all students are earnestly advised to attend. Latin is one of the entrance requirements, and this course has been introduced especially for students who are proficient in the other entrance requirements, but not in Latin. The attendance upon the lectures is obligatory for such, and optional for those who have fulfilled the entrance requirement in Latin. The latter will profit by taking this course as it is especially adapted to pharmacists. Two hours weekly are given to the study during the school year.

MINERALOGY.

A short course of lectures embracing the minerals and ores which are the sources of the metals and salts used in pharmacy is provided.

PHYSICS.

Students are required to be familiar with elementary physics, before entering this college. The physics involved in the various chemical and pharmaceutical processes, is, however, fully elucidated as occasion suggests or requires, and considerable attention is given the subject incidentally, principally in the pharmaceutical laboratory.

PHARMACY LAW.

Several lectures will be given to the seniors on the pharmacy laws of the State.

TEXT AND REFERENCE BOOKS.

Pharmacy. U. S. Pharmacopœia, Remington's, Caspari's and Coblenz's, Practice of Pharmacy, U. S. Dispensatory, National Dispensatory, Lyon's Pharmaceutical Assaying. Storer's Dictionary of Solubilities, Hager's Handbook of Pharmacy, Fluckiger and Hanbury's Pharmacographia, Era Formulary, American Pharm. Assoc. Proceedings. Berichte der Pharm. Gesellschaft, Peter's Ancient Pharmacy, National Formulary Homeopathic Pharmacopœia, German Pharmacopœia, British Pharmacopœia.

- Pharmaceutical Chemistry:* Wulling, Sadtler and Trimbles, Attfield, Simon, Hoffman and Powers's Examination of Medical Chemicals, Schmidt, Elsner.
- General Chemistry:* Remsen's Inorganic, Prescott and Johnson's, Watts' Fownes, Gmelin's Handbook, Roscoe and Schorlemmer, Watts' Dictionary, Fresenius, Sadtler's Industrial Organic Chemistry.
- Prescriptions:* Ruddiman on Incompatibility, Gerrish's Prescription Writing, Rice's Posological Tablets.
- Mathematics:* Oldberg's Pharm. Problems, Weights and Measures, Mathematical Chemistry, Helm and Morgan's, Metric System by Hamblin Smith.
- Materia Medica:* U. S. Pharmacopœia, Sayre; Bracken; Maisch, U. S. Dispensatory, National Dispensatory; Culbreth, Bently and Trimen's Medicinal Plants.
- Pharmacognosy:* Sayre, Maisch, Rusby and Jelffe, Fluckiger, Huseman and Hilger's Pflanzenstoffe, Base on Vegetable Microscopy, Hanbury's Pharmacographic and Science Papers, Tschirch and Oesterle's Anatomischer Atlas der Pharmacognosie, Herlant's Micrographie des Poudres Officinales.
- Botany:* Strassburger, Woll and Shimper's, Bergen, Bastin, Vines, Bessry, Bentley, Gray, Cross and Bevan on Cellulose, Wiesner's Rohstoffe, Strassburger and Hillhouse, Geddes, Zimmermann on Botanical Microtechnique, Warning and Posser.
- Urinalysis:* Tyson, Flint, Von Taksch on Clinical Diagnosis, Simon's Clinical Diagnosis Beale's Chart, Hoffman and Ultzmann, Peyer's Atlas.
- Mineralogy:* Dana.
- Physiology:* Martin's Human Body, Foster, Howell's American Text-book of Physiology
- Bacteriology:* Schenck, Sternberg, Fraenkel, Abbott.
- Toxicology:* Reese, Taylor on Poisons.
- Latin:* Robinson's Latin Grammar of Pharmacy, Jones, Harkness.
- Miscellaneous:* Gill's Oil Analysis, Mandel's Bio-Chemistry, Leffmann and Beam's Analysis of Milk, Wing's Milk and its Products, Lassar and Cohn's Chemistry in Daily Life, Park's Hygiene and Sanitary Science, Stewart's Pocket Dose-Book.

LIBRARY.

The students of this college have free access to all the library facilities of the University and of the city. The medical library contains, in addition to about twenty-four hundred volumes of a technical nature, the more important American and European medical and pharmaceutical periodicals.

LENGTH OF COURSE.

The complete course extends over two years, eight and one-half months each. Students may arrange their work so as to take the course in three years, without additional expense to them. It is quite possible that a three years' course may be required of students in this college in the near future.

The eleventh annual course begins Wednesday, September 23, 1902, at 9:00 a. m., at which time all applicants for admission should present themselves with their credentials.

REQUIREMENTS FOR ADMISSION.

I. Candidates who present a diploma of a reputable college, or of a high school of the first grade, or of the advanced course of a Minnesota State normal school, or of the preparatory department of either Hamline University or Carlton College, or of Pillsbury Academy, or of the Minneapolis Academy, or of any institution of similar standing or grade, will be admitted without examination. If the diploma does not cover physics, that branch will need to be taken up by the student during the first year of attendance.

Those bringing certificates of good standing in institutions of the collegiate grade are also admitted without examination.

II. Applicants who bring evidence of having been engaged in the practice of pharmacy for two or more years, who cannot meet the above requirements, are examined in the following branches:

1. English—An original composition of not less than 300 words upon some topic to be announced at the time of examination. Orthography, punctuation, use of capitals, grammatical construction and rhetorical fitness will be considered.

2. Algebra—elementary.

3. Physics—elementary.

III. Other applicants will be examined in the following branches:

1. English.

2. Algebra or geometry—elementary.

3. Physics—elementary.

4. Physiology or botany.

5. Latin—Jones' First Latin Book or an equivalent.

A foreign language, preferably German or French, may be offered in place of Latin, but Latin must then be pursued subsequent to entrance. Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in lieu of a portion of these requirements, equivalent preparation in similar branches of study; and if they show, by examination, or by other evidence, that their preparation has been substantially equivalent, such branches will be accepted as a substitute for those omitted.

The examinations for entrance are conducted by the faculty of the college of pharmacy, in the pharmacognosy room, beginning at 9:00 a. m., on Tuesday, September 23, 1902. Lecture work begins as soon as possible after the examinations, usually the following day.

PROFESSIONAL EXAMINATIONS.

Examinations are held during the last two or three weeks of the regular session and during the last week of the first semester, and are supplementary to the written recitations and quizzes that are held at frequent intervals during the term, and with them form the basis of final determination of fitness

for promotion or graduation. Students are rated throughout the year, and all students who have a standing of eighty-five per cent, or more, in certain of the branches, may not be required to take the final examination in those branches.

Students are not required to write graduating theses, but, instead, they keep complete records of all their laboratory work. The records are to be kept in substantially bound books, to be approved by the faculty. The respective professors call for the records for inspection and rating once a month or oftener. Duplicates of records are to be furnished the college by the students. The college provides the paper.

CONDITIONS.

Students having conditions in more than one major or in more than two minor subjects of the first year, cannot enter upon the second year's work. All entrance conditions must be removed before the spring examination. Candidates for graduation must have removed all conditions before entering upon the second semester of the graduating year.

Condition examinations are held during the week preceding the beginning of the course in September. The dates are posted in June. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations, or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies and must present themselves at the above dates and pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge of the various departments.

DEGREE.

This college confers the degree of pharmaceutical chemist (Ph. C.,) upon the graduates.

REQUIREMENTS FOR GRADUATION.

Regular attendance at lectures, quizzes and laboratory exercises. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least seven-eighths of the required number of exercises.

Every person upon whom the degree is conferred must be of good moral character, and must be twenty-one years old; must have attended two full lecture and laboratory courses, the last at this college, and must have passed a successful examination in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

Those who fail to appear for examination after having paid their diploma fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon payment of an additional fee of five dollars, and complying with all other requirements.

GRADUATE COURSE.

In addition to the course outlined, and which leads to the degree pharmaceutical chemist (Ph. C.,) this college offers two graduate courses, the first to continue through one college year and to lead to the degree of master of pharmacy, and the second to continue through an additional year or longer, and to lead to the degree of doctor of pharmacy. The first graduate course, the one leading to the master's degree, is now in operation. It is intended that the curriculum shall include higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, spectroscopic work, therapeutics, and bacteriology, and a thesis of at least 3,000 words, embodying the results of original work.

The requirements for admission are a diploma from a Minnesota high school of the first grade, or an equivalent; a diploma from a college of pharmacy whose curriculum, extent and kind of work and length of undergraduate course are equal to those of the undergraduate work of this college; an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature in those languages, and a certificate of registration as pharmacist from any state board of pharmacy. The fees for this course will be seventy-five dollars, and, in case of graduation, an additional fee of ten dollars for diploma. The rules relating to damage, waste or breakage in laboratories are the same as those applying to the undergraduate course.

The course leading to the doctor's degree will begin as soon as there are sufficient applicants.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give receipt. At the end of each course, if such apparatus and material are restored in good condition this receipt will be returned to him.

All apparatus lost or damaged will be charged to him and must be paid for before he can receive credits for his course or take his annual examinations.

GENERAL STATEMENT.

Those who do not pass the entrance examinations, may enter this college and complete their course in three years, provided they pursue the subjects required for admission, in addition to the professional work that may be assigned to them, and pass their entrance examinations, before the en?

of the first year. There are a number of preparatory schools in the neighborhood of the University, where the subjects required for admission may be pursued.

Students will be permitted to use their own crude drugs for the making of preparations, provided such material is approved by the dean of the college as suitable to demonstrate the lesson in hand. Finished products from such material, if of satisfactory quality, are at the disposal of the student, unless made with the tax-free alcohol belonging to the college.

Absence will not be excused, unless satisfactory reasons are given to the professor in charge. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension. Students are earnestly requested to be present at the beginning of the school year. Special students, however, may enter at any time; they will not be rated in their work, nor will they be examined unless they make special request therefor. All the facilities for work in the University are open to the students of this college, subject to the approval of the dean. Opportunity is afforded to do advanced work in all branches. Text-books may be obtained after coming to the University.

FEES,

TWO YEAR COURSE.

First year.....	\$75.00
Second year.....	80.00
Diploma.....	10.00
	—————\$165.00

Students who divide their work into three years pay their fees as follows;

THREE YEAR COURSE.

First year.....	\$45.00
Second year.....	55.00
Third year.....	55.00
Diploma.....	10.00
	—————\$165.00

There are no other fees in the regular course. Half the annual fees are payable before entrance, the remaining half *before* February 1st. Those desiring to take special work will be required to pay fifteen dollars a subject in the didactic courses and twenty-five dollars in the laboratory courses.

Students will be charged for laboratory material if used unreasonably. At the end of laboratory courses students will be required to pay for breakage and damage to utensils in their care. If a student is careful this charge need not amount to more than two or three dollars. Students who are to provide themselves with a set of metric weights, a set of apothecary's weights and steel spatulas. The expense of these is within two dollars. Students using platinum crucibles are charged for same. Upon the return of the crucible in the original condition the charge is cancelled, if the crucible is in any wise damaged, the full value is collected from the student. A rental of two

dollars per college year is charged for the use of a microscope. All money is payable to the accountant of the University who will give receipts which must be deposited with the dean. The receipts are returned to students at the end of each year.

Students will be required when entering upon laboratory work, to deposit five dollars with the accountant to cover breakage, damage and waste. At the end of the laboratory course any part of the sum unused will be returned to the student.

The diploma fee is to be paid by candidates for graduation before the beginning of the final examinations. Those whose term rating exempt them from the final examinations pay the diploma fee at least one week before commencement.

If a student is forced to discontinue work before the Christmas vacation for sufficient reasons, his lecture fee will be returned pro rata; if he discontinues work for insufficient reason, the fee will be retained and credited pro rata, on any succeeding course of lectures.

Laboratory fees will not be returned, except in case of discontinuance for sufficient reason, before the student has been assigned to a place in the laboratory. It is desirable that the students enter at the opening of the session in order to be admitted to the laboratories.

STATE BOARD OF PHARMACY.

The Board meets at the college in January, April, July and October of each year. For information concerning the Board, address the Secretary, Mr. H. G. Webster, 517 Bank of Commerce Building, Minneapolis, Minn.

COLLEGE OF PHARMACY ALUMNI ASSOCIATION.

The Alumni Association meets annually in the college building the day before commencement, at 3 p. m. Every member of the Association is urgently requested to report change of address to the secretary.

COMMUNICATIONS.

Address all communications to the Dean, Frederick J. Wuling, University of Minnesota, Minneapolis, Minn.

Students.

GRADUATE STUDENTS, 152.

CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY—41.

Alcott, A. N. B., <i>A. Washington and Jefferson Univ.</i> Sociology, Philosophy, History.	Minneapolis.
Angus, William, <i>B. A.</i> , '93. American Public Economy—Taxation, History.	Wadena.
Bergin, Rev. Alfred M., <i>A. Augustana.</i> Semitic, German, Scandinavian.	Cambridge.
Borass, Julius J., <i>M. L.</i> , '05. Psychology, English, Pedagogy.	Red Wing.
Brohough, Gustav O., <i>B. L.</i> , '89. Political Economy, Sociology.	Red Wing.
Butters, Frederic K., <i>B. S.</i> , '00. Botany, Zoology, Geology.	Minneapolis.
Campbell, John E., <i>M. S.</i> Chemistry, Embryology, Mineralogy.	Minneapolis.
Copeland, John, <i>M. A.</i> , <i>Princeton.</i> Sociology, History of Philosophy, Economics.	St. Paul.
Curtis, John P., <i>M. S.</i> Psychology, Chemistry Geology	Minneapolis.
Davis, Daniel D., <i>B. A.</i> , <i>Marietta.</i> Philosophy, Economics, Sociology.	Minneapolis.
Deinard, Samuel A., <i>DePauw U. of C.</i> Hebrew, French, German.	Minneapolis.
Dever, Charles S., <i>B. L. LL. B.</i> International Law, Private International Law, Political Economy.	Minneapolis.
Driscoll, Alfred E., <i>M. A. Manitoba</i> Philosophy, English, Greek.	St. Paul.
Ferner, Roy Y., <i>B. A.</i> , '97. Astronomy, Mathematics, Physics.	Minneapolis.
Firkins, Oscar W., <i>M. A.</i> English, Greek Poetry, Latin.	Minneapolis.
Freeman, Edward M., <i>M. S.</i> Botany, Embryology, Chemistry.	St. Paul.

Gains, Alvin D., <i>M. A. Dartmouth.</i> Economics, Philosophy, English.	St. Anthony Park.
Geisness, Thomas, <i>M. A., '00.</i> Comparative Philology, English, Philology, Latin.	Minnehaha Falls.
—Gibbs, Gertrude E., <i>B. S., M. S. Cornell.</i> Botany, German, Zoology.	Everett, Wash.
Glascoc, Paul M., <i>M. S.</i> Chemistry, Physics, Mineralogy.	Minneapolis.
Holmstedt, Victor E., <i>B. A., Gust. Adolph.</i> Mathematics, History, Scandinavian.	Minneapolis.
Johnston, George H., <i>M. S., '07.</i> Philosophy, History, Political Science.	Minneapolis.
Kampen, Ingvald Anderson, <i>B. A., '00.</i> English, Comparative Philology, Scandinavian.	Minneapolis.
Knox, Herbert W., <i>B. A., Cornell.</i> Semitic, English, Philosophy.	Minneapolis.
Lyon, Harold L., <i>M. S., '01.</i> Botany, Animal Biology, Geology.	Minneapolis.
—McDonald, Hope, <i>M. S.</i> History, Political Science, Philosophy.	Minneapolis.
McKay, Donald D., <i>B. A., Manitoba.</i> Philosophy, Psychology, Ethics.	Minneapolis.
Nelson, Emil A., <i>M. A., '01.</i> Politics, History, Pedagogy.	Minneapolis.
Nicholson, Edward E., <i>B. S., Nebraska.</i> Chemistry, Mining, Metallurgy.	Minneapolis.
Pease, Levi B., <i>M. S.</i> Chemistry, German, Mining.	Minneapolis.
—Peck, Mary G., <i>B. A., Elmira.</i> English, History, Comparative Philology.	Minneapolis.
—Potter, Frances B., <i>M. A., Elmira.</i> English, French, Italian.	Minneapolis.
Ringstad, Edward O., <i>B. L.</i> English, Comparative Philology, Old Swedish.	Hector.
Rypins, Isaac L., <i>B. L., U. of Cinn.</i> Philosophy, Greek, Semitic.	St. Paul.
Schmidt, Gottfridt, <i>B. S.</i> Mathematics, Animal Biology, Latin.	St. Paul.
—Shillock, Anna, <i>M. L., '97.</i> German, History, Philosophy.	Minneapolis.
Stangeland, Charles E., <i>B. A., Augsburg, M. A., '01.</i> Political Science, Latin, Sociology.	Minneapolis.
Swenson, David F., <i>B. S.</i> Philosophy, Greek Physiology.	Minneapolis.
—Tilden, Josephine, <i>M. S., '97.</i> Algology, Organic Chemistry.	Minneapolis.
Wilkin, George F., <i>B. A., Rochester.</i> Sociology, Philosophy, History.	Minneapolis.
Zeleny, Anthony, <i>B. S., '03; M. S., '05.</i> Physics, Theoretical Mechanics, Mathematics.	Minneapolis.

FOR THE DEGREE OF MASTER OF ARTS—82.

Aaberg, Arne A., <i>B. Ph.</i> , '01 Philosophy, History, Pedagogy.	Starbuck.
—Adams, Cynthia Emroy, <i>B. Ph.</i> , <i>Wisconsin</i> . English, History, German.	Minneapolis.
Aune, Beyer, <i>B. Ag.</i> , '01. Botany, German.	Starbuck.
Baker, Franklin Luther, <i>B. A.</i> , <i>Colgate</i> . Geology, Chemistry, Animal Biology.	Duluth.
Baldy, Fred Carroll, <i>B. A.</i> , '05; <i>LL. B.</i> , '08. Politics, Mathematics, History.	Minneapolis.
Beach, Joseph W., <i>B. A.</i> English, French, Philosophy.	Minneapolis.
Bentel, Joseph E., <i>B. S.</i> , <i>Dennison</i> . Chemistry, Mineralogy, Physics.	Winnebago City
Berg, John Nelson, <i>B. S.</i> Political Economy, History, Philosophy.	St. Paul.
Bessee, Henry J., <i>B. A.</i> Political Science, History, Logic.	Albert Lea.
Botnefield, N. D., <i>Agr. College</i> . Organic and Industrial Chemistry and Plant Breeding.	Minneapolis.
Brandelle, D. A., <i>B. A.</i> , <i>Augustana</i> . Philosophy, History, English.	Minneapolis.
—Brill, Ethel C., <i>B. L.</i> Philosophy, History, English.	St. Paul.
Burkhard, Oscar Carl, <i>B. A.</i> , '01. German, French, Teutonic Philology.	Preston.
Bush, William, E., <i>B. A.</i> , '02. Chemistry, Mineralogy, Geology.	Afton.
—Christopherson, Laura, <i>Albert Lea</i> . Latin, English, Pedagogy.	Long Prairie.
Clausen, Neils Y., <i>Luther College</i> . English, Latin, Comparative Philology.	Minneapolis.
—Cliffell, Mary E., <i>B. L.</i> , '08. English, History, Rhetoric.	Redwood Falls.
—Dale, Dorothea P., <i>Oregon</i> . English, Pedagogy, Literary Criticism.	Minneapolis.
Day, Ernest E., <i>B. A.</i> , '05. Philosophy, History.	Minneapolis.
Duncan, Theodore L., <i>B. S.</i> Geology, Forestry, Surveying.	St. Anthony Park.
Eaton, Benjamin Galen, <i>B. A.</i> , <i>Bates</i> . History, Greek, Philosophy, Latin.	St. Paul.
Erickson, Henry Anton, <i>B. E. E.</i> , '06. Physics, Mathematics, Astronomy.	Minneapolis.
—Fanning, Clara E., <i>B. S.</i> , '01. English, History, Economics.	Minneapolis.
—Fanning, Mary G., <i>B. S.</i> Botany, History, Geology.	St. Paul.

- Faulkner, Charles E., Jr., *B. A., Midland, (Kan.)*
Political Science, English Spanish. Minneapolis.
- Forsyth, Olga B., *B. S.*
History, Philosophy, English. Minneapolis.
- Funk, Henry D., *Macalester.*
Semitic, History, English. St. Paul.
- Hartmann, Marcus, *B. A., St. Olaf.*
English, Comparative Philology, History. St. Anthony Park.
- Helliwell, Harriet E., *B. L., '08.*
English, German, History. Minneapolis.
- Hemingway, Ernest E., *B. A.*
Major—Animal Biology. Fox Lake, Wis.
- Hodnefield, Jacob J., *B. A., '02.*
Political Science, English, History. Blue Earth.
- Holtz, Fred L., *B. S., '02.*
Botany, Animal Biology. Mankato.
- Hoverstad, Torger, *B. Ag., B. S.*
Political Science. Crookston.
- Johnson, Peter J., *B. A., St. Olaf.*
English, Comparative Philology, History. Minneapolis.
- Jones, R. U., *Macalster.*
Chemistry, Physics, Animal Biology. Minneapolis.
- Kennedy, Joseph, '86.
Pedagogy, Philosophy, Political Science. Fargo, N. D.
- Kilgore, Helen D., *B. A., '01.*
Greek, Comparative Philology, Paleontology. Minneapolis.
- Kleven, Nils, *B. A., St. Olaf.*
English, German, Comparative Philology, History. Minneapolis.
- Klose, W. H., *B. A., Roanoke.*
German, French, Comparative Philology. Minneapolis.
- Kunze, William Frederick, *B. S.*
Chemistry, Geology. Hastings.
- Lambert, Bernard N., *B. L., '01.*
Philosophy, Scandinavian, German, Sociology. Waverly.
- Lantz, Charles E., *B. A., Gustavus Adolphus.*
Latin, Greek, Philosophy. Minneapolis.
- Larson, August T., *B. A.*
Economics, Greek, History. Cokato.
- Leavitt, Clara K., *B. S.*
Botany, Geology, French. Minneapolis.
- LeMiller, Mark A. J., *B. S., U. of Ind.*
German, Astronomy, English. Minneapolis.
- Lofstrom, Elmer E., *B. A., '06.*
Hebrew. Windom.
- Magnusson, J. P., *Gust. Adolph.*
Chemistry, Geology, Physics, History. Hastings.
- Marlowe, Cora E., *B. S., '00.*
History, English, Political Science. Morris.
- Marshall, John W., *B. S.*
Economics, Astronomy, Psychology. Wadena.
- Martenson, Magnus, *B. A., Gustavus Adolphus.*
Philosophy, Greek, Political Science. Minneapolis.

- Miner, J. Burt, *B. S., LL. B.*
Psychology, Animal Biology. Berlin, Wis.
- Moore, Margaret, *B. L., '01.*
English, German, History. Minneapolis.
- Murfin, Arthur M., *B. S.*
History, Philosophy, Political Science. Sleepy Eye.
- Nichols, Georgia L., *B. A., '00.*
Greek, Latin, History. Pipestone.
- Nothrop, George N., *B. L., '01.*
English, French, Political Science. Platteville, Wis.
- Oftedal, Osmund, *Augsburg.*
Hebrew, Sociology, English. Minneapolis.
- Pemberton, John, *B. A., Hamline.*
Philosophy, Economics, Greek. St. Anthony Park.
- Peterson, J. M., *B. A., Luther.*
Major—German. Minneapolis.
- Pickett, Victor G., *B. S., '06.*
Economics, History, English. Minneapolis.
- Rankin, Albert William, *B. A., '80.*
History, English, German. Minneapolis.
- Rankin, Mrs. Jean S., *B. S., Kifon.*
English, Pedagogy, Philosophy. Minneapolis.
- Robbins, Amy, *B. L., '01.*
English, Design, Spanish. Robbinsdale.
- Rosendahl, Otto, *B. S., '01.*
Botany, Entomology, English. Minneapolis.
- Rossman, Floy A., *B. Ph., Hamline.*
Major—English, Political Economy and History. Hamline.
- Rounds, Ona M., *B. Ph., Upper Iowa.*
English, History and Philosophy. Fayette, Iowa.
- Sanford, Edward P., *B. A.*
Major—Economics. Minneapolis.
- Shelveland, Axel, *B. A., St. Olaf.*
English, German, History. Minneapolis.
- Shellenberger, Emma W., *B. Ph., Iowa.*
English, History, German. St. Anthony Park.
- Simensen, Iver, *Luther College.*
History, Latin, English. Minneapolis.
- Skinemoe, John S., *B. A., Luther College.*
English, Latin, History. Minneapolis.
- Skonnard, Johannes, *B. A., Augsburg.*
English, Rhetoric, German. Minneapolis.
- Stanford, Blanche M., *B. L., '01.*
English, Pedagogy, Spanish. Kelso, N. D.
- Stewart, William B., *B. S.*
Major—Botany. Bemidji.
- Stirratt, O. J., *Hamline.*
Mathematics, Pedagogy, Sociology. Minneapolis.
- Torelle, Ellen, *B. Ph., '01.*
Botany, Animal Biology, Paleontology. Minneapolis.

—Traver, Madeleine M., <i>B. A., Vassar.</i> Philosophy, History.	Minneapolis.
Vicker, Edwin J., <i>B. A., '01.</i> French, Scandinavian, Comparative Philology.	Minneapolis.
Wallestad, John N., <i>B. A., St. Olaf.</i> Philosophy, Pedagogy, Economics.	Minneapolis.
Westerson, William A., <i>B. S., Carleton.</i> History, Political Science, Geology.	White Rock.
—Wilcox, Jessie G., <i>Albert Lea College.</i> Latin, English, Pedagogy.	Minneapolis.
Wright, W. H., <i>B. S., U. of Ill.</i> Botany, Chemistry, Philosophy.	Minneapolis.
Ylvisaker, Olaf S., <i>Luther College.</i> Greek, Latin, Comparative Philology.	Minneapolis.

FOR MASTER OF AGRICULTURE.—1

Palmer, William G., <i>B. Ag.</i> Zoology, Chemistry, Animal Husbandry.	St. Anthony Park.
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OTHERS DOING GRADUATE WORK. 28.

—Abbott, Emma A., <i>B. Ph., Cornell (Ia.)</i> English, Psychology.	Minneapolis.
—Adams, Mary M. English.	Minneapolis.
Alexander, Hugh S., <i>B. A., Macalester.</i> Astronomy, Hebrew.	St. Paul.
Anderson, Martin E., <i>E. E., '01.</i> Mathematics, Mechanics, Rhetoric.	Decorah, Iowa.
Burns, Kenneth L., <i>B. A., Yale.</i> Forestry, Geology, Entomology.	Minneapolis.
—Chalmers, Lillian Hatch, <i>B. S., '05.</i> Experimental Psychology.	Minneapolis.
—Cheney, Lora Allen, <i>B. A., Simpson.</i> English Literature.	Minneapolis.
—Colquhoun, Flora, <i>Holland.</i> Old French, English, History.	Minneapolis.
—Comstock, Ada L., <i>M. A. Smith.</i> English.	Minneapolis.
—Dresser, Medora E., <i>B. L., '00.</i> German.	Minneapolis.
Erickson, Martin L., <i>B. S., S. D., Agr. College,</i> Forestry, German, Geology.	Flandreau, S. D.
—Firkins, Ina, <i>B. L., '38.</i> Philosophy.	Minneapolis.
—Foss, Elizabeth H., <i>B. S.</i> Botany, Batenology.	Minneapolis.
—Gale, Dreshea P., English.	Minneapolis.
Jackson, Robert M., <i>B. S.,</i> Comparative Philology.	Winona.

- Jackson, Jeanie M., *B. A.*,
German, Spanish. Minneapolis.
- Jaeger, Mrs. N. M.,
German. Minneapolis.
- Lagerstrom, Lydia T., *B. S.*,
English Literature. Minneapolis.
- Langemo, Peter C., *B. L.*, *Wisconsin*.
Economics, Politics. Kenyon.
- Long, Sue May,
English. Minneapolis.
- Mattson, Rev. P. A., *B. A.*, *Augustana*.
Hebrew, German, Scandinavian. Minneapolis.
- Melom, Carl M., *B. L.*, '01.
French. Manila, P. I.
- Olds, Mrs. Harriet T., *B. L.*, *Carleton*.
English. Minneapolis.
- Pendergast, Sophie. *B. L.*,
German. Hutchinson.
- Powell, Florence, *B. A.*,
English. Minneapolis.
- Sardeson, Eva R., *B. L.*, '00.
Phonology. Minneapolis.
- Schmidt, Paul G., *B. A.*, '07.
Latin. Minneapolis.
- Webster, Jennie, '99.
German. Minneapolis.

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

SENIOR CLASS—1911.

- Alvilda Aarnes, Montevideo.
 Mabel Louise Abbott, Minneapolis.
 Willard Henry Ackerson, Minneapolis.
 Charles Lewis Alexander, Kasson.
 William August Alexander, Carver.
 Peter John Anderson, Helena, N. D.
 Elizabeth Kidder Andrews, Faribault.
 Campbell Lauran Bailey, Minneapolis.
 Elizabeth Douglas Barstow, St. Peter.
 Raymond Calvan Benner, Sauk Center.
 William Aaron Besesen, Albert Lea.
 May Louise Blasing, Henderson.
 Eva Willoughby Brady, Dodge Center.
 Charles J. Brand, Chicago, Ill.
 Gilbert Anderson Brattland, Hendrum.
 Paul F. Brown, Pipestone.
 Mary Emma Buell, Minneapolis.
 Achsa Burgess, Minneapolis.
 Paul C. Burrill, Hawley.
 William Emmett Bush, Afton.
 Jane Catherine Byrnes, Minneapolis.
 Helen Elizabeth Camp, Minneapolis.
 Henry Don Campbell, St. Paul.
 Bernice May Cannon, St. Paul.
 John Marius Casey, Elk River.
 Mabel Elizabeth Coates, Minneapolis.
 Ruth Fitch Cole, Minneapolis.
 Arthur N. Collins, Minneapolis.
 Vesta Margaret Cornish, Vernon Center.
 Caroline Crosby, Minneapolis.
 John Rees Current, Sleepy Eye.
 Helen Henrietta Currer, LeSueur.
 Hans H. Dalaker, Ossian, Ia.
 Herman A. Danelz, Swift Falls.
 Grace Davis, Minneapolis.
 Jessie Emeline Davis, Anoka.
 Louise Kellogg Diesem, LaMoure, N. D.
 Elmer Leslie Dills, Albert Lea.
 Laura Anna Dohm, St. Paul.
 Alice Dougan, Minneapolis.
 Jay Isaac Durand, Crookston.
 Marvin Jay Egleston, Wykoff.
 Christian Adam Ehrhardt, *New Richmond, Wis.*
 Grace Nelson Elliott, St. Paul.
 August George Erickson, Springfield.
 John Joseph Fahey, Green Isle.
 Pauline Field, Minneapolis.
 Perry Arthur Field, Blanchard, Ia.
 Pauline Henrietta Finke, Minneapolis.
 Helen Randle Fish, Minneapolis.
 Mabelle Helen Fosseen, Minneapolis.
 Edith Foulke, St. Paul.
 Bror Gustaf Frykman, Minneapolis.
 William Doan Galvin, West Liberty, Ia.
 Edward Smith Gilfillan, Minneapolis.
 Ralph Perkins Gillette, Minneapolis.
 Glenora Luenette Gilman, Minneapolis.
 Laura Elizabeth Golden, Minneapolis.
 Florence Eva Goodrich, Minneapolis.
 Alice Pitcairn Graham, Windom.
 Sara Catherine Grant, Bald Eagle Lake.
 Olaf Halvorson, Norway, Ill.
 Helen Harrington, Minneapolis.
 Mary Miranda Harrington, Minneapolis.
 Bruce Franklin Harris, Crookston.
 Ella M. Hawk, Redwood Falls.
 Paul Carrier Heard, Minneapolis.
 Della Hermann, Minneapolis.
 Edith Lillian Herman, Minneapolis.
 Catherine Hillesheim, Sleepy Eye.
 Clara Hillesheim, Sleepy Eye.
 Hemeilia Lydia Hocanzon, St. Paul.
 Floy Edna Hodgmore, Minneapolis.
 Jacob J. Hodnefield, Radcliffe, Ia.
 Daisy Sarah Hone, Minneapolis.
 Homer Francis Horton, Algona, Ia.
 Frank Henry Hosmer, Farmington.
 Marguerite Huntley, Minneapolis.
 Katherine Jacobson, St. Paul.
 Alex Janes, Pipestone.
 Antoinette Wallace Johnson, Minneapolis.
 Hannah Johnson, Willmar.
 Oscar Victor Johnson, Carver.
 Peter Rudolph Johnson, New Ulm.
 Elizabeth Marie Jones, Minneapolis.
 Melva L. Kamrar, Minneapolis.
 Robert Lincoln Kelley, Minneapolis.
 Karl Bradley Kellogg, Minneapolis.
 Lee Olds Kellogg, St. Paul.
 Adelaide Julia Kiichli, Duluth.
 Martin Severin Kindseth, Goodhue.
 Lillian Virginia King, St. Paul.
 Ida Knoblauch, Minneapolis.
 Maximillian Nandor Lando, St. Paul.
 Sarah Lewis, St. Paul.
 Gene Lilley, Minneapolis.
 Norman George Lind, Minneapolis.

- Gladys Ermytrude Macdonald, Minneapolis. Bert Russell, St. Paul.
 Julia Genevieve McDonough, Darfur. Elizabeth Viola Sadley, Princeton.
 Marjorie McDougal, Minneapolis. Olga Emelie Saltness, Minneapolis.
 Frances Gwynne MacFarland, Des Moines, Ia. Mary Frances Sanford, Minneapolis.
 Ellen Elise McGregor, Minneapolis. Percy Seavey Saunders, Minneapolis.
 Jennie Beatrice McGregor, Minneapolis. Thomas D. Schall, St. Paul.
 Minnie Katherine McHerron, Minneapolis. Herman Friederich Schrader, St. Paul.
 Angus Donald McKinnon, Crookston. Charles Adolph Schunert, Minneapolis.
 Agnes McNulty, Litchfield. Alvina Charlotte Siegmann, Minneapolis.
 Gertrude Isabel Marshall, Minneapolis. George Elbridge Silloway, Minneapolis.
 Edna May Matchan, Minneapolis. Martha Herberta Sjoberg, Duluth.
 Carl Asa Mayo, Minneapolis. Florence E. Smith, Minneapolis.
 Halsted Carpenter Moody, St. Paul. Ralph Elmore Squires, St. Paul.
 Theresa Eleanor Morrison, Ryegate, Vt. James Garfield Stanley, Minneapolis.
 Willis Richmond Morton, Woodstock. Elbridge Cole Staples, St. Paul.
 Walter Henry Murfin, Sleepy Eye. Augusta Mara Starr, Minneapolis.
 Myrtie Agnes Murphy, St. Paul. Peter Leon Stavseth, Duluth.
 Marion Kate Newman, Gibbonsville, Idaho. Edith Clare Steele, Princeton, Ill.
 Edwin Herbert Nicholas, Fairmont. Jesse Grant Steenson, Eden Prairie.
 Frances Marie Pansy O'Brien, St. Paul. George Charles William Stein, St. Paul.
 Nelle A. Olson, Zumbrota. Fred Harding Stevens, Minneapolis.
 Frank William O'Neill, Graceville. Homer William Stevens, Centerville, S. D.
 Helen Louise Ozias, Minneapolis. Emma Laurel Swart, Fargo N. D.
 Ernest J. Parkin, Pine Island. Georgia Mitchell Swett, Minneapolis.
 Adolph August Passer, New Paynesville. Edith Mighill Thomas, Minneapolis.
 Alfred Emanuel Peterson, Crookston. Henry Joseph Thorpe, Clyde, Ohio.
 Selmer L. Peterson, New Sweden. Lucy Towler, Minneapolis.
 Ethel May Petran, Minneapolis. Harriet Trimmer, Winfield, Ia.
 Louise Phelps, Minneapolis. Edward Leo Touhy, Chatfield.
 Barney Orin Phinney, Sutherland, Ia. Mary Edna Twamley, Grand Forks, N. D.
 Grace Elizabeth Polk, Brainerd. Nels Eric Valerius, Waconia.
 Chalmer Lucas Powell, Chicago, Ill. Florence Van Evera, Minneapolis.
 Leonard H. Pryor, Minneapolis. Herbert Wellington, Wakefield, Wahpeton, K. D.
 Lydia Carlton Pullen, Harrison. Ralph Charles Wedge, Plainview.
 Mary Phelps Putnam, Red Wing. Benjamin Bartlett Weed, St. Paul.
 Stephen Walter Ranson, Dodge Center. Robert Wallace Wetmore, Minneapolis.
 Frank Elisha Reed, Glencoe. Grace Wheaton, Minneapolis.
 John Homer Reed, Minneapolis. Juanita Williams, Duluth.
 Edgar Whitman Rice, Minneapolis. Mary Lydia Woodward, Langdon.
 Adelaide Robbins, Robbinsdale. Ernest William Wright St. Paul.
 Mabel Cordelia Rodlun, Willmar. James Claire Wyman, Minneapolis.
 Willard Allen Rossman, Chatfield. Everett LeRoy Youngberg, Cannon Falls.
 Arthur Nelson Rowe, Springfield. Ruby Pauline Zehnter, Minneapolis.

JUNIOR CLASS—187

- Ackerson, Winifred Harriet, Minneapolis. Baily, Seavey Moor, Minneapolis.
 —Adams, Helen, Minneapolis. —Baker, Augusta Emma, Austin.
 —Ainsworth, Bessie Ella, —Ballard, Gertrude Ellen, Minneapolis.
 Chippewa Falls, Wis. —Blitz, Annie D., Minneapolis.
 —Andrews, Bonnie Florence, Mankato. —Boutelle, Anna Kimber, Marshall.
 —Andrews, Dolly, Minneapolis. Bray, Elwyn Royal, Excelsior.
 —Armstrong, Harriet L., Minneapolis. Brohough, Oscar, St. Paul.
 —Arndt, Caroline Agnes, St. Paul. Brown, Allan Reginald, Minneapolis.
 Austin, Clarence Elliott, Barton, Vt. Burmester, Ernest Adolph, Wells.
 —Babcock, Ruth Eloise, Minneapolis. Burns, Kevin, Brainerd.

- Butler, M. Belle, St. Paul.
 —Button, Mary Stewart, Casselton, N. D.
 Callerstrom, Gottfried W., Gowrie, Iowa.
 —Campbell, Harriet Louise, Alexandria.
 Campbell, Otho Harold, Litchfield.
 —Carpenter, Alfaretta May, Sauk Center.
 —Chadwick, Grace, Owatonna.
 —Chapman, Anna Field, St. Paul.
 Chase, Raymond Park, Anoka.
 Chernausek, Samuel, Hutchinson.
 —Claypool, Jennie Leona, Spencer, Ia.
 Cleven, Nels, Andrew Nelson, Wist P.O. S. D.
 Colby, Carl W., Plainview.
 —Cotter Annette L., Minneapolis.
 —Cressy, Mary, Sioux Falls, S. D.
 —Cross, Catherine Mabel, Hudson, Wis.
 Cull, John Arthur, St. Thomas, N. D.
 —Dahl, Inga, Minneapolis.
 —Daly, Alice, St. Paul.
 —Dann, Ethel Claire, Clark, S. D.
 Deering, William C., Minneapolis.
 —Denny, Grace Ella, St. Paul.
 —Dinsmoor, Jessie Belle, Austin.
 Downey, Hal, Minneapolis.
 Drake, Benjamin F. Jr., Maple Plain.
 Duncan, Urin S., Sisseton, S. D.
 —Dyar, Alice Emma, Winona.
 Dye, Willard, B., Winona.
 Eastby, John M., Norway.
 —Ewards, Flora Alice., Minneapolis.
 Emerson, Byron Todd, Brandon.
 —Fagundes, Mary Wilson, Hillsboro, N. D.
 Feliman, William E., Arlington.
 Ferns, Helmer M., Granite Falls.
 Fisher, Blanding, Devils Lake N. D.
 Fisher, Harry White, San Francisco, Cal.
 —Fletcher, Maude Rena, Minneapolis.
 —Fuller, Florence Lenora, Crookston.
 —Gillis, Mary May, Minneapolis.
 —Glasoe, Agnes, Spring Grove.
 Goodwin, Harry James, Appleton.
 Griffith, Charles Augustus, Minneapolis.
 —Halvorson, Gurinne A., Rushford.
 Haney, Claude Leonard, Minneapolis.
 —Hannemann, Susan E., Minneapolis.
 Hanson, Nicholas, Eyota.
 —Hanson, Ella Caroline, Crookston.
 Hanson, Henry G., Willmar.
 —Harris, Martha Fallis, Minneapolis.
 —Hartzel, Margaret Sproat, Minneapolis.
 Hatch, Samuel Atherton, Pipestone.
 Hegel, Newton, Minneapolis.
 —Hendrix, Helen Rozette, Minneapolis.
 —Houlton, Ruth, Elk River.
 Howes, Lyman J., Hannibal, Mo.
 Huff, Ned, Little Falls.
 Humphrey, Edward Frank, Winnebago City.
 —Hutchinson, Harriet Jane, Minneapolis.
 Hutchinson, John C., Minneapolis.
 Ives, Henry Swift, St. Peter.
 —James, Ursula Marguerite, Minneapolis.
 —Johnson, Bessie, Minneapolis.
 Johnson, Thorwald Ross, Hampton, Iowa.
 Jones, Benjamin Milton, Minneapolis.
 —Judson, Leulah Jeanette, Minneapolis.
 —Kasper, Evelyn Leone, Glencoe.
 —Keatley, Sadie Lura, Minneapolis.
 —Kennedy, Cornelia, Minneapolis.
 —Kennedy, Eileen, St. Paul.
 Kibbourne, Stanley Shumway, Lisbon, N. D.
 —Knatvold, Ruth B., Albert Lea.
 Knight, Ray Roberts, Minneapolis.
 —Koch, Flora Marguerite, Fergus Falls.
 Ladd, James B., Sanborn.
 Ladd, Sumner M., St. Peter.
 Latimer, Arthur Hugh, Mason City, Ia.
 —Lavayea, Grace White, Larimore, N. D.
 Lavell, Richard Alexander, Minneapolis.
 Layne, John A., Rushford.
 —Liddell, Grace Isadora, Wadena.
 Livingston, Robert Wm., Center Chain.
 —Longbrake, Mary Louise, Minneapolis.
 —Lord, Inez Helen, Charleston, Ill.
 —McFadden, Esther, Fergus Falls.
 —McFarlane, Lorena, Minneapolis.
 —McGillis, Annie Minneapolis.
 —McKeehan, Irene P., Minneapolis.
 MacLean, Malcolm Appleton, Minneapolis.
 —McMillan, Margaret, Minneapolis.
 McMillan, Putnam Dana, Minneapolis.
 —McVeigh, Elisabeth, Minneapolis.
 Mallory Earl P., Brainerd.
 —Mallory, Helen, Minneapolis.
 Mann, George D., St. Paul.
 —Mann, Leonora C., Minneapolis.
 —Marshall, Olive M., Minneapolis.
 Martin James McG., Minneapolis.
 —Mathews, Bessie Louise, Minneapolis.
 —Mendenhall, Alice Louise, Minneapolis.
 —Mersen, Alice Margaret, Hutchinson.
 Monton, William Andrew, Minneapolis.
 Mosher, Esek Ray, Albert Lea.
 —Muedeking, Galena, Owatonna.
 —Nelson, Alice May, St. Paul.
 Nelson, Arthur, Red Wing.
 —Nelson Sadie H., Humboldt, Ia.
 Newhall, Robert T., Minneapolis.
 —Newhart, Grace, Minneapolis.
 —Newkirk, Bertha G., Minneapolis.
 —Nickerson, Maude, Elk River.
 —Nixon Lillian, Minneapolis.
 Norton, Willis I., Minneapolis.
 —O'Gordon, Hannah, Sacred Heart.
 —Oliver, Myrtle Talbot, Garden City.
 —O'Neill, Mamie Gertrude, St. Paul.
 —Parker, Belle Louise, Pickwick.

- Parker, Dora May, Hastings.
- Peck, Edith Laura, Minneapolis.
- Peck, S. Louise, Chicago, Ill.
- Pendergast, Ellen Martha, Hutchinson.
- Pennington, Georgiana, Minneapolis.
- Perry, Florence McCloud, St. Paul.
- Peterson, Niels John, Racine, Wis.
- Pinney, George G., Minneapolis.
- Pond, Frances Eggleston, Minneapolis.
- Purdy, Edward Amos., Minneapolis.
- Putnam, Robert W., Red Wing.
- Ray, Mary Louise, St. Paul.
- Reid, Eva Christie, Minneapolis.
- Ricks, William L., Iowa Falls, Ia.
- Robb, Laura M., Minneapolis.
- Rowe, Arthur Nelson, Springfield.
- Rudell, Gustaf Leander, Winthrop.
- Sandstrom, John Ferdinand, Benson.
- Santee, John H., Fairmont.
- Shumway, Royal R., Robbinsdale.
- Sinclair, Agnes Winifred, Fairmont.
- Slack, Marie Louise, St. Paul.
- Smith, Elliott, Fairmont.
- Smith, Emmet W., St. Paul.
- Smith, Fred Le Roy, Sloux Falls, S. D.
- Spear, Ruth Minerva, Minneapolis.
- Spencer, Mildred A., Minneapolis.
- Stanley, George Lyle, Lyle.
- Steele, Katherine D., Princeton, Ill.
- Stockman, August F., Plato.
- Stockton, Glennie Bacon, Faribault.
- Stone, Elsie A., Minneapolis.
- Ten Broeck, Robert Carpenter, Faribault.
- Thompson, Alice Eva, Minneapolis.
- Thompson, Marie, Minneapolis.
- Thornton, Mary L., St. Paul.
- Tibbets Chester H., Duluth.
- Tisdale, Isabel A., St. Anthony Park.
- Tompkins, Nellie E., Robbinsdale.
- Truax, Emma Leoine, Hastings.
- Upson, Arthur W., St. Paul.
- Veldey, Tedlef, Hanley Falls.
- Waddle, Ralph Henry, Knoxville, Ill.
- Wagner, Susie A., Minneapolis.
- Weaver, Jessie Isabel, St. Paul.
- Webster, George Burbank, Minneapolis.
- Wentworth, Hattie Ellen, Minneapolis.
- Wheeler, Cleora Clark, St. Paul.
- White, Clyde Roy, Pine Island.
- Whittemore, Josie M., Elk River.
- Wilcuts, Indianola, Duluth.
- Williams, James Von, Marshall.

SOPHOMORE CLASS—263.

- Alden, Mary M., Minneapolis.
- Aldrich, Helen Jane, Denxer, Col.
- Alexander, Sara, Lake City.
- Ames, Elizabeth Harriet, Litchfield.
- Anderson, Louis P., Southerland, Ia.
- Arnold, Morris LeRoy, Minneapolis.
- Asher, Allen Preston, Granite Falls.
- Aygarn, Martin Hallock, Choice.
- Baker, Merton Franklin, Elgin.
- Bakke, Anna Helen, St. Louis Park.
- Barnum, Cyrus Paine, Minneapolis.
- Barteau, Fred, Pine Island.
- Bean, Alice Annette, New Prague.
- Beede, Ethel Remington, Minneapolis.
- Benson, Clarence Herbert, Minneapolis.
- Binberg, Margaret R., St. Paul.
- Blanchar, Clarence Leroy, Welcome.
- Bockman, Sigurd, Minneapolis.
- Bodenstedt, Eleanor Mathilde von, St Paul.
- Bolin, Mamie Anglim, Brainerd.
- Boraas, Ingmar J., Hader.
- Bradford, Eva Austin, Minneapolis.
- Bradford, Fannie P., Minneapolis.
- Broderick, Marian J., St. Paul.
- Brohough, C. Mary, St. Paul.
- Brooks, Paul A., Minneapolis.
- Brown, Ruth Alberta, Minneapolis.
- Bryden, Mabel Clare, Rushmore.
- Buell, Ella Louise, Minneapolis.
- Bullard, Polly Caroline, St. Paul.
- Burbridge, Helen Pauline, Minneapolis.
- Burgess, Florence, Minneapolis.
- Byard, Lee Brooks, Minneapolis.
- Carter, Alice Ellen, Minneapolis.
- Casey, Martin Joseph, Jordan.
- Choate, Isaac W., West Barnet, Vt.
- Christopherson, Ciara Sophia, Faribault.
- Churchill, Irwin Allen, Rochester.
- Clancy, Margaret, St. Paul.
- Claydon, Leonard E., M. D., Mazeppa.
- Cole, Marion Alice, Minneapolis.
- Cole, Marjorie Helen, Minneapolis.
- Cole, Ruth Law, Minneapolis.
- Collins, Louis Loren, St. Cloud.
- Collins, Richard Delos, Windom.
- Colter, Ester Helen, St. Paul.
- Cook, Amy Josephine, Greenwood, S. D.
- Cosgrove, Joseph Henry, Montevideo.
- Cotter, Mary Scholastica, Austin.
- Covert, Bessie Almira East Randolph, N.Y.
- Covey, William Sumner, Minneapolis.
- Cutting, Ellsworth Alphonso, Sleepy Eye.
- Danforth, James Arthur, Parker, S. D.
- Davis, Scottie Primus, St. Paul.

- Dibble, Walter Gordon, St. Paul.
 —Dinsmoor, Marian Ethel, Austin.
 —Docken, Elizabeth Glassford, Edina Mills.
 —Dorsett, Harriet Ann, Minneapolis.
 —Douglas, Edna Grace, Winona.
 Dow, Don Carlos, Worthington.
 Drake, Clarence Everett, Mitchell, Ia.
 —Duensing, Minnie, Minneapolis.
 Dungay, Neil S., Faribault.
 Dye, John Walter, Winona.
 —Easton, Leora, Warren.
 —Easton, Susie Katherine, Warren.
 —Eaton, Mabel, Minneapolis.
 Eide, Carl John, Minneapolis.
 —Fahhestock, Amy Louisa, Graettinger, Ia.
 —Farnsworth, Florence, St. Paul.
 —Feely, Mary Corinne, St. Paul.
 Feely, Thomas James, Farmington.
 Firkins, Chester, Minneapolis.
 Fish, Horace Porter, Minneapolis.
 —Fiske, Mary Ednah, St. Paul.
 —Fitzgerald, Sadie Monica, Litchfield.
 —Fleming, Mable Clare, Minneapolis.
 —Fleming, Winnie Avis, St. Paul.
 —Foster, Pauline B., Minneapolis.
 —Foulke, A. Elsie, St. Paul.
 Francis, Harry Edwin, Minneapolis.
 Frisbee, Willis Haseltine, Sheldon, Ia.
 —Frost, Mabel Blanche, Norway, Mich.
 —Frye, Anna Marion, St. Paul.
 Gallagher, Richard Anoka.
 —Garrow, Lillian Bird, St. Paul.
 Gibbons, Archibald Ray, Austin.
 Glass, Courtney T., Luverne.
 —Goetzinger, Katherine, Fergus Falls.
 Goodsell, Clarence W., Flandreau, S. D.
 —Gould, Laura, Minneapolis.
 —Griffith, Helen, Minneapolis.
 —Halvorson, Ella Josephine, Dawson.
 —Harholdt, Marie, St. Paul.
 —Harris, Marian Jane, Lake City.
 Harsh, George Warren, Canton.
 Haverson, Geo. Bennett, Merriam Park.
 Hayward, George Irwin, Pine Island.
 —Herbst, Edith Gertrude, Osakis.
 —Higginbotham, Blanche, Minneapolis.
 —Hillesheim, Anna, Sleepy Eye.
 —Hillesheim, Mary Josephine, Sleepy Eye.
 —Hiscock, Jennie Isabelle, Minneapolis.
 Hoerger, Benjamin George, Faribault.
 —Holly, Clara May, Peru, Ill.
 Holm, John G., Minneota.
 —Houck, Edna Christina, Preston.
 Hovda, Olaf, Duluth.
 —Hubbell, Mina Elisabeth, Lake Minnetonka.
 —Hull, Clara Blanche, St. Paul.
 —Hull, Mabelle Catherine, Minneapolis.
 —Hurd, Ina Frances, Minneapolis.
 —Hyser, Alice Maude, Minneapolis.
 —Ives, Agnes, St. Paul.
 —Ives, Mary, St. Paul.
 Jacobson, Martin L., Slayton.
 —Janney, Emily Florence, Minneapolis.
 —Jenks, Grace Mae, Minneapolis.
 —Jensen, Dagmar Christence, St. Paul.
 Jensen, Jes Peter Frederik, Hutchinson.
 —Jewett, Gertrude Ellen, St. Paul.
 Johnson, Arthur Monrad, Warren.
 —Johnson, Florence Edna, Morris.
 Johnson, Lloyd, Minneapolis.
 Johnsrud, Iver T., St. Cloud.
 —Johnston, Emma Lydia, Minneapolis.
 —Jones, Marion Isabelle, Minneapolis.
 —Joy, Lillias Anne, St. Paul.
 —Kapp, Kate, Dubuque, Ia.
 Kells, Lucas Carlisle, Sauk Center.
 Kelsey, Carleton Gale, Minneapolis.
 Keyes, Robers Howard, Minneapolis.
 King, Francis LeRoy, Ellendale, N. D.
 —Klein, Laura E., Manketo.
 —Koehler, Nora Evelyn, Zumbrota.
 Kovarik, Alois Franciscus, Spillville, Ia.
 —Kraft, Mary Helen, Minneapolis.
 Kranz, James Philip, Hastings.
 —Lamphere, Eugenie Margaret, St. Paul.
 —Lange, Mary S., Minneapolis.
 Leach, Hugh Elis, Spring Valley.
 —Leonard, Ruth, Minneapolis.
 —Lewis, Elizabeth May, Hastings.
 —Lewis, Laurel, St. Paul.
 Lewis, Roy Vivian, Worthington.
 —Linkfield, Alice Ernestine, Minneapolis.
 —Littlefield, Lura May, Minneapolis.
 Loomis, Earl Alfred, Owatonna.
 —Lucas, Rena A., Minneapolis.
 —Lucker, Clara Antoinette, Minneapolis.
 —Ludwig, Corabelle, Minneapolis.
 —McCarriel, Myra, Minneapolis.
 —McClelland, Alice, Minneapolis.
 McConn, C. M., Minneapolis.
 —McCurdy, Myrtle, Minneapolis.
 —McCurdy, Pearl, Minneapolis.
 McGrath, William Henry, Waverly, Ia.
 —McKittrick, Elizabeth, Minneapolis.
 —McLachlan, Ellen, Glenwood.
 McMahan, Charles, Ellsworth.
 McManigal, Allison, Minneapolis.
 —McMillan, Ethel May, Minneapolis.
 Maland, Clarence, Rushford.
 —Mannheimer, Elsa, St. Paul.
 Martin, Thomas Roy, Mantorville.
 —May, Grace Jane Lovell, St. Paul.
 Miller, Frederick Caspar, Minneapolis.
 —Moore, Edith Randall, St. Paul.
 Morgan, George Wagner, Minneapolis.
 —Nelson, Marie Louise, Minneapolis.
 Newhall, Norman Leslie, Minneapolis.
 —Nisbit, Jane, Rochester.

- Nord, William A., Willmar.
 —Northrop, Jessie Eastman, Minneapolis.
 Norton, Frank E., Minneapolis.
 —Norton, Mayme Louise, Red Wing.
 Noyes, Edgar Leonard, Minnetonka Mills.
 Nye, Marshall Albee, Minneapolis.
 —Oberg, Marie Josephine, Litchfield.
 —Olds, Nina Delia, Minneapolis.
 —Olson, Deva Mae, Cass Lake.
 Oman, Alfred Edward, Hastings.
 —Parker, Alice Margaret, Minneapolis.
 Pattee, Richard Storrs, Minneapolis.
 Patten, Burl Sherman Wright, Pipestone.
 Pehoushek, Charles, Minneapolis.
 —Peteler, Gertrude May, Minneapolis.
 Peters, Le Roy, St. Joseph, Mich.
 Peterson, Horace, Pillager.
 Pierce, Clifford Vivian, St. Paul.
 Pierce, Ernest Boynton, St. Paul.
 Pingry, Frank Richardson, Minneapolis.
 —Pitblado, Susan, Minneapolis.
 Plummer, Harry Levinne, Minneapolis.
 Poppe, Frederick Harold, Milbank, S. D.
 Powell, Lee Marsden, Montgomery.
 —Pratt, Prudence Emily, Minneapolis.
 Praxel, Anthony Joseph, Lambertton.
 Prouty, De Forest, Minneapolis.
 —Putnam, Edith Elizabeth, Minneapolis.
 Quinn, Vernon Tilden, Lambertton.
 —Redfield, Alice W., Minneapolis.
 Remele, Albert C., Sleepy Eye.
 —Richardson, Iva Myrtle, Elgin.
 Rickard, Truman Elwell, Minneapolis.
 —Root, Alice Gardiner, St. Paul.
 —Rosholt, Lillian Ruth, Mayville, N. D.
 —Rueth, Agnes Teresa Eugenia, St. Paul.
 —Sahlbom, Eureka Amelia, Org.
 —Salisbury, Carolyn Tyler, St. Paul.
 —Schutt, Alma Jean, Minneapolis.
 Schwartz, Barney Levy, Towanda, N. Y.
 —Scripture, Bessie Byrona, Minneapolis.
 Severson, Samuel Ole, Norden, S. D.
 —Shedorsky, Sara, St. Paul.
 —Sheldon, Eleanor Augusta, Minneapolis.
 Shuck, Warren Ellsworth, Rushmore.
 —Skoog, Artie Nettie, Red Wing.
 —Smith, Hortense M., Algona, Ia.
 —Smith, Lillian M., Minneapolis.
 Soderburg, Nathaniel, Dawson.
 Sogge, Ludwig Larson, Jackson.
 —Stebbins, Lillian B., Minneapolis.
 Stevens, Charles Sidney, Farmington,
 Stevens, Fred Walter, Minneapolis.
 —Stevenson, Mabel Cordelia, Minneapolis,
 Stone, Georg H., Minneapolis
 —Stone, Lilla Grant, Minneapolis.
 Strathern, M. Lane, Rich Valley.
 —Swenson, Rhoda, New London.
 —Swift, Carry, Robbinsdale.
 —Teeter, Jennie, Austin.
 —Tennison, Agnes Ada, Monticello.
 —Thomas, Josephine, Minneapolis.
 —Thompson, Edith Lillian, Minneapolis.
 —Thompson, C. Joseph, St. Paul.
 —Thornton, Margaret Amelia, St. Paul.
 —Van Bergen, Margaret Phipps, Minneapolis.
 Varco, Albert Raymond, Austin.
 —Vessey, Alice, Eldridge, N. D.
 Vickerman, Edward Toppen, Jasper.
 —Wagen, Alma Dorothy, Mankato.
 Waggoner, Ara E., Bismarck, N. D.
 —Wagner, Iva Etta, Moorhead.
 Ward, George Westerfield, Alexandria.
 —Washburn, Grace E., Oxford, N. H.
 —Watson, Florence H., Minneapolis.
 —Wayne, Alta M., Minneapolis.
 —Webster, Julia Corinne, Minneapolis.
 Wedge, Wayne W., Plainview.
 Weir, Sue Allen, Minneapolis.
 Welles, Albert B., Minneapolis.
 Weum, Thurston W., Moorehead.
 Whited, Oric Ogilvie, Minneapolis.
 Whitney, Albert Ezra, Warren.
 —Whittier, Bessie Mabelle, Minneapolis.
 Williams, Fredrick Travis, Minneapolis.
 Wiren, Oscar B., Cottagewood.
 Wold, Carl John Adolph, Minneapolis.
 —Woodworth, Loella, Minneapolis.
 —Wright, Daisy Mabel, St. Paul.
 —Yager, Mary, Wilton, Wis.
 Youngquist, Charles, Minneapolis.

FRESHMAN CLASS—379.

- Abbott, Jessie, Minneapolis.
 Abbott, John Steele, St. Paul.
 Adams, Carleton Chauncey, Elgin.
 Adams, Charles Edwin, Groton, S. D.
 —Adams, Edna Southworth, Geneva, N. Y.
 Adams, Leon Ray, Luverne.
 —Aldrich, Addie Rumsey, Mendota, Ill.
 Aldrich, Harry, Minneapolis.
 —Alexander, Anne Frances, Lake City.
 —Alexander, Ida Mary F., Carver.
 —Allyn, Anna Louise, St. Paul.
 —Anderson, Abbie, Wells.
 Anderson, Don Cameron, Minneapolis.
 Armstrong, James Hamilton, Luverne.
 —Austin, Caroline Isabel, St. Paul.
 —Baier, F. Jeanette, Jamestown, N. D.
 —Bailey, Katherine Deering, Minneapolis.
 Banfield, Nathan F., Austin.
 Bank, Albert Meyer, Minneapolis.
 Bartleson, Charles Albert, Minneapolis.

- Bartron, Harry Jacobs, Lake City.
 —Belden, Antoinette, Austin.
 —Belden, M. Perle, Spring Valley.
 —Bell, Margaret George, Minneapolis.
 —Bell, Mary Elizabeth D., St. Paul.
 Bergstrom, C. Walter, Minneapolis.
 —Bergum, Emma, Minneapolis.
 —Best, Sarah, Fargo, N. D.
 Biermann, Frederick Elliott, Decorah, Ia.
 —Bintliff, Florence Amoretta, Minneapolis.
 Blaisdell Arthur, Fairmont.
 —Bonwell, Emily Learned, Blue Earth.
 —Boutelle, Louise Elizabeth, Marshall.
 Bowe, Dennis Edmund, Waseca.
 —Boyce, Anna Louise, Fargo, N. D.
 —Boyce, Jessie Wadleigh, Minneapolis.
 Boyd, Leon Morelle, Alexandria.
 Boylan, S. Dana, New Paynesville.
 Boyle Edward F., Stillwater.
 —Brandenburg, Elizabeth M., Faribault.
 Brockway, Hart Leebert, Balaton.
 —Broderick Loretta Katherine, St. Paul.
 —Brooks, Jessie Renville.
 —Brooks Ruby Alice, San Jose, Calif.
 Brown, Garfield William, Pipestone.
 —Browne, Isabelle Victoria, Minneapolis.
 —Bruce, Ellen Mary, St. Anthony Park.
 Bryden Frank Race, Rushmore.
 —Buchanan, Kate Webster, Minneapolis.
 Bunce, Paul Fay, Minneapolis.
 —Burdick, Mrs. Emma Cecelia,
 Minnewaukon, N. D.
 Burnham, Chilo Webb, Carrington, N. D.
 Burell, Fred Russell, Princeton.
 —Burow, Anna Johannah M., St. Paul.
 Bush, Ira Drayton Hutchinson.
 Butler, Stacy, Minneapolis.
 —Caldwell, Grace Ferne, Mankato.
 Calhoun, Frederick David, Minneapolis.
 —Campbell, Mabel Agnes, Tracy.
 Campbell, Robert Henry, Burkeville, Va.
 Carkin, John Herbert, Hillsboro, N. D.
 —Carlson, Lily Elizabeth, Minneapolis.
 Carlson, Philip Emanuel, Cannon Falls.
 Carroll, Josiah Francis, Newhaven, Ia.
 Carson, Walter Hartley, Ada.
 —Caster, Mary Elizabeth, Minneapolis.
 Chapman, Winthrop Severance, St. James.
 —Chase, Elizabeth, Rapid City, S. D.
 —Chilton, Almema Jane, Frazee.
 —Chilton, Martha Rose, Frazee.
 —Clark, Louise Campbell, St. Paul.
 Clarke, Charles F., Adel, Ia.
 —Clarke, Helen, Algona, Ia.
 Colburn, Algernon Osmer, Minneapolis.
 Colovin, Edward Joseph, Cloquet.
 Conklin, George Leroy, Garden City.
 —Cool, Augusta Mary, Minneapolis.
 —Cooper, Maud Lovina, Minneapolis.
 —Cox, Elizabeth Jennings, Minneapolis.
 —Craig, Maude Eva, Anoka.
 —Cramer, Margaret Ethel, Minneapolis.
 —Crane, Lillian Mary, Laverne.
 Cressy, Earl Herbert, Minneapolis.
 —Crouse, Ella Dix, Minneapolis.
 Damon, George Myron, Worthington.
 Davenport, Murray Taylor, Minneapolis.
 Davidson, Raymond Grant, Sauk Center.
 —Davis, Irma Loe, Dodge Center.
 —Davis, Pearl, Minneapolis.
 —Dayton, Carrie Ward, Worthington.
 —DeBell, Florence, Rosebud Agency, S. D.
 —DeMeules, Sophia Charlotte, St. Paul.
 DeVaney, John P., Lake Mills, Ia.
 —Devereaux, Helen, Minneapolis.
 —Dillon, Bridie, New Richmond, Wis.
 Doolittle, Leroy Edson, Luverne.
 Douglas, Harold Barton, St. Paul.
 Einarson, Sturla, Duluth.
 Elmquist, John Lawrence, St. Paul.
 —Estergreen, Mary Ethel, Hastings.
 —Everett, Elsie Nettleton, Minneapolis.
 Fahnstock, Otto Preston, Graettinger, Ia.
 Fairchild, F. Tracy, Minneapolis.
 —Falkenstein, Mary Myrtle, Bismarck, N. D.
 Faunce, Carroll Seth, Blue Earth.
 —Finkle, Kate Talbot, Moorhead.
 —Fish, Helen Jennings, Minneapolis.
 —Fisk, Grace, Plainview.
 Foote, Willard Clyde, Estherville, Ia.
 —Frank, Sylvia Stern, Minneapolis.
 Freedman, Isaac Valero, Minneapolis.
 —Garbett, Edith May, Minneapolis.
 —Gearing, Maud Parthena, Minneapolis.
 Gerrish, Harry Eldon, Minneapolis.
 —Gibbons, Alma Laura, Owatonna.
 —Gibson, May, Stillwater.
 Gilman, Charles Lewis, St. Cloud.
 —Gilmore, Madge Claire, Algona, Ia.
 —Goodrich, Lois Ethel, Minneapolis.
 —Gordon, Mildred Clare, Minneapolis.
 Gray, Raymond Hulbert, Elk River.
 —Grindelund, Synneva, Warren.
 —Gunckel, Kathleen Elizabeth, Minneapolis.
 —de Haas, Virginia Gertrude, St. Paul.
 Hagen, John, Dawson.
 —Hageman, Frances Rose, Morris,
 Haines, George Clarence, Willmar.
 —Hallett, Loretta Agnes,
 New Richmond, Wis.
 Halloran, Mathew William, Chatfield.
 Halvorson, John Oliver, Madelia.
 —Hamilton, Eleanor Stanton, Minneapolis.
 —Hamm, Edith Charlotte E., St. Paul.

- Hande, Emma Mathilda, Spring Valley.
 —Harden, Elizabeth Carleton, Minneapolis.
 —Harding, Rowena Wilhelmina, Minneapolis.
 Harris, William Daniels, Minneapolis.
 —Hass, Rose Ernestina, Dumont.
 —Healy, Bessie Olivia, Minneapolis.
 —Heily, Patrick Robert, Graceville.
 —Heine, Sarah, Wilhemine, St. Paul.
 Heuston, Benjamin Burgess, Minneapolis.
 —Hillman, Lena Elizabeth, Minneapolis.
 —Hollinshead, Cornelia, Minneapolis.
 Hughes, Mack, New Richmond, Wis.
 Hughes, William Vance, Minneapolis.
 Hugo, Rene Trevanion, Duluth.
 Humphrey, John K., Minneapolis.
 —Hunt, Lillian Mabel, Minneapolis.
 —Huyck, Ethel Indie, Minneapolis.
 Hyatt, Frank LeRoy, Minneapolis.
 Hyttsten, John Anderson, Becker.
 —Ingham, Helen Marian, Sherburn.
 Irsfeld, James Balthasar, Sauk Center.
 —Jacobsen, Eva, St. Paul.
 Jacobson, Walter Jacob, Luverne.
 —Jacobsen, Lena Eleanor, Sleepy Eye.
 —Janes, Susie, Pipestone.
 —Johnson, Adella Tena, Minneapolis.
 —Johnson, Alice Anna Elizabeth, St. Paul.
 Johnson, Andrew William, New Richland.
 —Johnson, Jennie Helena, Casselton, N. D.
 —Johnson, Maude Vivian, Morris.
 —Johnson, Rose Mathilda, St. Paul.
 Jones, David M., Wabasha.
 Jorgenson, Louis, Staplehurst, Neb.
 Joss, Louis H., Bismarck, N. D.
 Kells, Laurel Lucas, Sauk Center.
 Kelly, Thomas Robson, Owatonna.
 —Kelsey, Inez Adele, Anoka.
 —Kendall, Rita Harriet, St. Paul.
 —Kennedy, Helene, Minneapolis.
 —Kennedy, Katharine Harvey, St. Paul.
 Kinder, Louis Brownell, Minneapolis.
 —Kinnard, Bertha Clay, Minneapolis.
 —Kinyon, Edna Abigail, Owatonna.
 Klein, Carl Frederick, Mountain Lake.
 —Klein, Edith Mabelle, Minneapolis.
 Koch, Albert Charles, Pekin, Ill.
 —Konig, Eva Ernestine, Minneapolis.
 Kraft, Arthur William, Groton, S. D.
 Lagerstrom, Ansgarius Thelander,
 Minneapolis.
 Laible, Victor Hugo, Glencoe.
 Lamberton, Frank S., Winona.
 —Larsen, Ida Mathilda, Minneapolis.
 —Lauderdale, Mildred, Minneapolis.
 Leach, Helon Edwin, Spring Valley.
 —Leeds, Bessie Geraldine, Sioux City, Iowa.
 —Lees, Eleanor M., Minneapolis.
 Lenox, John Rawson, Minneapolis.
 —Lewis, Margaret, St. Paul.
 Lewis, Robert Carpenter, Fargo, N. D.
 Liggett, Robert Bruce, St. Anthony Park.
 —Lillie, Annie Laura, Minneapolis.
 Litchfield, John Thomas, Green Isle.
 Lockerby, Avis, Minneapolis.
 Love, Harry Dare, Lisbon, N. D.
 —Lovell, Lela Elma, Jamestown, N. D.
 Luiten, Xavier Edward, Glencoe.
 —Lundgren, Hylda Eugenie, Alexandria.
 —Lyon, Ethel Maude, Plainview.
 —McCabe, Etta J., Minneapolis.
 —McDonald, Mabel Harriet, Minneapolis.
 —McIntyre, Mary E., Minneapolis.
 —McKittrick, Carrie, Minneapolis.
 —McLean, Florence, Duluth.
 —McMillan, Corinne Frances, Minneapolis.
 McNeill, Edwin Ruthven, Onawa, Ia.
 McRea, Randolph James, Duluth.
 —Magelssen, Karine Elizabeth, Rushford.
 Magnuson, Leifur, Duluth.
 —Mahaffy, Mary, Minneapolis.
 —Mahle, Florence Edna, St. Paul.
 —Malgren, Helma Ethel, Minneapolis.
 Manns, Albert Herman, South Freeport, Ill.
 Marks, Jasper Glenn, Hampton, Ia.
 Marshall, Ray Gifford, Minneapolis.
 —Marvin, Adeline Rhoda, Pine Island.
 —Mather, Edith Elizabeth, Groton, S. D.
 —May, Lillian Merry, Minneapolis.
 —Medberry, Louise, Lisbon, N. D.
 —Merrill, Sadie, Salt Lake City, Utah.
 —Miller, Aurelia, St. Paul.
 Miller, Charles Edward, Heron Lake.
 Miller, Clarissa Amy, Waseca.
 —Miller, Laura Ernestine G., Minneapolis.
 Mitchell, Harry Sewall, Minneapolis.
 —Mohr, Alma, West Bay City, Mich.
 —Monson, Letitia, St. Paul.
 —Moore, Florence May, Minneapolis.
 —Moore, Hattie Mabel, Minneapolis.
 —Moulton, Helen Marion, Two Harbors.
 —Muller, Nellie Caroline, St. Paul.
 Myron, Olin Cornell, Westerville, S. D.
 Nash, James Linn, Minneapolis.
 Nelson, John Arthur, Stillwater.
 Nelson, Wilson Everene, Parker's Prairie.
 Newberg, Oscar, Edina.
 Newell, Floyd Howard, Baraboo, Wis.
 —Newell, Theodate Catherine, Rochester.
 —Norris, Anna Laura, Sauk Center.
 Northrop, Louis Harold, Minneapolis.
 —Norton, Myra Elizabeth, Mantorville.
 Odell, Chester Luverne, Owatonna.
 —Odenwald, Clara Luella, Jordan.
 —O'Gorman, Theresa Regenia, St. Paul.

- O'Leary, Mamie Cecelia, Wabasha.
 —Olsen, Mabel Juliet, Minneapolis.
 Olson, Clarence, Hampton, Ia.
 Olson, Frederick Adolf, Wells.
 —Oren, Hannah, Minneapolis.
 —Organ, Mary Elizabeth, St. Paul.
 —Osher, Helen Christine, Minneapolis.
 —Ozias, Alice Evelyn, Minneapolis.
 —Paddock, Medora Althea, Minneapolis.
 —Page, Ida Floy, Mason City, Ia.
 —Palmer, Ethel Gillette, Minneapolis.
 Parks, Edgar Kay, Brainerd.
 Parmelee, Charles Benson, Mankato.
 —Patterson, Helen Jeanette, St. Paul.
 Payne, Frederick Witter, Lakefield.
 —Perry, Lucy, Minneapolis.
 Peterson, Arthur Leonard, Benson.
 Peterson, John William, Montevideo.
 Peterson, Victor Muller,
 Black River Falls, Wis.
 Pettijohn, Earl, St. Paul.
 Phillips, Charles Earl, Sutherland, Ia.
 Pierce, Joseph Alfred, Duluth.
 —Pierce, Mary Seabury, Minneapolis.
 —Plummer, Bessie Taylor, Minneapolis.
 —Potter, Grace Ruth, St. Paul.
 Powers, Arba Joseph, Granite Falls.
 Pratt, Robert Henry, Minneapolis.
 Puffer, Howard Albert, Bird Island.
 —Radcliffe, Grace Irene, Minneapolis.
 Rahr, Maximilian, Jr., Manitowoc, Wis.
 —Rank, Hattie, Browns Valley.
 —Rank, Minnie Louise, Browns Valley.
 Ransom, John Elmir, Albert Lea.
 —Rawson, Fannie Maria, Wadena.
 Redman, Henry C., Browns Valley.
 Reed, Robert Ray, River Falls, Wis.
 —Rich, Bertha Elizabeth, Sauk Center.
 —Richmond, Helen Ivah, Minneapolis.
 Ricker, Max Wilcox, Minneapolis.
 —Riggs, Helen Georgina, Minneapolis.
 Rinker, Charles Haglin, Great Falls, Mont.
 Robbins, Vernon N., St. Paul.
 Robertson, Archibald Wright, Litchfield.
 —Robertson, Jessie Anne, Minneapolis.
 Robson, Sidney, Owatonna.
 Rockwell, Frank Irvin, Osseo.
 Rockwood, Merle Clinton, Madelia.
 Rolph, William Henry, Minneapolis.
 —Rosenthal, Rose Bronie, St. Paul.
 Rowe, Arthur Taylor, Casselton, N. D.
 Rowe, Jr., William Henry, St. James.
 —Royer, Jessie Edna, Mandan, N. D.
 Ruble, Harry Eustace, Albert Lea.
 Ruger, Thomas Wright, Devils Lake, N. D.
 Ryan, Michael Joseph, Graceville.
 Sanborn, John Benjamin, St. Paul.
 —Sandvall, Ruth Josephine, Minneapolis.
 Sanford, Roscoe Frank, Faribault.
 Scaze, Lee Arbor, Pringhar, Ia.
 Schafer, Alfred Lincoln, Milbank, S. D.
 Schouten, Charles Pearsall, Lisbon, N. D.
 —Scott, Alice, Duluth.
 Scott, John Ritchie, Thielman.
 Seiter, Roy Charles, New Ulm.
 —Sewall, Harriet Winslow, St. Paul.
 —Shadewald, Elsie Anna, Minneapolis.
 —Sharpe, Mabel Lovejoy, Minneapolis.
 —Simonson, Eda Sophia, Minneapolis.
 Sinclair, Arthur Duncan, St. Thomas, N. D.
 —Sjoberg, Edith June, Duluth.
 Smalley, Albert Dwight, Hector.
 Smith, Carroll Ninde, Pekin, Ill.
 Smith, Roy Howard, Shakopee.
 Soderstrom, Ida Ameia, Hutchinson.
 —Somerville, Madge, Sleepy Eye.
 —Sproat, Grace, St. Paul.
 —Spurr, Zoe, Morris.
 —Stanley, Lucy Mabel, Chippewa Falls, Wis.
 Stead, George, Grand Forks, N. D.
 —Steelman, Marjory, St. Paul.
 —Stene, Isabelle Caroline, Minneapolis.
 —Stenseng, Sena Theresa, Rushford.
 Stevenson, William Claude, Minneapolis.
 Stockton, Charles Murray, Faribault.
 —Stoughton, Katherine, St. Paul.
 Stromswold, Joseph Christian, Bellingham.
 Sullivan, John, Estherville, Ia.
 —Sullivan, Mary Elane, Minneapolis.
 Sutton, Cora Olyve, Prior Lake.
 —Swenson, Elfrida Marie, Minneapolis.
 —Taft, Laura Janet, Minneapolis.
 —Thompson, Alice Elizabeth, Minneapolis.
 Thompson, Charles Richard, Mankato.
 Thompson, Willard Eeles, Algona, Ia.
 Thornson, Carl Otto, Minneapolis.
 —Thum, Marion Davis, St. Paul.
 Tierney, Charles Nicholas, Farmington.
 Todd, Raymond William, Aspermount, Tex.
 Towler, Bruce, Manannah.
 —Trabert, Ruth Esther, Minneapolis.
 Tripp, Harold Merritt, Morris.
 —Turnbull, Jane, St. Paul.
 —Uhl, Lucy Laura, Brownton.
 Van Camp, Lloyd Herbert, Sauk Center.
 Vanstrom, Fred Wilhelm, Dawson.
 —Van Wert, Mary Caroline, Minneapolis.
 Verne, Victor Ernest, Minneapolis.
 Walchli, Hans, Kalispel, Mont.
 —Waldo, Katibel Julia, Columbus, Wis.
 Walker, George Thompson, Devils Lake, N. D.
 Walsh, William, Albert Lea.
 Walston, Marion Cragg, Minneapolis.
 —Warrington, Helen Louise, Minneapolis.

- Watson, Raymond Adelbert, Minneapolis. —Winchell, L. Louise, Minneapolis.
 --Webster, Leila Ione, Andover, S. D. Wirth, Frederick Adolphus, Minneapolis.
 Webster, Milo DeLancey, Minneapolis. —Wold, Claudia Emilie, Minneapolis.
 Weiskopf, Robert George, Minneapolis. —Wold, Ethel Amelia, Austin.
 --Wennerlund, Camilla, Minneapolis. —Woodbridge, Frances Dwight, Duluth.
 Wheaton, Charles Augustus, St. Paul. —Woodward, Ruth, St. Cloud.
 --Wheeler, Clara Kingswell, Minneapolis. —Works, Bernice, Minneapolis.
 --Wilcox, Marion Elvira, Minneapolis. —Works, Florence Ethel, Minneapolis.
 Williams, Fred Mortimer, Elk River. Wright, Charles Rolla, Fergus Falls.
 --Williams, Louella Blanche, Wathena, Kan. —Wyand, Edith, Crookston.
 --Wilson, Laura Blanche, Rochester. —Wynne, Janet Isabella, St. Thomas, N. D.

UNCLASSED STUDENTS, 147.

- Ackerman, Nellie F., Minneapolis. --Goldman, Sarah, St. Paul.
 --Adams, Gertrude Karrick, Minneapolis. --Gove, Helen R., Rochester.
 --Ames, Marion Hall, Minneapolis. --Gove, Margaret Thorpe, Minneapolis.
 --Andrews, Eleanor Gordon, Faribault. --Groger, Mary, St. Charles.
 Askelund, Halvor, Minneapolis. --Gronberg, Carl Gustaf, Minneapolis.
 --Barstow, Esther, Minneapolis. --Hale, Gertrude Louise, Minneapolis.
 --Battelle Violet, St. Paul. Hall, George Horace, Minneapolis.
 --Beebe, Gertrude L., Minneapolis. --Halverson, Louise Matilda, Adrian.
 --Beeson, Alta Adeline, Breckenridge. Hammand, Orville Adelbert, Spencer, Ia.
 --Bennett, Jane Prescott, Minneapolis. --Hankee, Gertrude, St. Paul.
 --Beyer, Mrs. Mina B., St. Paul. --Harrison, Florence, Minneapolis.
 Booth, Robert Kendall, Winona. --Hatch, Henry E., Minneapolis.
 --Brooks, Mrs. Georgia L., Minneapolis. --Hawes, Harriet, Minneapolis.
 --Buckley, Nellie A., Farmington. --Henriksen, Marie, Ossian, Ia.
 --Burwell, Louise, Minnetonka. --Henry, Lauretta, St. Paul.
 Callehan, James Edwin, Royal, Ia. --Hoff, Magda Matilda, Dalton.
 --Cannon, Ida Maude, St. Anthony Park. Holt, Charles M., Minneapolis.
 --Cantiemy, Florence V., Minneapolis. --Holt, Lulu Maud, Minneapolis.
 --Cashman, Eleanor Mary, Owatonna. Hoverstad, Torgeir, Minneapolis.
 --Catlin, Alice E., Minneapolis. --Hubbard, Zeta Lorena, Clear Lake, Ia.
 --Cole, Winifred, Minneapolis. --Hulbert, Jetta, Minneapolis.
 Constantine, Louis Le Roy, St. Paul. --Hult, Mrs. Florence Bowen, St. Paul.
 --Cook, Julia M., Minneapolis. Jaastad, Gullik, Marshfield, Wis.
 Copelin, Fred Atkins, Minneapolis. Jackson, Wickham M., Minneapolis.
 Cox, William T., Lowry. --Janney, Ellen, Minneapolis.
 --Craig, Agnes Somerville, Minneapolis. --Johnson, Sara J., Granite Falls.
 --Crane, Harriet Luella, Luverne. Johnston, Louis Harold, Brooklyn, N. Y.
 --Creelman, Ethel Margaret, Minneapolis. --Kelley, Ethel, Minneapolis.
 --Davis, Apphia Nelson, Minneapolis. --Kiehle, Florence E., Minneapolis.
 --Dean, Gertrude H., Minneapolis. --Kimberly, Helen, St. Paul.
 --Decker, Della Maud, Minneapolis. --King, Florence, Minneapolis.
 --Dickinson, Gertrude, Minneapolis. --Knights, Alice Fern, Litchfield.
 --Dickson, Anna Moore, St. Paul. --Knowlton, Anna Isabel, Estherville, Ia.
 --Donnelly, Theo Elizabeth, St. Paul. --Lancaster, Lillian Esteile, Webster, S. D.
 --Dredge, Beele, Lake Crystal. --Lando, Emma, St. Paul.
 --Eichelzer, Harriet, Minneapolis. --Lees, Eleanor G., Minneapolis.
 --Eppens, Ella Rose, Minneapolis. --Leidal, Nellie, Fergus Falls.
 --Everington, Gertrude M., Minneapolis. Leubner, Bernhard O., Minneapolis.
 Filtner, Charles Edward, St. Paul. --Leveroos, Emma, St. Paul.
 --Flynn, Rose Anna, Bendsley. Lewis, Carl H., Sparta, Wis.
 --Gallagher, Emma Belle, Minneapolis. --Liedloff, Ottilie Louise, Mankato.
 Garns, John Seamon, Des Moines, Iowa. --Long, Suel May, Minneapolis.
 --Gleeson, Alice Kyte, Minneapolis. --Lucas, Lenora B., Minneapolis.

- McFetridge, Margaret, Minneapolis.
 —McLaughlin, Elizabeth, Mapleton.
 —Malmsten, Julia Caroline, Minneapolis.
 —Marks, Minnie, Moorhead.
 —Maley, Anna Agnes, Minneapolis.
 —Millsbaugh, Florence Decker, Little Falls.
 Mitchell, Ralph Herbert, Minneapolis.
 —Moore, May, Minneapolis.
 Moore, Robert DuPont, Minneapolis.
 Morken, Gilbert Theo., Kragness.
 —Morris, Lucy Wilder, Minneapolis.
 Murrell, John Raymond, Wykoff.
 Nelson, Nels P. B., Rosendale.
 —Nichols, Carrie, Lebanon, Ill.
 —Norby, Leonore Theresa, Detroit.
 —Osgood, Esse Irene, Big Rapids, Mich.
 —Parr, Elizabeth Hermena, Minneapolis.
 —Perkins, Evelyn Hope, Minneapolis.
 —Peterson, Sophie, Taylor, Wis.
 —Poucher, Clara, Minneapolis.
 —Prendergast, Louise, St. Paul.
 —Quigley, Eleanor Florence, Bird Island.
 —Read, Sara Juzi, Minneapolis.
 Ressler, Rex Lambert, Minneapolis.
 Rising, Paul B., St. Paul.
 Robertson, Allis, Minneapolis.
 Robertson, Francis Hamilton, Minneapolis.
 —Rosenholtz, Jennie, St. Paul.
 Rowlands, William Celynydd, Mankato.
 —Ruscoe, Mrs. Ella C., St. Paul.
 Savage, Erle B., Minneapolis.
 Scanlon, Charles, Minneapolis.
 Schlenker, Mrs. Jessie, Minneapolis.
 Shroyer, Henry Ward, Henderson.
 —Skinner, Eleanor, Minneapolis.
 Slye, Ralph, St. Paul.
 —Smith, Eva C., Minneapolis.
 —Smith, Margaret Isabel, Minneapolis.
 —Snook, Florence Elizabeth, Minneapolis.
 —Spaulding, Marietta, Minneapolis.
 —Spencer, Adele May, Minneapolis.
 Staddon, John Henry, Minneapolis.
 —Staley, Katherine, Bismark, N. D.
 —Stevens, Leilah, Minneapolis.
 —Stinchfield, Nellie May, Rochester.
 —Stratton, Myrtle Leonore, Minneapolis.
 —Sullivan, Mary Laura, Spring Valley.
 Swem, Thomas Marion, Fargo, N. D.
 —Swift, Margaret, Minneapolis.
 —Taylor, Elise, St. Paul.
 —Tennant, Lois Agnes, Minneapolis.
 Thompson, Albert C., Minneapolis.
 —Thomson, Eva F., St. Paul.
 Troutfether, Albert, Windom.
 —Wartinbee, Martha Velona, LaCrosse, Wis.
 Watson, John, Minneapolis.
 —Watts, Grace, Minneapolis.
 —Watzke, Helen Edith, Minneapolis.
 —Weaver, Gertrude Benjamin, Minneapolis.
 —Wheeler, Carrie, Minneapolis.
 —Wood, Bessie Trumble, Minneapolis.
 —Wood, Celia Adella, Adrian.

SCHOOL OF CHEMISTRY.

SENIOR CLASS, 3.

- Benner, Raymond Calvin, Sauk Center. Rice, Edwin W., Minneapolis.
 Lando, Maxmillian N., St. Paul.

JUNIOR CLASS, 2.

- Bakke, Ole Mathias, St. James. Rose, Anton Richard, Marine, Minn.

SOPHOMORE CLASS, 5.

- Benner, Winthrop Webster, Sauk Center. Hopkins, Joseph Irwin, Bloomington.
 Grout, Frank Fitch, Rockford, Ill. Wagner, H. M., Minneapolis.
 Gutsche, Edward Jacob, Glencoe.

FRESHMAN CLASS, 11.

- Dahlberg, Arnold Victor, Fergus Falls. Longworth, Fred James, Ortonville.
 Frary, Francis Cowles, Minneapolis. Nelson, Charles, Glencoe.
 Humphrey, John Register, Granite Falls. Pennock, E. M., Minneapolis.
 Huyck, Edgar Cecil, Minneapolis. Poore, Charles D. Bird Island.
 Jackson, Myron Bangs, St. Paul. Setzer, William Howard, Blooming Prairie.
 LeBeau, H. C., Little Falls.

COLLEGE OF ENGINEERING AND MECHANIC ARTS.

SENIOR CLASS, 27.

CIVIL ENGINEERING SECTION 10.

Allee, David Arthur, Minneapolis.	Knowlton, Warren Cumings, Minneapolis.
Beaulieu, Richard L., St. Paul.	Lambert, Fred T., Young America.
Carr, Harvey Chandler, St. Paul.	McClelland, Claude Leslie, Clark, N. D.
Hallan, Christian, Underwood.	Shepley, Charles R., Minneapolis.
Houston, George Somerville, Minneapolis.	Weston, William S., Faribault.

MECHANICAL ENGINEERING SECTION, 11.

Acomb, William Edward, Minneapolis.	Quense, John H., New Ulm.
Bean, William Lloyd, Brainerd.	Ramstad, Edward Carl, Eau Claire, Wis.
Cook, Robertson, Minneapolis.	Stone, Melvin Oscar, Minneapolis.
Graham, Eugene Clayton, Dundas.	Sudheimer, Edward Lawrence, St. Paul.
Grimshaw, William Elwood, Minneapolis.	Taylor, Ralph George, Minneapolis.
Herrick, Carl Albert, Minneapolis.	

ELECTRICAL ENGINEERING SECTION, 6.

Burns, Harvey Lynn, Merton,	Nilson, Wilhelm, Fossum.
French, Edwin Linton,	Spence, William James, La Crosse, Wis.
Sault Ste. Marie, Mich.	Wilson, Eliel Fletcher, Minneapolis.
McPherson, William Butler, Stillwater.	

JUNIOR CLASS, 35.

CIVIL ENGINEERING SECTION, 16.

Barlow, Harry E., St. Paul.	Oltman, Charles Albert, Trim Belle, Wis.
Bennett, Walter James, Minneapolis.	Prendergast, Arthur, St. Paul.
Beyer, Theodore Alexander, St. Paul.	Robbins, Orison B., St. Paul.
Davison, Joseph Henry, St. Paul.	Smith, Leighton H., St. Paul.
Fernald, Frank Osborne, St. Paul.	Smith, Paul S., Minneapolis.
Grow, Harry Allen, Dawson.	Smith, Raymond, Rochester.
Madden, Francis Michael, Eyota.	Stewart, Clarence H., St. Paul.
Novig, Ole L., Norway.	Verharen, Arthur Ward, Spencer, Ia.

MECHANICAL ENGINEERING SECTION, 5.

Crouse, Avery F., Minneapolis.	Kjosness, Ingram Gerhard, Madison.
Doughty, Mattison Henry, White, S. D.	Williams, Edward Hale, West Cedar Lake.
Fager, Simon Rudolph, Minneapolis.	

ELECTRICAL ENGINEERING SECTION, 14.

Benedict, George Frederick, St. Paul.	Page, Mark L., Minneapolis.
Dibble, Barry, St. Paul.	Rask, Louis G., Caledonia.
Eberhard, Otto Immanuel, Milaca.	Rosok, Marius, Minneapolis.
Erickson, Carl G., Minneapolis.	Schumacher, John H., Minneapolis.
Hughes, Frank C., Minneapolis.	Schwarz, John Nicolas, Stillwater.
Laird, Lee R., Wilmot, S. D.	Vincent, Jay C., Minneapolis.
Miller, Lucius, W., Red Wing.	Wicks, John, Tyler.

SOPHOMORE CLASS, 94.

CIVIL ENGINEERING SECTION, 32.

Acton, Robert William, Madison.	Holland, Jay Clark, Minneapolis.
Baihly, Moses Daniel, Rochester.	Hopeman, Albert Manns, Preston.
Bogue, Nathan Herschel, Castle Rock.	Hovde, Edward E., Wabasha.
Bowen, Fred Pabst, St. Paul.	Johnson, Nels, Preston.
Childs, Donald, Ortonville.	McMillan, Franklin R., Luverne.
DeKay, Charles Albert, Morris.	Nelson, Nels Benoni, Preston.
De Lamere, Charles T., St. Paul.	Peterson, Arthur Theodore, Olivia.
Doherty, Walter Anthony, St. Paul.	Rasmussen, Alfred Johannes, Houston.
Enger, Melven Lorenus, Decorah, Ia.	Root, Alexander B., Emerson, Manitoba.
Feyder, Wm. Henry, St. Paul.	Rothi, Paul, Minneapolis.
—Foss, Lota Alice, Minneapolis.	Scandrett, Benjamin W., Faribault.
Gibbs, Elbert Allan, Zumbrota.	Steinberg, Lewis Bobert, Mason City, Iowa.
Gillette, George Lewis, Minneapolis.	Tanner, Walter Krabel, Cannon Falls.
Groth, William Charles, Preston.	West, Robert William, Rochester.
Hanson, Henry Alexander, Fergus Falls.	Wood, Sheldon, Minneapolis.
Hart, Will C., Cass Lake.	Woolery, Mark Davis, Elmore.

MECHANICAL ENGINEERING SECTION, 32.

Alden, Lyman Shedd, Minneapolis.	Jackson, Earle Daniel, Minneapolis.
Andrews, George Luther, Green Valley.	Kinnard, Chester Haines, Minneapolis.
Armstrong, Thomas S., Minneapolis.	Lewis, Edward Bunker, Willmar.
Bohn, Carl Frederic, St. Paul.	Meldahl, Bernard, Duluth.
Bradford, Henry B., Minneapolis.	Nelson, Arne, Willmar.
Brown, James Everett, St. Paul.	Otto, Robert Walter, St. Paul.
Campbell, Lewis Park, Duluth.	Peterson, John N., Litchfield.
Cannon, Fred Kendrick, Green Bay, Wis.	Pratt, Arthur Pierce, Red Wing.
Caplin, George Wyndham, Minneapolis.	Priedeman, John Garfield, St. Paul.
Carrigan, Charles, Lake Side.	Rydeen, Francis G. A., Gibbon.
Cutter, Francis Charles, St. Paul.	Sharood, C. Roy, St. Paul.
Downs, Gerald Huntley, St. Paul.	Sheldon, W. B., Red Wing.
Dunn, John William, Minneapolis.	Smith, Justin VanderVelde, Pekin, Ill.
Fuller, Harry Victor, Mankato.	Stanton, Raymond Edward, St. Paul.
Grube, Arthur K., St. Paul.	Stout, William Bushnell, Winona.
Howatt, James William, Wabasha.	Towle, Merton, Red Wing.

ELECTRICAL ENGINEERING SECTION, 30.

Adams, William Charles, Minneapolis.	Lum, Fred Carleton, Minneapolis.
Bosworth, Vern Howard, Utica.	Maley, Levi William, Zumbrota.
Bouman, Bernhard Martin, Murdock.	Malmberg, Clarence Oscar, Austin.
Brown, William Clark, Renville.	Manthey, George A., Winona.
Cheney, Edward Joseph, Kissaquua, Ia.	Morris, Robert, Greenleafon.
Crabbe, George, Minneapolis.	Morton, Harry Garfield, St. Paul.
Davis, Charles Asa, Minneapolis.	Otto, Fred Arthur, St. Paul.
Downing, Lloyd, St. Charles.	Peterson, Henry Phillip, James, S. D.
Fairchild, Albert Royal, Buxton, N. D.	Saunders, Arthur William, St. Paul.
Francis, Harry M., Hillsboro, N. D.	Stanton, Chas. J., Sauk Rapids.
Goodwin, Victor Earl, Minneapolis.	Stenger, Lawrence Arthur, Parker, S. D.
Helms, Frank Charles, Cumberland, Wis.	Stephenson, O. H., St. Anthony Park.
Hooper, Wyllys G., Grand Forks, N. D.	Taplin, Robert Baird,
Howatt, John, Lake City.	Brockville Prov., Ont., Can.
Johnston, Wayburn Eugene, Estherville, Ia.	Tomlinson, L. C., Glencoe.
Kochendorfer, Milton, South Park.	

FRESHMAN CLASS, 126.

CIVIL ENGINEERING SECTION, 33.

Bisbee, Elmer, Madelia.
 Boardman, George Albert, Minneapolis.
 Brockway, Rayden Ray, Luverne.
 Burke, Roy Latourette, Minneapolis.
 Cary, Alan Gibbs, St. Paul.
 Childs, John Chauncey, Carroll, Neb.
 Cram, Clyde Maxwell, Zumbrota.
 Daley, Gustave Johann, Fertile, Ia.
 Ditmarsen, John Elias, Irving.
 Fawcett, Andrew, Karsas, Kansas City, Kansas
 Few, Thomas Harry, Flandreau, S. D.
 Finley, Joseph Edward, Janesville.
 Frahm, Herbert Conrad, Rochester.
 Green, Herbert H., Marion, Ind.
 Hensel, Charles Norton, St. Paul.
 Hobart, Walter Beall, Minneapolis.
 Jardine, John Alexander, Fargo, N. D.
 McCarthy, John Ireland, St. Paul.
 Malloy, Charles James, Red Wing.
 Mattison, Oliver, Minneapolis.
 Mueller, Henry John, Hamburg.
 Murphy, John, Litchfield.
 Ostvig, Richter Norman, Benson.
 Pagenhart, Edwin Herbert, Rochester.
 Reed, Arthur Lathrop, Anoka.
 Rosenwald, W. F., Madison.
 Smith, Donald Tidd, Chicago, Ill.
 Streissguth, William Christ, Arlington.
 Thomas, Evan, Mankato.
 Tondel, Mandel George, Minneapolis.
 Wardell, John Middleton, Jr., Tracy.
 Wilcox, Ralph DeWitte, Minneapolis.
 Yerxa, Dwight Keyes, Minneapolis.

MECHANICAL ENGINEERING SECTION, 38.

Alexander, Joseph Hunter, St. Paul.
 Baker, Glenn Julian, Sanborn, Ia.
 Bazilie, Chester Arthur, St. Paul.
 DeLong, Scott Hauxhurst, Hudson, Wis.
 Disney, Leonard William, Zumbro Falls.
 Drum, Andrew Boggs, Waseca.
 Frahm, Lucius Henry, Rochester.
 Granum, Otis Melvin, Montevideo.
 Gunther, Albert Nelson, St. Paul.
 Hall, Elmer Franklin, Anoka.
 Harrington, Glenn Morgan, Minneapolis.
 Harris, Sigmund, Minneapolis.
 Hartzell, James Hugh, Minneapolis.
 Henry, Addis Victor,
 White Sulphur Springs, Montana.
 Jackson, Louis Freeman, Starbuck.
 Jackson, Marshall Shawe, St. Paul.
 Lowry, Samuel Doak, Austin.
 Johnson, Ernest Prescott, Albert Lea.
 McCartney, Elmer Barber, Oakes, N. D.
 Matteson, Frank Elmer, Eyota.
 Molander, Arthur Hiding, St. Paul.
 Montfort, Louis de Montfort, Litchfield.
 Morse, Gordon V., Sauk Center.
 Myers, Paul Plato, Marion, Ind.
 Nind, John Newton, Jr., Minneapolis.
 Ormond, Alexander Meredith, Rochester.
 Pancratz, Alexander, Perham.
 Robinson, Charles Dudley, St. Paul.
 Schlegell, Max von, Minneapolis.
 Sjogren, Thor William, Dawson.
 Sutton, Frank Edgar, Hillsboro, N. D.
 Thompson, Arthur Harris, Minneapolis.
 Tuck, George Albert, Minneapolis.
 Walker, Archie Dean, Minneapolis.
 White, Grant Augustus, Luverne.
 Williams, Homer Arlington, Minneapolis.
 Wood, John William, Stewartville.
 Woodward, Ernest Austin, Minneapolis.

ELECTRICAL ENGINEERING SECTION, 55.

Able, Charles A., Shakopee.
 Anderson, Emil, Farwell.
 Avedovech, Myer, Minneapolis.
 Bergseng, Oscar, River Falls, Wis.
 Billau, Lewis Scoville, St. Paul.
 Boman, Carl Emmanuel, Stockholm.
 Brewer, Carl Winthrop, St. Charles.
 Buckles, Hardy M. I., Marion, Ind.
 Cochran, Moncrieff Mitchell, St. Paul.
 Colehour, Robert Allison, Battle Lake.
 Coleman, Frank D., Ellendale, N. D.
 Donaldson, Gilbert Sprout, Minneapolis.
 Dunham, John A., Mason City, Ia.
 Ely, Irving Robinson, Milbank, S. D.
 Fox, Cyrus Roy, St. Paul.
 Frankovitz, John Joseph, Fergus Falls.
 Garber, Gabriel Everette, Minneapolis.
 Gibson, Charles Bradley, Cedar Rapids, Ia.

Harris, Clayton John, Park River, N. D.
 Hinckley, Arthur John, Lake City.
 Houghtaling, Jay, Fairmount.
 Hovelson, Henry, Minneapolis.
 Hubbard, Robert Thorold, St. Paul.
 Jensen, John Arthur, Fergus Falls.
 Jones, Raymond Lasley, Minneapolis.
 Joyce, Arthur Reamy, Minneapolis.
 LeBlond, Edmond Jean, Minneapolis.
 LeFever, Orland Lester, Hampton, Ia.
 LeTourneau, Edward Harold, Duluth.
 Lundquist, Ruben Alvin, Red Wing.
 Mase, George Anson, Minneapolis.
 Milham, Roy Edward, St. Paul.
 Murray, Arthur Charles, Wadena.
 Nelson, Norman Clarence, Plainview.
 Nichol, Harry James, Minneapolis.
 Okes, Day Ira, Minneapolis.
 Rice, Alonzo Clinton, Wahpeton, N. D.

Riste, Jacob Norman, Decorah, Ia.
 Ryan, Will, Bristol, Ia.
 Sainsbury, Charles E., Lamaille.
 Schow, Harry Albert, Minneapolis.
 Sherwin, Elton Buchanan, Fergus Falls.
 Shuck, Gordon Russell, Rushmore.
 Simmon, Kall Albert, Jr., Helena, Mont.
 Sorenson, Oscar, Renville.
 Stone, Harris Garfield, Waseca.
 Torrence, James Benjamin, Minneapolis.
 Tradewell, Owen George, Delhi.
 Turngrain, Paul Walbridge, St. Paul.
 Van Camp, Gordon Reuben, Drayton, N. D.
 Waldman, Fritz, Minneapolis.
 Walshe, James, Northfield.
 Weideman, Frank Leroy, Rice Lake, Wis.
 Wilcox, Edgar Dunning, Minneapolis.
 Williamson, Edward Frank, Minneapolis.

FIVE YEAR—SCIENCE AND TECHNOLOGY, 8.

Brownrigg, Abel Leo, Slayton.
 Collins, Stewart Garfield, Minneapolis.
 Fisher, Thomas Asbury, Minneapolis.
 Halleck, Joseph Dwight, Akron, O.

Hosmer, William Edwin, Lamberton.
 Nord, William A., Willmar.
 Van Cleve, Horatio Phillips, Minneapolis
 Whitney, Alfred C., St. Paul.

UNCLASSIFIED STUDENTS, 30.

Anderson, Claud, St. Paul.
 Ashbaugh, Lewis E., Minneapolis.
 Brooke, Charles Walter, Marshaltown, Ia.
 Benton, Thomas Ray, St. Paul.
 Calhoun, Frederic D., Minneapolis.
 Chamberlain, Myron Ellwood, Ortonville.
 Davis, Gilbert Norton, Minneapolis.
 Fagan, Lewis E., Onslow, Ia.
 Fee, Charles William, St. Paul.
 Frederickson, Matt, Windom.
 Garbett, Benjamin, Minneapolis.
 Gilman, Alden J., St. Thomas, N. D.
 Grant, Philip Sidney, St. Paul.
 Gregg, Tresham D., Minneapolis.
 Ireland, Roy Rowell, Minneapolis.

Keenan, Michael, Minneapolis.
 Kreger, Alanson James, Le Sueur.
 Nelson, Oscar Benjamin, Minneapolis.
 Nutter, Frank H., Minneapolis.
 Palmer, George Bushnell, Minneapolis.
 Radcliff, Thomas John, Larimore, N. D.
 Rose, Norman Webb, Duluth.
 Schow, William Peter, Minneapolis.
 Smith, Randall Wells, Minneapolis.
 Stevens, Jessie E., St. Paul.
 —Talboys, Henry Hanscome, Eveleth.
 Vorum, Andrew, Farmington.
 Walts, John Paul, Pawnee, Okla.
 Watts, Clair Manson, St. Thomas, N. D.
 Wiggins, Gerald G., Minneapolis.

DRAWING AND INDUSTRIAL ART, 24.

—Ackerman, Nellie, Necedah, Wis.
 —Baxter, Wilma Kathryn, Minneapolis.
 —Blanchard, Calla, Minneapolis.
 —Bowman, Bessie E., Duluth.
 Brackett, Carl Loring, Minneapolis.
 —Burnham, May O., Minneapolis.
 —Fisher, Aimee Winnifred, Minneapolis.
 —Gardner, Sadie Electa, Minneapolis.
 —Hickok, Amy Elmira, Minneapolis.
 —Janney, Ellen Annette, Minneapolis.
 —Kennedy, Katherine Elsie, Duluth.
 —Matthews, Grace Jenness, St. Paul.

—Mowry, Myrtle E., Minneapolis.
 —Nettlecn, Jessie Baird, Minneapolis.
 —Rothschild, Ella, St. Paul.
 —Roulette, Lela M., Minneapolis.
 —Ryan, Elizabeth C., Minneapolis.
 —Scott, Helen B., Minneapolis.
 —Sowden, Bessie Pearl, Minneapolis.
 —Steward, Maude H., Minneapolis.
 —Taylor, Lilly Florence, Red Wing.
 —Turnquist, Anna Sophia, Minneapolis.
 —Verharen, Lulu Maude, Spencer, Ia.
 —Williams, Lillian Mae, Minneapolis.

THE SCHOOL OF MINES.

SENIOR CLASS, 4.

Holden, Henry Hall, Duluth.	Morris, Charles Statham, Duluth.
Hoyt, Charle Cameron, St. Paul.	Smith, Carl James, Cambridge.

JUNIOR CLASS, 17.

Callaway, Frederick Wm., Minneapolis.	Rait, Donald M., Minneapolis.
Cohen, Samuel William, St. Paul.	Smith, Franklin W., St. Paul.
Cory, Milton Burnett, Minneapolis.	Sowle, Lawrence Kimball Minneapolis.
Field, Edward Morse, Jr., New York City.	Truesdell, William Howard, St. Paul.
Flynn, John Gerald, Lake City.	Van Bergen, Robert E., Minneapolis.
Freimuth, Louis, Duluth.	Whiteley, Eugene E., Brainerd.
Hoard, Harold Joseph, Red Wing.	Willis, Carl S., Minneapolis.
Lovett, Henry Steele, Minneapolis.	Winther, Arno, Fereus Falls.
Loye, Henry, E., Red Wing.	

SOPHOMORE CLASS, 29.

August Harry H., Minneapolis.	Kingston, Merton Stephen, Eveleth.
Bass, Samuel, Thayer, St. Paul.	Knopp, Arthur Adelbert, Winona.
Bowman, Frank Atherton, Minneapolis.	Kuehn, Amor Erederrick, Minneapolis.
Claypool, Charles Holmes, Duluth.	Lamberton, Herbert Sears, Lake City.
Colhoun, Allan B., Minneapolis.	Lamphere, J. S.
Collesler, Thorley Marc, Minneapolis.	McCarty, Andred Leonard, Good Thunder.
Corl, Edward Jennings, Minneapolis.	Merritt, Lucien, Duluth.
Devereaux, Francis Cyril, Minneapolis.	Nye, Charles Wheeler, St. Paul.
Devereaux, John Albert, Minneapolis.	Penfield, Herbert J., Spokane, Wash.
Donaldson, A. Hazeltine, Minneapolis.	Richards, Earl, Duluth.
Edmonds, Frank Norman, Minneapolis.	Rohr, Carl von, Winona.
Hale, Will Hammond, Minneapolis.	Schrader, Erich Julius, Minneapolis.
Hayes, Samuel Evans, Minneapolis.	Shonts, Sydney Latham, Fergus Falls.
Houlton, Lewis K., Elk River.	Squyer, Dewey Charles, Minneapolis.
Ingalls, Clarence Frand, St. Paul.	

FRESHMAN CLASS—59.

Ayer, Edwin Demarest, Luverne.	Haynes, Francis Rea, Minneapolis.
Barnes, Charles Warrington,	Hickman, Maurice Auerbach, St. Paul.
Lavenworth, Kan.	Hinton, George, Minneapolis.
Bernhagen, Otto Lewis, Minneapolis.	Howard, Byron S., Minneapolis.
Boardman, Donald, Minneapolis.	Howes, Frank Twombly, St. Paul.
Bogart, John Henry, Minneapolis.	Hurd, Edward French, Minneapolis.
Brooks, Alan, Minneapolis.	Jensen, James Edwin, Minneapolis.
Berch, Warren Brunton, St. Peter.	Keil, Otto Gustave, St. Paul.
Child, Clyde Roy, Superior, Wis.	Keller, Orrin Edwin Martin, Minneapolis.
Clement, Lester Latham, Winona.	Lamphere, Frank Elmer, St. Paul.
Cook, Frederick Stephens, St. Paul.	Lauderdale, Harry Taylor, Minneapolis.
Crandall, Roy Lewis, Duluth.	Lowry, Milton Henry, Minneapolis.
Crocker, Ronald Martin, Mt. Clemens, Mich.	Lytzen, Walter William, St. Paul.
Cunningham, Alvin Robert, St. James.	McCallum, James.
Curry, Duncan Ellsworth H. Sprig'Val'ey, Wis.	McCallum, William Clyde, Minneapolis.
Edwards, Sohn Paul, Minneapolis.	McKay, Henry Sinclair, Brainerd.
Field, Thorold Farrar, New York, N. Y.	Mella Ralph, St. Paul.
Fisher, Frank Loring, Duluth.	Merriam, Robert Stanley, Minneapolis.
Funck, Richard Maurice, Burlington, Ia.	Merrick, Gale Clifford, St. Paul.

Minder, Emil George, St. James.	Stoughton, Arthur Gus, St. Paul.
Murphy, John Francis, Minneapolis.	Thornton, Edwin Burdette, Benson.
Aeustadt, Berthold Nobert, LaSalle, Ill.	Wallace, George Watson- Jr., Duluth.
Noerenberg, August Carl, Minneapolis.	Walter, Herbert Winfred, Bellingham.
O'Brien, Charles Smith, St. Paul.	Weeks, Allan Lydiard, Minneapolis.
Penhoel, Louis, St. Paul.	Wentworth, Harland, Duluth.
Rawson, Horace Cole, Fergus Falls.	Wheeler, Walter Hall, Minneapolis.
Robertson, John James, Fergus Falls.	Wilkinson, Paul Harris, Crookston.
Schmidt, Caol Edgar, St. Paul.	Yates, Raiph Pierce, Jr., New Ulm.
Sherman, Ira Washington, Fergus Falls.	Yerxa, Ernest Lee, Minneapolis.
Simpson, Dwight Swain, Minneapolis.	Zieseimer, Ralph A., Fergus Falls.

DEPARTMENT OF AGRICULTURE—618.

COLLEGE OF AGRICULTURE—21.

SENIOR CLASS—2.

Buell, Max Whitney, St. Anthony Park. Mackintosh, Roger Sherman, St. Anthony Pk.

JUNIOR CLASS—3.

Becksted, Jesse Franklin, St. Anthony Pk. Guthrie, Francis Burrell, St. Anthony Pk.
Krum, Harry Garfield, Minneapolis.

SOPHOMORE CLASS—9.

Cuzner, Harold, Minneapolis.	—Mathews, Mary Lockwood,
Firmin, Alfred Fouracre, Minneapolis.	Cambridge City, Ind.
Gaumnitz, Daniel Asher, St. Cloud.	Parker, Edward Cary, St. Anthony Park.
Hoagland, Ralph, St. Anthony Park.	Schrader, Udo, Minneapolis.
McGuire, Arthur James, St. Anthony Park.	—Wilcox, Estella Willa, Hugo.

FRESHMAN CLASS—7.

Boerner, Emil Godleip, Buffalo.	Lugger, Humboldt, St. Anthony Park.
Briggs, Ealy Grannis, Houston.	Parker, Robert Stewart, Coatopa, Ala.
Dean, Geo. E., Minneapolis.	Widmoyer, Leslie R., Dresbach.
Jahle, Robert Andrew, St. Paul.	

STUDENTS IN INTERMEDIATE COURSE—9.

Adams, Theodore Nelson, Luverne.	—Lind, Emma, Houston.
—Giesman, Elma Alice, Merriam Park.	Roohr, Frank Louis, Warwick.
Ingalls, Herbert Benjamin, Blooming Prairie.	—Palmer, Mabel C. Como, Wis.
—Leinen, Mary E., Merriam Park.	—Strunk, Blanch Alice, Faribault.
Liggett, Alfred Russell, Detroit, Mich.	

SCHOOL OF AGRICULTURE.

A CLASS—70.

- Alsaker, Richard Edwin, Benson.
 Austwold, Theodore Ben, Glenwood.
 Bacheller, Thomas Thaxter Jr., Minneapolis
 —Bassett, Lelia, Rushmore.
 Bjertson, Benjamin Ludwig, Hanska.
 Blair, Donald Scripture, St. Anthony Park.
 Boss, John, Zumbro Falls.
 Brimmer, Archie Eli, St. Anthony Park.
 —Brude, Julia, Hanska.
 —Busse, Maude, Merriam Park.
 —Cederholm, Ida Louisa, Cannon Falls.
 Christenson, Bertal Peter, Hutchinson.
 Clouse, Frank, Spring Valley.
 —Collins, Gertrude Valentine, Billings, Mont.
 Cosart, George Lawrence, Orange, Cal.
 Cooper, Thomas Poe, Emerald, N. D.
 Danielson, Howard Raymond, Goodhue.
 Embertson, Oscar Frederick, Grue.
 Enestvedt, Engebret Gennan, Belview.
 —Ericson, Agnes Charlotte, Hector.
 —Fasken, Eva Irene, Faribault.
 —Ferch, Susie Martha, Odessa.
 —Ferch, Lydia, Odessa.
 Fingerson, Gilbert Jorgen, Swift Falls.
 Fowler, Robert Grey, Amery, Wis.
 Grant, George William, Windom.
 Grant, Charles Francis, Windom.
 —Hall, Mary Julia, Fairmont.
 Halvorson, Ole Levi, Grove City.
 —Held, Natalie Margarette, Minneapolis.
 Herbrandson, Herman O., Brooten.
 Holmberg, John Nathaniel, Renville.
 Hummel, Charles Edward, Dundas.
 —Hummel, Lucy A., St. Paul Park.
 Johnshoy, Herman Magnus, Starbuck.
 King, Ernest Arthur, Chatfield.
 —Koch, Mary Elizabeth, Litchfield.
 Lein, Bernard, Carlisle.
 Ludtke, Henry Adolph, Willow Creek.
 Miller, Ralph Chaffee, Bloomington.
 Paterson, Thomas, St. Cloud.
 Payne, Claude Clark, Kasota.
 Pease, Ray Ernest, Hamilton.
 —Pennington, Grace Lura, Cottage Grove.
 —Philly, Marie Ida, Louisburg.
 Price, Arthur William, Beaver Creek.
 Robinson, Edward William, St. Paul.
 Rose, John De Cew, Detroit.
 Rostad, Alvin, Dalton.
 Schneider, John Walter, White Bear Lake.
 Shaver, Fay Robinson, Redwood Falls.
 Shumway, Roy C., Northfield.
 Sletten, Hans Magnus, Willmar.
 Spreiter, Walter Emil, Berne.
 —Staples, Edith Helen, St. Paul.
 Thoe, Jacob F., Hayfield.
 Thomas, Charles Henry, Withrow.
 Thomson, Wirt Amos, Grand Rapids.
 Thorpe, Edward Lawrence, Willmar.
 Tomhave, William Henry, Fergus Falls.
 Tyler, Granville Albion, Minneapolis.
 Tyson, Robert Edwin, Redwood Falls.
 Van Vlissingen, Paul Cornelius, Hitterdal.
 —Van Slyke, Letitia Ann, Northfield.
 —Voxland, Clara, Norway.
 —Warden, Lola Elizabeth, Maine Prairie.
 —Wells, Mabel Annis, Monticello.
 —Wilcox, Jean Elizabeth, Hugo.
 —Wilson, Nettie Ray, Davies.
 —Wilzbacker, Louise Rose, Merriam Park.

B CLASS—97.

- Aldrich, Stanley Martin, Minneapolis.
 —Alexander, Fannie P., Brownton.
 Anderson, Chase, Hutchinson.
 Anderson, Julius, Bird Island.
 Beardsley, William Thayer, Minneapolis.
 Blackburn, James Raymond, Royal, Neb.
 —Brekke, Inger Jensina, Norway.
 Calderwood, Charles Granville, Newport
 Calmer, Ebb Rudolph, Hallock.
 Camp, Abner Wilson, Holdingford.
 Champion, Jesse William, Angus.
 Carlton, J. Strong, Merton.
 Carmine, Philip, Aberdeen, S. D.
 Clapp, William Angus, Roberts, Wis.
 Clouston, Joseph, Barnesville.
 Dailey, Robert, Flandreau, S. D.
 —Dalbotten, Anna Melvina, Nansen.
 —Dalbotten, Ida, Nansen.
 Dalbotten, Oliver, Nansen.
 Dean, Melburn L., Hamline.
 Dieter, George Miller, St. Paul.
 Dinsmoor, Fay, Austin.
 Dinsmoor, Charles Derwood, Austin.
 Dixon, Cyril Eckles, Northfield.
 Downie, Dana Thomas, Faribault.
 Dunavan, Walter Loyley, Cross Lake.
 —Eggena, Mary Helena, Maple Lake.
 Ellison, Frank Harold, Minneapolis.
 Emerson, Isaac, West Concord.
 Ferch, Paul Henry, Odessa.

- Foster, Jeannette Ora, Minneapolis.
 Frost, Walter Leon, Windom,
 Gaumnitz, Amos John, St. Cloud.
 Grant, John Geddes, Windom.
 Gregon, John, Hutchinson.
 —Halverson, Ida Gurina H., Grove City.
 Headley, Frank Burdette, Hutchinson.
 —Heier, Carrie Sophia, Twin Valley.
 Hohle, Ola Arnold, Hector.
 —Holmquist, Clementine Aurora, Providence.
 Holt, Edward August, Delhi.
 Hopwood, James Edward, Sergius, N. D.
 —Ingalls, Ruth Evaline, Blooming Prairie.
 Jepson, Frank Harding, Minneapolis.
 Johnson, Bert, Osseo.
 —Johnston, Christine Margaret, Robbinsdale.
 Johnston, Wallace George, Robbinsdale.
 Jones, Harold Winthrop, Minneapolis.
 Kassube, Frederick William, Wayzata.
 Kidder, Royal Aaron, Marshall.
 —King, Charlotte Barbara, St. Paul.
 Larson, Henry, Swea City, Iowa.
 Lingen, Carl John, Starbuck.
 McConnell, Roy Elmer, St. Cloud.
 MacKean, Augustus Smith,
 Fishing Creek, N. J.
 Mandell, George Dwight, Faribault.
 Martens, Jens, Norway,
 Meillicke, Otto Fredrick, Windom.
 Mills, Garfield Russell, Buffalo.
 Naegeli, Herman Gustav, Elizabeth.
 Olson, Carl, Brandon.
 —Olson, Ella Nathalia, Belview.
 Olson, Oscar Milton, Montevideo.
 Peck, William Argalus, Acton, Ind.
 Pennington, Walter Scott, Minneapolis.
 —Peters, Cora Frances, St. Paul.
 Peterson, Arthur Willard, Litchfield.
 —Peterson, Minnie Cordelia, Brighton.
 —Peterson, Regina, Hector.
 Peterson, Segwal Sophus, Minneapolis.
 —Pierce, Jennie, Rushford.
 —Pierce, Mabel Alice, St. Anthony Park.
 Prosser, William Glenn, Le Roy.
 Randall, Clarence Brewster, Hamline.
 Randall, Karl, Minneapolis.
 Reid, Roy Wilbur, Kasson.
 Reinert, Charles, Odin.
 Ritzinger, Frederick, St. Paul.
 —Roohr, Edna Margaret, Osseo.
 —Russ, Ethel Olive, Robbinsdale.
 Rund, Carl Oscar, Dawson.
 Schmitz, Prosper Laurence, Stewart.
 Schrepel, George William, Le Sueur.
 Sheldon, Lester H., Paynesville.
 Smith, Langford Wheaton, St. Paul.
 —Smith, Phoebe Carrington, St. Paul.
 —Spencer, Nellie Sophia, St. Paul.
 Strand, Alfred, Kensington.
 Swenson, Gilbert, Hoyt.
 —Thompson, Anna Adel, Cottage Grove.
 White, Hall Brewer, Winnebago City.
 Whitney, June Dexter, Minneapolis.
 —Wilkins, Annie Loretta, Minneapolis.
 Wold, Christian Willickson, Averill.
 Wollan, Anton Marcus, Starbuck.
 Wood, Casper Alfred, Waseca.
 —Worthington, Bernice May, River Falls, Wis.

C CLASS, 217.

- Anderson, Andrew Daniel, Wadena.
 Anderson, Iver Frederic, Lanesboro.
 Anderson, Lewis, Kenyon.
 Atkins, Fred Wesley, Columbia.
 Ask, Carl M., Lanesboro.
 Babcock, Lee Eugene, Vernon Center.
 Bauman, Felix Henry, Minneapolis.
 —Benchley, Mary Louise, Minneapolis.
 Bingham, Charles Lord, Hutchinson.
 Bisbee, Everett Hall, Madelia.
 —Blair, Ruby Isabelle, Utica.
 Bolser, Lewis Francis, Minneapolis.
 —Boston, Mable, Lynd.
 Boutwell, Elgin Harland, Kasota.
 Bradford, Albert, Empire.
 Brakke, Albert Cornelius, Wild Rice, N. D.
 —Browne, Laura Belle, Minneapolis.
 Brueck, Charles Frederick, Battle Creek, Ia.
 Bruggren, David Carl, Cannon Falls.
 —Bunker, Bessie Irene, Bloomington Ferry.
 Bunge, Albert Chriton, Eitzen.
 Burtman, Edor, Lester Prairie.
 —Campbell Helen Mae, Macalester.
 Cartier, Michael Calix, Centerville.
 Carpenter, Lynn Otis, St. Paul.
 Carson, Emmett Leroy, Chatfield.
 Chesley, Fred, Anoka.
 Crandell, Charles Norman, Rockford.
 —Cody, Ella Florence, Minneapolis.
 —Coffin, Ella Carnelia, Minneapolis.
 Cooper, Lee Eduard, Adrian.
 Crozier, John Bennett, Minneapolis.
 —Davidson, Florence, Lake Geneva, Wis.
 Davidson, Frank, Excelsior.
 De Zell, Edward James, Browns Valley.
 Dean, William Leroy, Hamline.
 —Dick, Ethel May, Cottage Grove.
 Dickenson, Wesley Amos, Rockford.
 Eide, Peter John, Eldred.
 Eggen, Ole, Brandt, S. D.

- Elston, Harry Raymond, Rich Valley.
 Epler, Joseph W., Balmoral.
 Ericson, Alfred Louis, Hector.
 —Ferch, Sarah Emma, Big Stone.
 Forsburg, Albert Theodore, Lamson.
 Foster, William Guy, Randolph.
 Foster, Harold Darcy, Minneapolis.
 Frear, Dana Walter, Minnetonka.
 —Gibbs, Ethel May, Minneapolis.
 Gilles, James Rozel, Bethel.
 Gruechte, Franklin, Eitzen.
 Garvey, Harry F., Minneapolis.
 Garen, John Earl, Stillwater.
 —Gaslin, Jennie E., Anoka.
 —Gerde, Pauline, New Paynesville.
 —Gleason, Minnie E., Northfield.
 Graham, Ralph Martin, Rochester.
 Grannis, Charles E., Vernon Centre.
 Grant, George Howison, Faribault.
 Gregg, Victor Hugo, Austin.
 Grosse, Leo Martin, Minneapolis.
 Hacking, Earl Lester, Republic.
 Hagerman, William Farnsworth, Morris.
 Hanratty, Patrick Andrew, Barry.
 Hall, Frank Wright, North Star.
 Harris, Homer Claud, Luverne.
 Harper, Roy Slater, St. Paul.
 Harper, Sidney Raymond, St. Paul.
 Harrison, Clement Allen, Bloomington.
 Hassig, Willie Day, Fairwater.
 —Hays, Bessie S., St. Anthony Park.
 Hazen, John Loveland, Norwich, Vt.
 Hegseth, Peter T., Carlisle.
 Henderson, George, Halstad.
 —Hendrickson, Katherine, Forest Lake.
 Hoff, Harry G., Tordenskjold.
 Holland, Rasmus, Henley Falls.
 —Holmberg, Ruth Hildegard, Renville.
 Horton, Thomas James, North Branch.
 —Houde, Minnie, Godahl.
 Hoverstad, Christopher Martinus, Nerstrand.
 —Hoverstad, Emeline, Denison.
 —Howe, Lizzie R., Kellogg.
 Hunt, Robert James, River Falls, Wis.
 —Jacobson, Annie M., Lynd.
 Jacobson, Frank, Lynd.
 Jehle, Robert Andrew, St. Paul.
 Jessen, Claude Eldon, Minneapolis.
 Jensen, Andrew, Kanaranzi.
 Johnson, Charles Lucius, Audubun.
 —Johnson, Mabel Charlotte, St. Paul.
 —Johnston, Laura St. C., Minneapolis.
 Jonson, Alex. Ernest, Rockford.
 Joyce, Richard William, Hammond, Wis.
 Kenten, Iver C., Hayan.
 Kassube, Frank John, Wayzata.
 Kern, Harry Fredrick, Lake Elmo.
 King, Curtin Andrew, Chatfield.
 Kinyon, Wallace, Norcross.
 Kjos, Elvin A., Arendahl.
 Knorr, Fritz, Clark, Ky.
 Knutson, Harold Richard, Clear Lake.
 Kreiser, Alexander Henry, Minneapolis.
 Kuhn, Harland McKean, Moline, Ill.
 Kierz, Harry, Annandale.
 —Lampson, Stella May, Waseca.
 Lee, Isaac F., La Salle.
 —Leinen, Frances Clementine, Merriam Park.
 —Ley, Bertha Henrietta, Excelsior.
 —Ley, Lizzie, Smithfield.
 Ley, Peter James, Smithfield.
 Liggett, Walter William, St. Anthony Park.
 Lommen, Tosten, Spring Grove.
 Lommen, Peter Julius, Caledonia.
 Loudon, Chester Biron, Maine Prairie.
 —Lovell, Margaret Emma, Vernon Centre.
 —Ludwig, Florence Anna, Minneapolis.
 —McCabe, Lulu Marion, Richfield.
 McLane, Daniel Leonard, Browns Valley.
 McLeod, Leon Thomas, Monticello.
 McMillan, William Allan, Minneapolis.
 —McNelly, Mabel Emily, Caledonia.
 —Mallett, Angie Augusta, Minneapolis.
 —Mallett, Gertrude Minna, Minneapolis.
 Maring, Albert, Nansen.
 Marple, Ernest Everett, Wendell.
 —Mason, Ella N., St. Paul.
 —Mason, Maude Goadby, St. Paul.
 Mast, James Garfield, Monticello.
 —Mather, Sophy, Faribault.
 Matthews, Meredith, Cambridge City, Ind.
 Mayland, Edwin, Arnedahl.
 Miller, Edwin Bensley, Bloomington.
 Mills, Rodney Newton, Buffalo.
 —Mitchell, Bessie, New York Mills.
 —Mitchell, Bessie May, Osseo.
 Moak, Clarence B., Minneapolis.
 —Moore, Catherine Bradbury, Minneapolis.
 Mowry, Herbert Hager, Minneapolis.
 Mudeking, Ray Fred, Owatonna.
 Negaard, Horace Theodore, St. Paul.
 Nelson, Lars, Winthrop.
 Ness, Harold Trygve, Hector.
 Newcomb, Earle Bradford, Minneapolis.
 Newcomb, Vern Elmer, Minneapolis.
 O'Connell, Richard C., River Falls.
 Orton, George Edward, Maritta.
 Ostergren, Reuben Gustaf, St. Paul.
 Owen, Alfred, Hanska.
 Owen, William Moss, Anoka.
 Parker, Raleigh Albert, Robbinsdale.
 —Partridge, Minnie, St. Anthony Park.
 —Pemberton, Ada Maude, Washburn.
 Peterson, Carl Hjalmer, Lynd.

- Peterson, Clarence Edward, Brighton.
 Peterson, Eric Ludwig, Dawson.
 Peterson, Flanders Herbert, Litchfield.
 Pond, Harold Hollister, Bloomington.
 Pratt, Earl Wells, Alexandria.
 Ramstad, Samuel Edward, West Lake.
 Randall, Rufus Russell, Warsaw.
 Rich, Ralph W., New Brighton.
 Richardson, Horace Elmer, Faribault.
 Rietz, Oliver Augustus, Victoria.
 —Riley, Ellen H., Hammond.
 —Roach, Eva Estella, Paynesville.
 Roach, Samuel Zimmerman, Paynesville.
 Roehrs, William, Ceylon.
 Roth, Gilbert Eugene, Danvers.
 Rothi, Albert, Moland.
 —St. Martin, Josephine P., Bloomington.
 Sargent, Foster Herbert, Red Wing.
 Schendel, Will Alfred, Campbell.
 Schilling, Jacob, Smithfield.
 —Schrepel, Minnie Annie, Le Sueur.
 Shannon, Wiley James, Camden Place.
 Sheldon, Louis James, Paynesville.
 —Smith, Bessie, Farmington.
 Squire, Ernest Porter, Hanley Falls.
 —Standish, Bertha, Minneapolis.
 Stark, Alfred Laurange, Harris.
 —Stark, Helma Madeline, Harris.
 —Stecher, Lizzie Margaret, Zumbrota.
 Steenerson, Arne Orlando, Climax.
 Stimpson, Herbert, Minneapolis.
 —Stoa, Mary, Ashby.
 Streetly, Charles, St. Francis.
 Streetly, Robert G., St. Francis.
 Stewart, Charles Deloss, Alpha.
 Sturges, Raymond Foster, Excelsior.
 Sullivan, Albert Henry, Adrian.
 Swenson, Edward, Willmar.
 Swenson, Wesley, Willmar.
 Talle, Pealer Alous, Kenyon.
 Turnham, Vivan, Wayzata.
 Valentine, Edwin M., St. Paul.
 Vaughn, Lillie Belle, St. Anthony Park.
 Walls, Everett Earl, Wheaton.
 Washburn, Edson Dean, Monticello.
 Wasson, Harris Berton, Belview.
 Watson, Edwin Jay, Morris.
 Watson, Frank Merton, River Falls, Wis.
 Webster, Alfred Alexis, Bernadotte.
 Weimerskirch, Pierre Xavier, Browns Valley.
 Welch, Horace Lewis, Corvuso.
 —Wells, Zoe Alice, Monticello.
 Whitney, Carl, Minneapolis.
 Wilder, Davis Ezlow, Brownsdale.
 Wilhelm, John Peter, Wheaton.
 Wilt, Elvin, Red Wing.
 Winslow, Fay, Chatfield.
 Winslow, Sears Hosmer, Chatfield.
 —Wold, Carrie H., Brandon.
 —Wood, Augusta Adelide, Waseca.
 Wood, Frank George, Waseca.
 Wood, Roy, Delavan.
 —Wulf, Emma A., Wheaton.

PREPARATORY—56.

- Abbott, Irwin Leon, Excelsior.
 —Algren, Alfred, Hutchinson.
 Bailey, Arthur, Rich Valley.
 Bierman, Carl Frederick, Rochester.
 Christenson, Thomas, Austin.
 —Cin, Clara, Donnelly.
 Cowell, George Arthur, Northfield.
 —Creelman, Alma Eleanor, Wayzata.
 Dudek, Frank, Chatfield.
 Dwyer, Katherine Theresa, Avoca.
 Frick, William Walter, Wayzata.
 Gilbertson, Martin Gerhard, Lanesboro.
 —Glesener, Lena, Eddsville.
 Gudal, Jorgen O., Bricelyn.
 Heinecke, George Wilhelm, Appleton.
 Hendrickson, Ward Grosvernor, St. Paul.
 Holgerson, Oscar Bernhard, Irving.
 Hulst, George William, St. Cloud.
 Jenkins, Evert Merle, Camden Place.
 Jensen, Jens Peter, Hayward.
 —Johnson, Ida Matilda, Louisburg.
 Johnson, Richard Teman, Spring Grove.
 Johnson, William August, Olivia.
 Keller, Peter Joseph, Merriam Park.
 Kringsberg, Emil Otto, Sacred Heart.
 Krogh, Fred George, St. Paul.
 Lane, Warren Wyman, Edina Mills.
 Lang, Max Emil, Hegbert.
 Langseth, Oscar Herbert, Round Lake.
 —Lapham, Cora Jane, Portland.
 Leathers, Bert Parker, St. Francis.
 Losleben, George, Sleepy Eye.
 Lydon, Edward, Kellogg.
 —Mayer, Della, Minneapolis.
 —Mortenson, Marie Carolyn, Sacred Heart.
 Norsakog, Caroline, Eddsville.
 Nygren, Herman John, Lake City.
 Ohnstad, Adolph Edwin, Cannon Falls.
 Oiseth, Olaf Vernon, S. D.
 —Olson, Ina, Upsala.
 Palmer, Harry, Bloomington.
 Pederson, Jens C.
 —Peterson, Laura Christina, Minneapolis.
 Rentz, Theodore Frederick, Morris.

Robertson, Lynn Shelby, London.
 Sederstrom, Alfred, Montevideo.
 Sjostrom, Victor, Bernadotte.
 Skaug, Rangvold, Voss.
 —Sletten, Julia O., Willmar.
 —Svarstad, Anne, Bath, S. D.

Talbert, Walter, Long Lake.
 Thomas, David Emery, Minneapolis.
 Thompson, Louis, New London.
 —Trittelwitz, Anna, Wayzata.
 Vogt, John, Edgerton.
 Wernerskirchen, Jacob, Gona.

UNCLASSED STUDENTS, I.

—Pendergast, Ellen M., Hutchinson.

DAIRY SCHOOL, 114.

Albertson, Edmund, Kellogg.
 Almquist, Walter V. A., Stark.
 Anderson, Alfred, Litchfield.
 Babcock, E. J., Huntley
 Beardsley, Milton, Clinton Falls.
 Beck, Oluf C., Cream.
 Beckwell, A. H., Litchfield.
 Bennett, Sanford L., Moland.
 Berland, Henry L., Waukon.
 Betaque, A. M., Rochester.
 Bird, Albert L., St. Francis
 Blank, C. W., Florida.
 Bolling, C., New Sweden.
 Boltes, Peter W., New Market.
 Boe, Ira N., Lansing.
 Carlson, Andrew W., Rush City.
 Carlson, M. F., Harris.
 Christiansen, Nels, Otisco.
 Carr, W. A., St. Paul.
 Case, D. R., Minneapolis.
 Caswell, S. L., Jordan.
 Chase, Marion J., Concord.
 Chesley, Frank A., Anoka.
 Clevon, James, Hammond, Wis.
 Credicott, H. J., Easton.
 Crooks, H. W., Montrose.
 Dahlin, John, Alpha, Wis.
 Derungs, J. J., Ramona, S. D.
 Edwards, J. W., Welcome.
 Ekbon, Eugene, Grove City.
 Engbloom, Charles A., Nowthen.
 Gerber, August, Renville.
 Goetsch, H. A., Winthrop.
 Gordhamer, Oliver.
 Gray, Charles, Fertile.
 Gray, Earl, Hinckley.
 Gunderson, Albert L., New Richland.
 Halls, Albert, Hills.
 Hanson, Andrew M., Emmons.
 Hecker, Paul, Star Prairie, Wis.
 Helmstetter, Emil, Lake Henry.
 Hoeger, Willie, Sims, N. D.
 Hondl, Joseph, Albany.
 Hughes, Hugh J., Tracy.
 Irgens, Arthur, Glenwood.

Istrup, Ben, Buffalo.
 Iverson, N. P., Minneapolis.
 Johnson, Laurence, Hutchinson.
 Jensen, Nels M., Tyler.
 Jeppesen, Jens J., Evan.
 Johnson, Frank, Stockholm.
 Johnson, Hetman O., Irving.
 Johnson, Ole J., Manchester.
 Jones, J. H., Northwood, Iowa.
 Kendall, W. A., Jackson.
 Kerrigan, Jas. F., McCeron Lake.
 Kilty, Wm. H., Forest City.
 Kipp, Ellis W., New Auburn.
 Kipp, Henry, Jordan.
 Knowlen, Fred H., Washburn.
 Kopp, Wm., New Ulm.
 Kuhnman, Robert, Lakefield.
 Larson, Fred L., Cannon Falls.
 Larson, Wm. Stewart.
 Leffler, Henry, Hanover.
 Lein, Edward M., Corning.
 Lindberg, John E., Harris.
 Lohnbakken, L., Butternut.
 McDaniel, Wm., Dean.
 McKay, R. H., Rush City.
 Micklish, John, Freeport.
 Miller, Peter A., Hartland.
 Mossar, Wm., Madelia.
 Nachbar, C. A., Helena.
 Natland, Martin K., Lerdal.
 Nelson, Adin, East Union.
 Ness, Christian W., Hector.
 Noble, A. C., Mankato.
 Olson, Oscar, Star Prairie, Wis.
 Orban, A. C., Silver Lake.
 Parkin, W., Pine Island.
 Parsons, G. L., Minneapolis.
 Paul, E. N., Kellogg.
 Pederson, Peter, Montevideo.
 Piehl, O. F., Chisago City.
 Pierce, E. H., Minneapolis.
 Peterson, E. H., Oxlip.
 Peterson, H. C., Minneapolis.
 Plocker, G. M., Victoria.
 Ransom, A., Annandale.

Rolig, Chas., Center City.
 Reimers, F., Brownton.
 Robinson, E. W., St. Paul.
 Sandholt, Henry, Grove City.
 Schwahn, E. M., Nicollet.
 Scott, Theo. V., Augusta.
 Smith, S. C., Nowthen.
 Sorby, O. J., Providence.
 Stensgaard, A. B., Ada.
 Sponnaus, A. C., Belle Plain.
 Steinhaus, E. W., New Richland.
 Sudendorf, E. Jr., Elgin, Ill.

Taylor, L. S., Glenville.
 Thor, Oscar, St. Paul.
 Torgerson, Louis, Bratsberg.
 Torgerson, Martin, Ellendale.
 Veit, J. W., New Ulm.
 Walstrum, J. L., Rush Point.
 Wolff, Phillip, Sherburn.
 Wenzer, Henry, Sleepy Eye.
 White, Emmett, Milbank, S. D.
 White, Jos. F., Milford, Mass.
 Widger, F. A., Royalton.
 Wilson, J. G., Withrow.

SHORT COURSE FOR FARMERS—33.

Batalden, Adolph, Lamberton.
 Bergemann, Rudolph Carl, Madelia.
 Cairns, P. J., Minneapolis.
 Christiansen, G. V., Linden.
 Clark, Theo. W., Reno, Nev.
 Conlin, T. S., North St. Paul.
 Dwyer, D. E., St. Paul.
 Erickson, Emil, Tarn.
 Feneon, C. W., Winona.
 Halcrow, John, Bowsmont, N. D.
 Halfpenny, W. A., Minneapolis.
 Holte, Jacob A., Kragness.
 Kenny, Denis, Gotha.
 Knowiton, J. E., Minneapolis.
 Larson, L. E., Cottonwood.
 Linnell, Charles W., Centre City.
 Lloyd, Thomas, Lloyd.

Lundborg, John, Gotha.
 Nordby, Edward J., Renville.
 Rahilly, John H., Dexter.
 Raney, A. N., Pittsburg, N. D.
 Rollefson, Andrew, Granite Falls.
 Seashore, Edwin, Pilot Mound, Ia.
 Sethre, Peter, Carlisle.
 Skotterud, Erik O., Dawson.
 Smith, Geo. W., St. Peter.
 Smith, Kirk, Livingston, Mont.
 Stubben, Ole M., Nora.
 Sundberg, Bengt, Kennedy.
 Tilderquist, Lawrence T., Vasa.
 Wade, Guy W., Pendleton, Ore.
 Wheeler, Frank H., St. Paul.
 Zimmerman, Albert, Spring Valley.

COLLEGE OF LAW.

FOR DOCTOR OF CIVIL LAW, II.

Bates, William Earl, *LL. M.*, Minneapolis.
 Carroll, Walter N., *LL. M.*, Minneapolis.
 Coombs, Lee A., *LL. M.*, Minneapolis.
 Denegre, James D., *LL. M.*, St. Paul.
 Dever, Charles S., *LL. M.*, Minneapolis.
 Hermann, Arthur L., *LL. M.*, Minneapolis.
 Mercer, Hugh Victor., *LL. M.*, Minneapolis.
 Moore, Albert R., *LL. M.*, St. Paul.
 Olson, Carl O. A., *B. S., LL. M.*, Minneapolis.
 Sweet, John C., *LL. M.*, Minneapolis.
 Whitcomb, Walter B., *LL. M.*, Minneapolis.

FOR MASTER OF LAWS, 13.

Blomberg, Charles August, St. Peter.
 Christofferson, Arthur, Hudson, Wis.
 Esterly, Frank Curtis, Washington, D. C.
 Grant, Richard F., Fargo, N. D.
 Heino, John R., St. Paul.
 Hyland, James Anderson, Minneapolis.
 McElroy, Earle W., St. Paul.
 Morey, Arthur G., Minneapolis.
 —Morgan, Jessie Thayer, New York.
 Todd, Jay, Shelton, Wash.
 Williamson, Alonzo P., Minneapolis.
 Willis, Hugh E., Minneapolis.
 Wittmaack, John H., St. Paul.

SENIOR DAY, 80.

Aygarn, Oliver, Choice.
 Baker, Frank Milton, Emmetsburg, Ia.
 Bane, William Whitmore, Brainerd.
 Bengston, Hans Peter, Canby.
 Berge, Herbert James, Jackson.
 Beum, John E., Lanesboro.
 Bonhus, Andrew G., Aspelund.
 Bothne, Nils J., Abercrombie, N. D.
 Brown, William Scantleberry, Duluth.
 Buck, Charles Sumner, Minneapolis.
 Burns, Thomas Francis, Minneapolis.
 Cameron, Donald Alexander, La Crosse, Wis.
 Compton, William Gould, Minneapolis.
 Conser, Louis Agassiz, Sand Spring, Ia.
 Dignan, Thomas, Richfield Springs, N. Y.
 Elliott, Ira Russell, Drayton, N. D.
 Ellwood, Walter Jesse, Montgomery.
 Elwin, Elmer Harrison, Moorhead.
 Ermatinger, Joseph J., St. Paul.
 Evans, Maurice V., Mankato.
 Fagan, N. Carle, Minneapolis.
 Finstuen, Andrew, Kenyon.
 Fitch, Lester John, Minneapolis.
 Flagler, Nicholas, Wimbledon, N. D.
 Fraser, Robert L., Rochester.
 Frye, George R., Minneapolis.
 Furst, William., Minneapolis.
 Gallagher, George A., Minneapolis.
 Gilmore, George Albro, Valley City, N. D.
 Halvorson, Henry O., Dawson.
 Hammett, William George, Hawley.
 Heffron, Frederick Cleveland, Minneapolis.
 Houston, Charles Egbert, River Falls, Wis.
 Jensen, Constan, St. Paul.
 Jordan, Edward, Flandreau, S. D.
 Kane, James Henry, New Richmond, Wis.
 Kleinman, Charles P., Hutchinson.
 Knox, John C., Jackson, Minn.
 Lavelle, John Paul, Minneapolis.
 Lawrence, Percy J., Minneapolis.
 Livermore, Harry Adam, Fairmount.
 Lovett, Ralph E., Minneapolis.
 Luby, Michael J., Minneapolis.
 McBride, Morton Lewis, Milbank, S. D.
 McElmeel, Owen Peter, Delhi, Ia.
 McGregor, Bruce Elmo, Mapleton.
 MacLane, John, St. Paul.
 McLaughlin, George Vincent, Mapleton.
 McNulty, Frank, Sisseton, S. D.
 McPartlin, Francis Joseph, Glencoe.
 Marshall, John W., Wadena.
 Mitton, William Bayfield, Brown's Valley.
 Mueller, Albert W., New Ulm.
 Nelson, Bertle, Hutchinson.
 Nelson, Cornelius S., Hendrum.
 Ness, Sjur Peter, Kenyon.
 Newman, Francis Julian, Bemidji.
 Nickerson, John E., Garden City.
 Nostdal, Louis Robert, Madelia.
 Ofsthun, Christopher O., Cyrus.
 Packer, Benjamin G., Eau Claire, Wis.
 Phillips, James E., Arlington.
 Quamme, Edward G., Kenyon.
 Redding, Paul S., Windom.
 Richardson, Elmer, Drayton, N. D.
 Rickert, Jacob Arthur, Wahpeton, N. D.
 Stolberg, Alfred Peter, Harris.
 Swenumson, S., Saude, Ia.
 Schellbach, Charles Henry, Mankato.
 Sheran, John Francis, Alma City.
 Simpson, Earle, Winona.
 Sobotka, Ottocar, St. Paul.
 Solem, Louis, Minneapolis.
 Stanford, Ralph Waldo, Kandiyohi.
 Terry, Robert Weston, Minneapolis.
 Thornton, John James, Jr., St. James.
 Tone, Aad Addison, Gilman, Ia.
 Wachuta, Charles Frank, Minneapolis.
 Webb, George Taylor, Merricourt, N. D.
 Wiegand, George H., White Bear Lake.

SENIOR NIGHT, 40.

Andrews, Alva Austin, Minneapolis.
 Baldwin, William, Red Creek, N. Y.
 Bessesen, Nelson Daniel, Albert Lea.
 Cotton, Claude G., St. Paul.
 Des Lauriers, Alphonse Joseph, Minneapolis.
 Dodge, Vernon W., Burlington, Vt.
 Donahue, William H., Minneapolis.
 Dolds, William Lawrence, Minneapolis.
 Dowdall, August Sylvester, Minneapolis.
 Guesmer, Arnold L., Minneapolis.
 Hale, Harry, Minneapolis.
 Hamaker, Harry, St. Paul.
 Hamley, George Orlando, Minneapolis.
 Hauck, Edward William, Minneapolis.
 Henderson, O. J., Story City, Ia.
 Heitmann, Johan, Minneapolis.
 —Hern, Angie King, St. Paul.
 Hobbs, Waldo Warren, Minneapolis.
 Lossow, Albert Henry, St. Clair.
 McGray, Frank Edward, Minneapolis.
 McKusick, Roy W., Minneapolis.
 Maron, Frank Anthony, St. Paul.
 Martin, George Riley, Minneapolis.
 Melville, James Condit, Brooklyn, N. Y.
 Nash, Louis, St. Paul.
 Norton, Eric, St. Paul.

Olson, Charles Leonard, Minneapolis.
 Poirier, Otto A., Duluth.
 Potter, Paul Emery, Minneapolis.
 Rachie, Elias, Granite Falls.
 Schall, Anthony X., Jr., Minneapolis.
 Schonarth, Peter, St. Paul.
 Sexton, Luke K., Chaska.

Silloway, Charles Frank, Minneapolis.
 Sperry, Roy E., Willmar.
 Tautges, William A., Minneapolis.
 Velikanje, Milan, Minneapolis.
 Von Kuster, Paul Edward, Minneapolis.
 West, Harry Clark, Minneapolis.
 Whitney, Arthur B., Slayton.

MIDDLE DAY, 80.

Alexander C. L., Kasson.
 Austin, Joseph E., Minneapolis.
 Baldwin, Matt., Minneapolis.
 Berg, Alvin Martin, Sleepy Eye.
 Borgendale, Hans, Lac qui Parle.
 Bowler, Madison Caleff, Minneapolis.
 Brown, John Harrison, Benson.
 Brown, Warrington, Minneapolis.
 Burchard, Simeon James, Marshall
 Buttz, Adrian E., Buttzville, N. D.
 Chase, Kelsey Stillman, Faribault.
 Colmenson, Benjamin, St. Paul.
 Coury, Joseph J., Alta Vista, Ia.
 Dillman, Raymond Lee, Reville, S. D.
 Dobie, Gilmore, Hastings.
 Dormoy, David A., Minneapolis.
 Dyer, George Elmore, Houston.
 Edwards, Harrison E., Ashland, Wis.
 Fernholz, Edward J., Jefferson, Wis.
 Finley, John Matthew, Minneapolis.
 Finstad, Ole J., Windom.
 Freeman, Edward, Minneapolis.
 Gallagher, Michael William, St. Paul.
 Gardner, Richard Nelson, Fergus Falls.
 Gluck, Albert, Minneapolis.
 Gunderson, Andrew Bennett,
 Vermillion, S. D.
 Halsted, Hugh M., Sheboygan, Wis.
 Hanson, George Elmer, Sleepy Eye.
 Hanson, Nels Benjamin, New Centerville Wis.
 Hegland, Martin Johan, Roland, Ia.
 Himsel, Joseph Benedict, St. Cloud.
 Holmberg, George Clarence, Minneapolis.
 Hopkins, Frank H., Fairfax.
 -Hougen, Alinda May, Northwood, N. D.
 Hudson, Guy H., Thorp, Wis.
 Huntington, Arthur E., Luverne.
 Jameison, J. B., Minneapolis.
 Johnson, Andrew P., Crookston.
 Johnson, Thore Rudolph, Cannon Falls.
 Kennicott, Jay A., Luverne.

Klancke, Emil John Charles, Norwood.
 Lamson William H., Minneapolis.
 Lawson, John E. Furgey, Owatonna.
 Lende, Olai A., Cottonwood.
 Lyche, Charles Albert, Hatton, N. D.
 -McCardy, Ella H., St. Paul.
 McClaren, Hugh James, Minneapolis.
 McGinley, Hugh S., Minneapolis.
 McManamy, James J., Cashton, Wis.
 Marshall, W. Frank Merriam Park.
 Mastenbrook, Adrian D., Kasson.
 Maurin, Francis Joseph, Elizabeth.
 Michelet, Wilhelm L. C., Minneapolis.
 Morrow, Thomas, Minneapolis.
 Murphy, Joseph L., Alma City.
 Nietert, Sun America, Minneapolis.
 Nyborg, Marinus J. C., Pithee, Wis.
 O'Donnell, Michael Charles, Avoca.
 O'Marr, Louis J.,
 White Sulphur Springs, Mont.
 Ostrom, Oscar W., New Sweden.
 Page, Leroy Albert Jr., Mason City, Iowa.
 Quinn, Andrew William, Fairmont.
 Rogers, Edward Lowell, Aitkin.
 Schacht, Theo. A., Elgin.
 Scholle, Gustave, St. Paul.
 Schroeder, Peter F., Perham.
 Schulz, Otto William, Montevideo.
 Scribner, James Clinton, Eldorado, Wis.
 Shea, Francis George, Perham.
 Smith, John Phillip, Cottonwood.
 Smith, Justin M., Brainerd.
 Smythe, Dan P., Arlington, Ore.
 Solem, Ludwig Oliver, Minneapolis.
 Sterling, Charles P., Elysian.
 Torrence, Lester Wayland, Minneapolis.
 Wederath, Frank C., Morton.
 Whitford, George Langdon, St. Anthony Pk.
 Williams, James Perry, Hayward, Wis.
 Williams, Edwin Adam, Rochester.
 Wyvell, Richard Charles, Minneapolis.

MIDDLE NIGHT CLASS, 54.

Albee, William E., Minneapolis.
 Benton, Harry G., Minneapolis.
 Bernhagen, John F., Minneapolis.
 Berry, Harry Lynn, Mapleton.

Buell, Charles Joseph, North Hudson, Wis.
 Burger, J. Archie, Huron, S. D.
 Chapman, Frank Johnson,
 New Richmond, Wis.

- Cook, Leslie Lloyd, Appleton, Wis.
 Crouley, William Dudley, Minneapolis.
 Currie, John D., Minneapolis.
 Davis, Louis David, Elgin.
 Erickson, Theodore O., Flandreau, S. D.
 Fahey, J. J. Green Isle.
 Ferry, Thomas J., Patrick, DeGraff.
 Furber, Fred Nason, Detroit.
 Gleason, Joseph William, Minneapolis.
 Gleeson, Martin Henry, Minneapolis.
 —Goldsbury, Maud, Cherokee, Iowa.
 Gorman, Francis Thomas, White Rock.
 Gould, W. Watson, Fairmont.
 Halvorson, Halvor L., Henning.
 Hanson, Hans Andrew, Fairbault.
 Harkness, Edgar G., Minneapolis.
 Haug, Lars O., Minneapolis.
 Headley, Lucius Ambrose, Luverne.
 Huebener, George C., Eau Claire, Wis.
 Jensen, Nils Martin, Minneapolis.
 Keohane, John Jeremiah, Minneapolis.
 Knauf, Arthur Lawrence, Jamestown, N. D.
 Lundquist, Charles Oscar, Minneapolis.
 McCollom, William Henry, Minneapolis.
 McKenna, George M., St. Paul.
 McKusick, Clinton Levi, Pine City.
 Margeson, Wylie Churchill, Hantsport, N. S.
 Moore, M. W., Minneapolis.
 Nash, Edward M., Minneapolis.
 Nash, John P., Minneapolis.
 Nash, William M., Minneapolis.
 Paddock, George A., Minneapolis.
 Paulson, Clarence Alfred, Minneapolis.
 Peter, Henry, Minneapolis.
 Porter, Gardner H., Minneapolis.
 Robertson, Raymond, Minneapolis.
 Rosier, Arthur J., Fairview, S. D.
 Rosted, John Edward, Hader.
 Russell, Bert, St. Paul.
 Smith, Orville W., Morton.
 —Smith, Mary Donovan, St. Paul.
 Soule, V. Ormsby, Minneapolis.
 Stephanus, Charles J. S., St. Paul.
 Taylor, Arthur Robert, St. Paul.
 Thompson, William E., Hastings.
 Verge, Walter L., Minneapolis.
 Wayne, James A., Minneapolis.

JUNIOR DAY, 126.

- Abrahamson, George Leroy, Cartwright, Wis.
 Aiken, Aleck Davidson, St. Cloud.
 Alexander, Fred A., Kasson.
 Allen, Edwin G., Duluth.
 Anderson, Alvin Ferdinand, Star Prairie, Wis.
 Back, Carl B., Vernon, S. D.
 Baudler, Carl, Austin.
 Barnard, Robert T., Minneapolis.
 Barney, Harry C., Mankato.
 Beagle, Charles, Arcade, N. Y.
 Bidlake, John, Minneapolis.
 Boulden, Keith L., Walnut Grove.
 Bridgman, Raymond, Vermillion, S. D.
 Burdick, W. Lloyd, Minnewaukon, N. D.
 Burns, Leo A., Wells.
 Bushfield, Harley J., Miller.
 Caldwell, Frank Arthur, Moorhead.
 Callihan, James Gerard, St. Paul.
 Calloway, C. H., Minneapolis.
 Campbell, H. Don, St. Paul.
 Campbell, James, Jackson.
 Carman, William Brainerd, Detroit.
 Caswell, Irving A., Minneapolis.
 Chase, Josiah H., Jr., Minneapolis.
 Chilson, Almon E., Webster, S. D.
 Chinnock, James Thornton, Decorah, Ia.
 Clapp, Harvey Spaulding, St. Paul.
 Clark, Samuel Hardwick, Stephen.
 Clock, Ralph H., Hampton, Ia.
 Closner, Edward G., Pine Island.
 Clough, Eugene Darwin, Bagley.
 Collins, David Tristram, Gladstone, Mich.
 Dawley, Carroll H., Minneapolis.
 Diepenbrock, Clarence Perry, Red Wing.
 Dieson, Elmer O., Heron Lake.
 Dousman, Charles J., Northfield.
 Dredge, George, Lake Crystal.
 Drotning, Alvin, Deerfield, Wis.
 Dutcher, Bert E., Hancock.
 Ellefson, Edward K., Dawson.
 Evans, E. Clark, Minneapolis.
 Flannery, H. C., Minneapolis.
 Folsom, Howard, Minneapolis.
 Fowler, Arthur William, Sheldon, N. D.
 Francis, Willard Asa, Fargo, N. D.
 Frankberg, George Walter, Fergus Falls.
 Fredrikson, Fred Marius, Dell Rapids, S. D.
 Freeman, William Hayward, St. Cloud.
 French, Arthur S., St. Paul.
 Frissell, E. Robert, New Richmond.
 Gann, John B., Minneapolis.
 Gislason, Arnie B., Minneota.
 Glassner, Lewis, Biwabik.
 Goff, Hiram S., Mapleton.
 Grannis, Day L., Fayette, Ia.
 Greene, Raymond William, Oshkosh, Wis.
 Greer, Dorance Dorman, Lake City.
 Griggs, Orrin Harold, Virginia.
 Gugisberg, Edward, Gibbon.
 Guthrie, Munson M. Z., Pierre, S. D.

- Haagenson, John N., Carlisle.
 Hanson, Walter Harry, New Lisbon, Wis.
 Haroldson, Hans B., Duluth.
 Harrington, Michael J., Avoca.
 Hayden, John Pierce, Peterson, Ia.
 Healey, Elmer Ellsworth, Fergus Falls.
 Ingebretsen, Ivar, Minneapolis.
 Johnson, Henry A., Sioux Rapids, Ia.
 Johnson, Samuel O., Cloquet.
 Johnson, Sidney Richard, Cannon Falls.
 Jones, George P., Luverne.
 Jones, Harry Kimball, Minneapolis.
 Kelly, Thomas Robson, Owatonna
 Kemp, John Farle, Minneapolis.
 —Kercher, Alice Louise, St. Cloud.
 Kuehn, Max August, Sioux Falls, S. D.
 Kuelne, August E., Rock Valley, Ia.
 Leuthold, Ralph N., Kasson.
 Little, Samuel Henry, Caledonia, N. D.
 Lundeen, Ernest C. A., Northfield.
 McGarry, John H., Glenwood, Wis.
 McLennan, Duncan J., Cottonwood.
 Maloney, Albinus S., Waseca.
 Matoushek, Frank J., Minneapolis.
 Messersmith, Joseph Edward,
 Dickinson, N. D.
 Metzler, John Andrew, Portage, Wis.
 Moe, Waldemar John, Duluth.
 Myers, Arthur Leroy, Lake City.
 Myers, Raymond Horace, Minneapolis.
 Nefsy, David W., Dickinson, N. D.
 Nelson, John Arthur, Stillwater.
 Nelson, John J., El Paso, Wis.
 Nichols, John Freeman, Rice Lake, Wis.
- Oppenheimer, William H., St. Paul.
 Parsons, Cleve Mark, Milbank, S. D.
 Praxel, Anthony J., Lambertson.
 Redding, John G., Windom.
 Rice, Zellie S., Sparta, Wis.
 Ripley, Edwin Arthur, Oakfield, Wis.
 Ruble, Edwin Carl, Willmar.
 Rust, Harm, Reading.
 Ryan, Patrick Joseph, St. Paul.
 Sasse, Carl A., Vienna, S. D.
 Sayre, Abraham Maxon, Ben Clare, S. D.
 Schmidt, Alfred Herman, Owatonna.
 Schuknecht, Edward Fred, Anamosa, Ia.
 Shea, William Henry, Jr., Sparta.
 Shillock, John C., Minneapolis.
 Slattery, William Charles, Eagle River, Wis.
 Smith, Earl Asbury, Breckenridge.
 Smith, Harry H., Silica, Mo.
 Spaulding, Fred Farley, Renville.
 Sullivan, Dennis Patrick, Mapleton.
 Taylor, James D., Red Lake Falls.
 Thelen, John N., Stillwater.
 Thompson, Arthur McCall, Deerpark, Wis.
 Thompson, John Benjamin, Fergus Falls.
 Thompson, Thomas, Onalaska, Wis.
 Thompson, Porteous Isaac, Houston.
 Thompson, Richard B., Onalaska, Wis.
 Thorp, Walton Willard, Britton, S. D.
 Volk, Henry William, Lake Washington.
 Weld, Lyman P., River Falls, Wis.
 Wildes, Frank A., Jr., Mankato.
 Williams, Charles S., Fairmont, N. D.
 Wood, Benjamin William, New Richland.

JUNIOR NIGHT, 130.

- Adams, Henry Rice, Minneapolis.
 Adams, Sidney DeWitt, Minneapolis.
 Akers, Walter Leslie, Minneapolis.
 Anderson, Arthur H., Rowland.
 Anderson, Sidney L., Little Falls.
 Anglim, William George, Crookston.
 Bailey, Campbell L., Minneapolis.
 Bailey, Robert M., South Troy.
 Bartlett, Joseph B., Minneapolis.
 Bartlett, Lester, Minneapolis.
 Bills, Glen Sanford, Ada.
 Bollum, Carl O., Belle Chester.
 Brattland, Gilbert A., Hendrum.
 Bridgman, Charles Alfred, Winona, Ontario.
 Bruse, Olof Ludwig, Minneapolis.
 Burns, Peter M., Minneapolis.
 Casey, William Joseph, Binghamton, N. Y.
 Chilton, Thomas Franklin, Minneapolis.
 Clarno, Elmer Richard, Parkers Prairie.
 Cotton, J. Frank, Minneapolis.
 Current, John Rees, Sleepy Eye.
 Curtis, Elias Burs, Minneapolis.
 Danelz, Herman A., Swift Falls.
 Davies, Otto Nelson, Winona.
 Davis, William Melville, El Paso, Texas.
 Dean, Ray Stuart, Sauk Centre.
 Dills, Elmer L., Albert Lea.
 Douglas, Burney Kirkpatrick, Macon, Mo.
 Duncan, Urni S., Sisseton, S. D.
 Egleston, Marvin Jay, Wykoff.
 Erickson, A. G., Springfield.
 Evans, Arja D., Mankato.
 Farmer, James D., Spring Valley.
 Felberbaum, Harry, Northfield.
 Frankel, Hiram David, St. Paul.
 Freeman, Rupert Leone, Minneapolis.
 Gilbert, Trygve O., Willmar.
 Gipple, Will Burr, Galesville, Wis.
 Hallam, Bernard Clair, St. Paul.
 Harkinson, Laun B., Mason City, Ia.

Harrington, Curtis Lyman, Hayward, Wis.
 Hughes, Edwin A., Minneapolis.
 Hughes, John William, Minneapolis.
 Janes, Alex, Pipestone.
 Johnson, Lewis Olaf, Minneapolis.
 Johnson, Peter R., New Ulm.
 Jukam, Juel C., Minneapolis.
 Kerr, Harold C., St. Paul.
 Kindseth, Martin, Goodhue.
 Kjesness, Syvert, Norway.
 Kline, Frank M. Hampton, Ia.
 Kleinmann, J. G., Hutchinson.
 Landon, Clio Grant, Minneapolis.
 Lane, L. N., Minneapolis.
 LeBell, Austin Ozias, Minneapolis.
 MacVicar, Earl Angus, Eau Claire, Wis.
 Mehan, James Edward, Minneapolis.
 Mitchell, D. A., Barr.
 Molzahn, Herman E., Hay Springs.
 Morton, Willis R., Woodstock.
 Murfin, Arthur M., Sleepy Eye.
 Murphy, Joseph Edward, New Richmond.
 Myran, A. G., Minneapolis.
 Newton, Charles McK., Bangor, Wis.
 O'Donnell, John T., Minneapolis.
 Ogden, Leslie Solomon, Minneapolis.
 O'Hare, Herbert F., Hammond, Wis.
 Olson, Hans M., Belview.
 Phillips, Luther Martin, Minneapolis.
 Pierce, Charles Curtis, St. Paul.
 Proctor, John Leonard, Minneapolis.
 Pryor, Leonard H., Minneapolis.
 Reed, Frank E., Glencoe.
 Reed, J. Homer, Minneapolis.
 Rice, William Albert, Lake City.
 Riebeth, George Henry, Minneapolis.
 Roberts, Edwin Abbott, Minneapolis.
 Rossman, Willard A., Chatfield.
 Rundell, Edwin Albert, Minneapolis.
 Sanborn, R. R., Minneapolis.
 Schall, Thomas D., St. Paul.
 Smith, John William, Chippewa Falls, Wis.
 Somers, Robert C., Minneapolis.
 Stanley, James G., Minneapolis.
 Steenson, Jesse G., Eden Prairie.
 Stephens, Ralph Brown, Minneapolis.
 Stevens, Homer W., Centerville, S. D.
 Thomas, Harry Hugh, Minneapolis.
 Vanasse, Thomas H., Spring Valley, Wis.
 Van Fredenberg, H. J., Alexandria.
 Van Valkenberg, Harry Jay, Canby.
 Wall, William H., St. Paul.
 Ware, J. Roland, Minneapolis.
 Wearne, Royer Grose, Minneapolis.
 Wennerdahl, John A., Chisago City.
 Wildey, Herbert Leslie, Anamosa, Ia.
 Williams, Warren O., West Concord.
 Young, Albert, Frederic, Lake City.
 Youngberg, Earl L. R., Cannon Falls.
 Youngquist, Carl August,

COLLEGE OF MEDICINE AND SURGERY.

GRADUATE STUDENTS, 1.

Coryell, Faulkner, *M. D.*

FOURTH YEAR, 66.

Alger, Edmund W., Minneapolis.
 Arey, Hugh C., St. Paul.
 —Barnsend, Nellie O., Starbuck.
 Baxter, Stephen H., Minneapolis.
 Bennion, Percival H., Litchfield.
 Bickford, Frank J., Maine.
 Bissell, Frank S., Litchfield.
 Bomberger, Franklin J., Minneapolis.
 Brigham, Charles F., St. Cloud.
 Brimhall, Silas J., San Diego, Cal.
 Brown, Walter M., Minneapolis.
 Brown, William G., Park River, N. D.
 Budworth, Benjamin F., Minneapolis.
 Bussen, Leonard H., Torah.
 Cameron, John A., Hillsboro, N. D.
 Clement, Lucian O., Waseca.
 Coulter, Charles F., New York Mills.
 Cummings, John H., St. Paul.
 Davis, Frederick U., Mankato.
 Drechsler, Herman A., Stillwater.
 Eckman, Albert, Cokato.
 Erb, Frederick A., Minneapolis.
 Field, Merton, Bismarck, N. D.
 Foster, Clyde C., Minneapolis.
 Fulton, Thomas C., White Bear.
 George, James W., Minneapolis.
 Godfrey, Harvey B., Minneapolis.
 —Goodman, Minerva, Minneapolis.
 Guthrie, Charles E., Minneapolis.
 Haugseth, Enoch, Minneapolis.
 Heidekker, Arne A., Minneapolis.
 —Hill, Eleanor J., Minneapolis.
 Ivers, Martin U., Minneapolis.
 Jenson, J. Marius, Minneapolis.

Jenson, Charles A., Brighton.
 Jewell, Emory L., Pine Island.
 Johnson, William W., Bryson.
 Judd, Edward S., Rochester.
 Kittelson, Theodore, Canby.
 Koch, John C., Fergus Falls.
 Lamb, Harold, Sauk Centre.
 Larson, Frank E., Winthrop.
 Lewis, William W., S. Paul.
 Liedloff, Adolph G., Mankato.
 Linneman, Nicholas J., Brainerd.
 Lohrbauer, Ejner, Northwood, N. D.
 McCreery, Charles R., Northfield.
 McCreery, William B., Northfield.
 McDonald, Irving C., Buxton, N. D.
 Meyerding, Edward A., St. Paul.

Millett, Josiah L., Graceville.
 Norred, William A., Minneapolis.
 Olson, Olof A., Dassel.
 O'Malley, William P.
 Peabody, Percy D., Webster, S. D.
 Schmidt, Walter R., Rochester.
 Seashore, David E., Pilot Mound, Ia.
 Seashore, Gilbert, Pilot Mound, Ia.
 Shaleen, Arthur W., Lindstrom.
 Stewart, Malcolm A., Flora, N. D.
 Thelen, William P., Stillwater.
 Thoraldsen, Torfin, Minneapolis.
 Vinje, Syver, Dalton.
 Vistaunet, Peter L., Fargo.
 Wilcox, Van H., Spokane, Wash.
 Wolner, Oscar H., St. Paul.

THIRD YEAR, 76.

Abbott, Claude V., Upton.
 Anderson, William S., Houston.
 Axilrod, David L., Cumberland, Wis.
 Baillee, William F., Barnesville.
 Bevans, Theodore F., St. Paul.
 Bockman, Michael, Minneapolis.
 Braasch, William F., Minneapolis.
 Butler, John Jr., Minneapolis.
 Call, Alfred M., Knox, N. D.
 Campbell, Eugene P., St. Paul.
 Catlin, John J., Delano.
 Chilton, Leo W., Fargo, N. D.
 Clark, Robert, Elysian.
 Coon, William F., Eau Claire, Wis.
 Coulter, Herbert, Ioamosa, Cal.
 Davis, Frank W., Taopi.
 Deslauriers, August A., St. Paul.
 Ellis, Burton.
 Fitzgerald, Don F., Minneapolis.
 Fowler, Paul H., Rochester.
 French, Ernest A., Plainview.
 —Fullerton, Ellen, Minneapolis.
 Gray, Clyde, Minneapolis.
 Green, Eugene K., Brooklin Center.
 Hagaman, George K., No. St. Paul.
 —Harden, Kate C., Minneapolis.
 Hart, Alfred B., Minneapolis.
 —Hebard, Sue, Mondovi, Wis.
 Higgins, John H., Minneapolis.
 Hovde, Anders G., Kenyon.
 Hubbard, Frederick G., St. Paul.
 Irvine, Harry G., Minneapolis.
 Jensen, James C., Spring Grove.
 Johnson, Anders E., Minneapolis.
 Juliar, Richard O., St. Claire.
 Kaess, Andrew J., New Ulm.
 Klove, Lewis, Dunbar, Ia.
 Lenfest, John W., Anoka.

Limburg, Albert M., Hunter, N. D.
 —Lindstrom, Josephine, Oberon, N. D.
 Lupton, Ernest A., Minneapolis.
 Lyman, Fred V., Caledonia.
 McDonnell, William N., Detroit.
 Magnusson, Herman E., Stark.
 Makinson, Herbert A., Cedarville.
 Mee, Patrick, Gaylord.
 Melby, Benedik, Merrillon, Wis.
 Munns, John F., Minneapolis.
 Newgord, Julius G., Minneapolis.
 Nicholson, Joseph, Strout.
 Nickerson, Bernard S., Minneapolis.
 Noth, Henry W., Minneapolis.
 Old, Herbert W., St. Paul.
 Pettit, Charles W., Preston.
 Phelan, Richard J., Lake Mills, Ia.
 Rice, George D., Adrian.
 Robitshek, Emil C., Minneapolis.
 Rollefson, Carl, Granite Falls;
 Rowe, Olin W., Benton Harbor, Mich.
 Russell, Clarence W., Augusta, Wis.
 Schacht, Frederick E., Elizabeth.
 Schalaben, Henry O., Madelia.
 Schneider, John P., Rollingstone.
 Schuldt, Fred C., Lakefield.
 Shellman, John L., Fergus Falls.
 Staley, John C., Bismarck, N. D.
 Stephenson, Robert B., Minneapolis.
 Sterner, Otto.
 Stimpson, Edward W., Newport, Ore.
 Tilderquist, David L., Vasa.
 Todd Gilbert D., Minneapolis.
 Voges, Adolph, St. Paul.
 Wethall, Anton G., Stoughton, Wis.
 Whipple, Clarence O., Rochester.
 Wiger, Nicholas, River Falls, Wis.
 —Wilkinson, Stella L.

SECOND YEAR, 83.

- Anderson, Arnt Gruntvig, Minneapolis.
 Anderson, Walmer, Minneapolis.
 Belden, George, Spokane, Wash.
 Biederman, Jacob (Special), Stillwater.
 Bigelow, Chas. Edward, Dodge Center.
 —Bird, Amy, Osakis.
 Birnberg, Tobias, St. Paul.
 Blais, Charles, Minneapolis.
 Boeckman, Egil, St. Paul.
 Brand, Wm. Algernon, Big Stone City, S. D.
 Campbell, Lorne Alexander, Waka, Ont.
 Campbell, Robert Wilson, Tracy.
 Churchill, James P., Minneapolis.
 Clarkson, Paul, Duluth.
 Clements, Stanley, Faribault.
 Coffin, Samuel David, Lyndale.
 Coria, Leon, Minneapolis.
 Costello, Thos. James, Graceville.
 Crosette, George Dart, Minneapolis.
 Dittman, George Claude, St. Paul.
 Dix, George Edwin, Canby.
 Dougherty, Edwin B., Duluth.
 Dougherty, Louis E., Duluth.
 Dunn, John T., Waseca.
 Emmerson, William S., Ontario.
 Epley, Otis Hoyt, New Richmond, Wis.
 Freeburg, Harry Milton, Charles City, Ia.
 Freeman, Chas. Doney, St. Paul.
 Frost, Wm. Stuart (Special), Willmar.
 Gaard, Rasmus, Roland, Ia.
 Gallagher, Patrick Joseph, Graceville.
 Gallup, Glen Dean, Hudson, Wis.
 Gates, C. Edson, Rochester.
 Gowenlock, Harry Joseph, Barnesville.
 Gunz, Abe Nathan, Austin.
 Higgins, Irving Wilbur, Hutchinson.
 Hoffman, Walter Frederick, Minneapolis.
 Hoffman, William Louis, Sioux Falls, S. D.
 Hoidale, Andrew, Dawson.
 Humiston, Ray, Worthington.
 Hutchinson, Henry John, High Rock,
 Lynn, Mass.
 Hynes, John E., Winnebago City.
- Johnson, Hans, Willmar.
 Johnson, Gunlauger Frederick,
 Grand Forks, N. D.
 Kearney, Percy F., Janesville, Wis.
 Kelly, Thomas Colvin, Duluth.
 Kiefer, Michael A. (Special), Sleepy Eye.
 Klemer, Carl Arthur, Faribault.
 Knutson, Ole, Little Coff.
 Koren, Harold, Minneapolis.
 Kuth, Joseph Robert, Minneapolis.
 Lebowsky, Joseph A., Minneapolis.
 Lundmark, Lambert, Cumberland, Wis.
 McKibben, Harry E.
 Mattson, John Albert, Dassel.
 Maurer, Edward L., St. Paul.
 Movius, Arthur J., Lidgerwood, S. D.
 Mueller, Geo. F., La Crosse, Wis.
 Nyquist, Jacob Erick, Hopkins.
 Olander, Edwin E., Minneapolis.
 Olson, George, Minneapolis.
 Pratt, Burton Atwood, Minneapolis.
 Pratt, Chelsea Carroll.
 Preisinger, Jos. Wolfgang, New Ulm.
 Ransom, Edward Madison, Minneapolis.
 Reynolds, Jos. S., New Hampton, Ia.
 Ribble, George R. (Special), St. Peter.
 Richards, William G., St. Paul.
 Robbins, Ray Palmer, Sauk Center.
 Rosen, Samuel, Minneapolis.
 Ross, Levi G., Janesville, Wis.
 Scherer, Carl A., New Ulm.
 Schulze, Albert Gustav, Duluth.
 Schutt, John P., Minneapolis.
 Tebbitt, Robert Lancelot, Estherville, Ia.
 Thomas, George E., St. Paul.
 Thomas, Arthur, Minneapolis.
 Titus, William S., Tracey.
 Wallace, Charles, Jas., Iola, Wis.
 Webster, Albert Martin, Minneapolis.
 Wheeler, Frederick L. (Special), Minneapolis.
 Williams, Stephen E., River Falls, Wis.
 Willson, Hugh S., Bathgate, N. D.

FIRST YEAR, 136.

- Alley, Albert G., Buffalo.
 Alexander, Charles J., Minneapolis.
 Anderson, Andrew O., Ossian, Ia.
 Argue, Hiram S., Bathgate, N. D.
 Arneson, Arne O., Beaver Creek.
 Aronsohn, David M., St. Paul.
 Arzt, Phillip G., St. Paul.
 Asbjornson, John G., Grand Forks, N. D.
 Ashley, Paul L., St. Cloud.
 Aspelund, Joseph, Mondovi, Wis.
- Austin, Wilford J., Milbank, N. D.
 Barney, Harry C., Mankato.
 Bartlett, Clayton E., Wycoff.
 Benoit, Frank T., Crookston.
 Benson, Oscar T., Appleton.
 Berg, Sigurd A., Granite Falls.
 Bessessen, William A., Albert Lea.
 Blakely, Clement C., Neenah, Wis.
 Bond, Earl D., St. Paul.
 Brandt, Albert M., Forest City.

- Branton, Berton J., Minneapolis.
 Brauer, Julius J., Minneapolis.
 Breda, William G., Minneapolis.
 Brigman, Frank T., St. Cloud.
 Brown, Paul F., Pipestone.
 Brush, Fred H., Amboy.
 Bryant, Oliver R., Minneapolis.
 Bryant, Fern T., Rochester.
 Burgan, Hoyt P., Milbank, S. D.
 Burns, Robert N., St. Paul.
 Campbell, Daniel R., St. Paul.
 Campbell, Otho H., Litchfield.
 Canfield, Harry E., St. Charles.
 Castle, Harry E., Dewey.
 Chambers, Wilson C., Owatonna.
 Chase, Frank E., Greeley, Ia.
 Chesley, Albert J., Minneapolis.
 Conley, George T., St. Paul.
 Collins, Arthur N., Minneapolis.
 —Colby, Gertrude K., Minneapolis.
 Conway, Steven V., Graceville.
 Corl, John A., Minneapolis.
 Dyar, Burt A., St. Charles.
 —Demmon, Alice E., Minneapolis.
 Durand, Jay I., Crookston.
 Fields, Perry A., Minneapolis.
 —Foss, Elizabeth, Minneapolis.
 Fosseen, Irving O., Minneapolis.
 Franzen, Herman G., Minneapolis.
 Frazier, George W., Wheaton.
 Freeman, George H., Hector.
 Gans, Edward M., St. Cloud.
 Gauger, Edward, St. Paul.
 —Gerrish, Judith A., St. Charles.
 Goehrs, Henry, Minneapolis.
 —Gray, Catherine, St. Paul.
 Greaves, Jay J., Glencoe.
 —Griffin, Mariam E., St. Paul.
 Grove, Martin, Plainview.
 Hammerel, Ambrose, Minneapolis.
 Haney, Claude L., Minneapolis.
 —Harris, Sally P., Minneapolis.
 Haugen, Gilbert, Maynard.
 Helland, John W., Minneapolis.
 Hendrickson, John F., Montevideo.
 Hiebert, Sohn P., Mountain Lake.
 Holton, Vincent, Elgin.
 Hoyt, John E., Hoyt, Ia.
 Jacobson, Johannes C., Spicer.
 Jacobson, Leonard H., Luverne.
 James, Ralph C., Mankato.
 Jensen, Carl W., Kasson.
 Johnson, John A., Minneapolis.
 Johnson, Martin A., Duluth.
 Johnson, Neliis J., Mabel.
 Johnson, Nimrod A., Winthrop.
 Johnson, Oscar V., Carver.
 Johnson, Thorwald R., Hampton, Ia.
 Kelly, Aris V., Minneapolis.
 Kelly, Severin M., Madelia.
 Kibbe, Orel A., Hampton, Ia.
 Klein, Henry N., St. Paul.
 Kranz, Martin, Lake Crystal.
 Kuhlmann, August, Melrose.
 Larson, Leonard A., Minneapolis.
 Larson, Oscar J., Minneapolis.
 Ludemann, Alfred H., Buffalo.
 Lynde, Roy, Ellendale, N. D.
 McCarthy, Richard I., St. Paul.
 Maschger, Albert P., St. Paul.
 Mathews, Gustav A., Lester Prairie.
 Mathieu, Albert L., Faribault.
 Mathews, Abner J., Ortonville.
 Metcalf, James N., Minneapolis.
 Meyer, Atte L., Minneapolis.
 Moir, William W., Minneapolis.
 Morrill, Robert, Byron.
 Nicholson, Elmer, Strout.
 Newton, Alexander E., Bangor, Wis.
 O'Brien, Henry B., St. Paul.
 O'Neill, Frank W., Minneapolis.
 Parsons, George E., Elk River.
 Pearce, Nay O., Duluth.
 Peterson, Claus L., Cokato.
 Porter, Oliver M., Willmar.
 Ramaley, Louis, St. Paul.
 Rice, Clarence P., Appleton.
 —Riley, Mrs. Dora P., Minneapolis.
 Richmond, Charles D., Windom.
 Rogers, James L., Minneapolis.
 Rothschild, Harold J., St. Paul.
 Rousseau, Victor, French Lake.
 Seaburg, Simon P., Olivia.
 Seliskar, James, St. Cloud.
 —Simmons, Echo, Minneapolis.
 —Slack, Marie L., St. Paul.
 Smith, Arthur E., Minneapolis.
 Sogge, Ludwig L., Jackson.
 Thauwald, Charles C., St. Paul.
 Thompson, Albert, Sacred Heart.
 Tibbitts, Chester H., Duluth.
 Trutna, Thomas J., Silver Lake.
 Tryon, Victor W., Minneapolis.
 Tuohy, Edward L., Chatsfield.
 Van de Erve, Hubert, Minneapolis.
 Walter, Guy F., Minneapolis.
 —Watson, Martha E., Utica.
 Weishaar, Charles H., Osseo.
 Weyrena, Joseph R., St. Nicholas.
 Whitney, Phillip L., Clark, S. D.
 Will, Will W., Medo.
 Witham, Carl A., Rock Elm.
 Zanner, Frank M., Omaha, Neb.
 Zimmerman, Albert F., St. Paul.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.

FOURTH YEAR CLASS—3.

Hall, Earl Lester, Eau Claire, Wis. Warner, Eugene Frederick, St. Paul.
 Rogers, Frederick Drake, St. Paul.

THIRD YEAR CLASS—7

Hawson, Charles Arthur, Minneapolis. Riley, Percy E., Eau Claire, Wis.
 Holmes, Charles Franklin, Aberdeen, S. D. Schmidt, Gottfried, B. S., St. Paul.
 Newkirk, Harris Dana, B. S., Minneapolis. Whittemore, J. Gooch, Glenwood.
 Page, George Edgar, B. S., Anoka.

SECOND YEAR CLASS—3.

Ballard, James Allen, St. Paul. Wilkowski, Conrad W., Morristown.
 —MacKeen, Ida H., Minneapolis.

FIRST YEAR CLASS—7.

Barrows, Harry C., Minneapolis. Lowe, Roy C., Winnebago City.
 Cole, Herbert Phalon, A. B., Fergus Falls. Tigue, Francis H., Coon Creek.
 Jordan, Michael L., Minneapolis. Waller, Joseph D., Minneapolis.
 King, Herbert V., Minneapolis.

COLLEGE OF DENTISTRY.

GRADUATES—CLASS 1901—31.

Ball, Wm. Harrison.	Oison, Adolf.
Brodeen, Albin.	Osterberg, Alfred.
Brownlee, Wilbur James.	Owens, John Evans.
Child, Harry Burr.	Pepper, Frederick Wm.
Cox, Norman J.	Rhame, Walter Stevens.
Creelman, Ernest Everett.	Sargent, Will Ernest.
Dahlgren, Bror Eric.	Smith, Ai Biley.
Doheny, Edward.	Stoudt, Frank Lawrence.
Frodeen, Henry Emanuel.	Sweet, Cyril Fairman.
Holmberg, John Louis.	Thiebaud, James Earl.
Holmgren, Carl Johan.	*Thompson, Thomas L.
Jargo, Adam Boorman.	Thorsen, Adolph Theodore.
Johnson, Martin Calvin.	Woehler, William Winfred.
Jaehning, Herman Schmal.	Works, William Joseph.
Moody, Adolf.	Yates, Cecil Fred.
Nelson, Orrin Chauncy.	

*Died July 20, 1901.

THIRD YEAR CLASS—33.

Allen, Arthur Barrett, Grafton, Ill.	Fish, Lawrence James, Minneapolis.
Bacon, Dexter Sterling, Cannon Falls.	Gunderson, Julius Lavine, Kenyon.
Bettschen, William Farnsworth, Berlin.	Hickman, Carl Edward, Minneapolis.
Beede, Thad Sheridan, Minneapolis.	Johnson, Nelson Lionel, Renville.
Bolstad, Ole, Minneapolis.	Jorgens, Carl Sophus, Minneapolis.
Caine, William Allen, Minneapolis.	Kalther, Eugene William, Lake Fremont.
Carter, Cyrus Joseph, Minneapolis.	Lindsley, William Sherman, Mankato.
Crandall, Charles Ray, Etter.	Meyer, Fred Sophus, Minneapolis.

Miller, Daniel Ralph, Minneapolis.
 Moorhouse, Franklin Elmer, Minneapolis.
 Oberg, Alfred Tion, St. Paul.
 Palmer, Walter Norman, Lisbon, N. D.
 Peterson, Plymouth Oscar, Minneapolis.
 Russell, Aubrey Herbert, Anoka.
 Sandy, Benjamin Arthur, Minneapolis.
 Schacht, John, Minneapolis.
 Seaquist, William Peter, Mankato.

Smith, George Dwight, Minneapolis.
 Smith, Julius Waldo, Austin.
 Tift, J. Floyd, Hutchinson.
 Trondson, Alexander Samuel,
 Black River Falls, Wis.
 Tuck, Lewis Edward, Minneapolis.
 Turner, Edward Warden, Minneapolis.
 Vanstrum, Albin R., Minneapolis.
 Wanous, Edwin Frank, Black Duck.

SECOND YEAR CLASS—35.

Ahlstrom, Joseph Theodore, St. Peter.
 *Amos, Francis Philip, Alma Center, Wis.
 Bosel, Albert Christian, Henderson.
 Burns, Jay Hugh, Stewart.
 Cain, James Robert, West Concord.
 Cole, Claude Lynn, Fergus Falls.
 Conley, Samuel Lewis, Cannon Falls.
 Cook, Michael Francis, Faribault.
 Crane, Emory Saxe, Minneapolis.
 Davies, Norman Llewelyn, Minneapolis.
 Day, Judson Leroy, Clinton Falls.
 Frankoviz, Frank Anton, Fergus Falls.
 Gholz, Lewis Ralph, Roscoe.
 Goodspeed, Henry Erwin, New Richland.
 Hagaman, Clarence Augustus, N. St. Paul.
 Hektner, Hans Christian, Mooreton, N. D.
 Hourn, George Edwin, Minneapolis.
 Huestis, Walter Clyde, Minneapolis.

*First Semester.

Hull, Isaac Stephenson, St. Paul.
 Kuncke, Gustavus Adolphus, Henderson.
 Lasby, William Frederick, Northfield.
 Pattison, George Jay, Herman.
 Peterson, Ernest Francis, Minneapolis.
 Pike, Jay Nelson, Lake City.
 Prendergast, Frank, St. Paul.
 mith, Clayton Mills, Minneapolis.
 Sparrow, Cecil Chester, Ortonville.
 Spring, William John, Madison.
 Spurr, (M. D.) Stephen Howard, Minneapolis.
 Trench, James Francis, Dennison.
 Werring, Oscar Sidney, Sleepy Eye.
 Whitcomb, Harold Warren, Rollis.
 Williams, George Davis, Willmar.
 Wood, Orlando Bigelow, Blue Earth.
 Yaeger, Frederick Spencer, Helena, Mont.

FIRST YEAR CLASS—29.

Bell, Charles Ulysses, Cedar Mills.
 Bennett, David William, St. Peter.
 Braafladt, Theodore Olaf, Belview.
 Carr, Alvin Eugene, Minneapolis.
 Cox, Arthur Henry, Wasioja.
 Cullum, Walter Cornwall, St. Paul.
 Freeburg, Jay Monroe, Charles City, Ia.
 Froelich, George Henry, Winnebago City.
 Green, Robert O., Florence.
 Grey, William Alexander, Cadott, Wis.
 Hall, Neal C., Minneapolis.
 Hughes, Archibald C., Waseca.
 Johnson, Leonard James, Cedar Mills.
 Kendall, Earnest Clayton, Waseca.
 Lefek, William Joseph, Ellendale, N. D.

Lillehei, Axel Olaf, Luverne.
 McNeil, Walter Hill, Alexandria.
 McRae, Duncan Adrian, Sleepy Eye.
 Mihleis, Edwin William George,
 Ellsworth, Wis.
 Montelius, George Alfred, Sweden.
 Nelson, Albert Carlos, Litchfield.
 Rice, Arthur Nelson, Adrian.
 Schacht, Joseph August, Minneapolis.
 Steadman, Guy Benjamin, Anoka.
 Strong, William Henry, Graceville.
 Sture, Walmer Turner, Center City.
 Swenson, Carl August, Ubet P. O., Wis.
 Waist, Charles Edgar, Minneapolis.
 Washburn, Reuben Jesse, Monticello.

SPECIAL STUDENTS, 10.

Amundson, C. LeDue, St. Peter.
 Batterick, C. Aubrey, Rushford.
 Billings, Wall M., Minneapolis.
 Fletcher, Franklin F., Red Lake Falls.
 Foster, Albert R., Winona.

Kennedy, J. Duncan, Tracy.
 Lafans, Walter S., Minneapolis.
 McNerthney, Michael J., Red Lake.
 Plmer, Ralph G., LeRoy.
 Smith, Ai Biley, Minneapolis.

COLLEGE OF PHARMACY.

GRADUATE CLASS, 1.

O'Connell, Charles J., New Rockford, S. D.

SENIOR CLASS, 26.

Anderson, Oscar C. J., Kerkhoven.
—Aubrecht, Anna F., Minneapolis.
Bollman, Frank Frederick, Harmony.
Cleveland, Zina R., Northfield.
Dreis, Walter Frank, St. Paul.
Erkel, Arthur George, Minneapolis.
Fuller, Paul C., Rochester.
—Harr, Cecile Inez, Belmont, Iowa.
Hawley, Herbert C., Walhalla, N. D.
Irwin, George Wilson, Minneapolis.
Jamieson, Roy R., Drayton, N. D.
Kellam, Alex S., Heron Lake.
Kuhn, Arthur, Red Wing.

Jewell, Scott W., Pine Island.
Nielsen, Max Nels, Denmark.
Norse, Herbert N., Sauk Centre.
Netzer, Edward Franklin, Crookston.
Peterson, Harvie Orie, Colfax, N. D.
Porter, Oliver Milton, Willmar.
Rood, Adolph F., Minneapolis.
—Rubeck, Belle, Elk River.
Rutherford, Charles Franklin, Stillwater.
Tilson, Frank H., Duluth.
Torgeson, Thomas, Sombre, Iowa.
Whittemore, Lee A., Elk River.
Zander, Charles H., Rochester.

JUNIOR CLASS, 35.

—Armitage, Anna D., Minneapolis.
—Byrnes, Helen, Minneapolis.
—Campbell, Lulu, Minneapolis.
—Carroll, Laura M., Fargo, N. D.
—Clune, Phoebe M., Minneapolis.
Carlson, Albin C., Willmar.
—Dolenty, Emma C., St. Paul.
Flemming, Herman F., Tracy.
Gifford, O. Bailey, Canton, S. D.
Gash, Thomas C., Wadena.
Graves, Claud W., Warsaw
Harms, Fred J., Norwood.
Hartmann, Bert F., Alma Centre, Wis.
Holton, Vincent, Elgin.
Hubbard, Henry F., Rochester.
Kelly, John V., St. Paul.
Kelly, Paul H., St. Paul.
Kohlhoff, Emil C., Hendrick.

—Mober, Nellie V., Minneapolis.
—Muedekling, Galena, Minneapolis.
Milne, George W., Minneapolis.
McCormick, Leslie J., Tracy.
Passer, W. F., New Paynesville.
Richard, Henry J., Little Falls.
Shaffer, George E., Elkton, S. D.
Skartum, Paul G., Lake Benton.
Sladek, Achilles Lp., St. Paul.
Swendseid, Ralph Eugene, Peterborough
N. D.
Thorp, Clarence McK., Hancock.
—Todd, Alice M., Minneapolis.
Warren, Edward F., Little Falls.
Weibler, Peter H., Belle Plaine.
Wiley, Ross Arthur, Tracy.
Vermilyea, Avery J., Dexter.
Vaughn, Patrick H., Morris.

SUMMER SCHOOL.

UNIVERSITY SECTION, 300.

- Ackermann, Adolphus, New Ulm.
 Adams, Arthur T., Sacred Heart.
 —Alexander, Ida Mary, Carver.
 —Anderson, Albertina Cecilia, Starbuck.
 Anderson, George N., Bellingham.
 —Anderson, Medora Christina, Maple Plain.
 —Anderson, Nettie, St. James.
 —Andrews, Dolly Sarah, Minneapolis.
 —ap Roberts, Elisabeth, Wilder.
 —Arneson, Anna, Cologne.
 Arp, Julius B., Breckenridge.
 —Atwood, Agnes Lowe, St. Paul.
 —Avery, Bertha C., Minneapolis.
 Aygarn, Edwin, Choice.
 Aygarn, Magnus, Choice.
 —Baker, Helen May, Brownton.
 —Baillif, Matilda Victorine, Osakis.
 Ball, William R., Minneapolis.
 —Ballou, Lois Bates, Lake Preston, S. D.
 Barnard, Robert T., Minneapolis.
 —Bassford, Adelia M., St. Paul.
 —Battelle, Violet P., St. Paul.
 Beaven, Arthur H., Sanborn, N. D.
 —Behrens, Kate W., Red Wing.
 —Bell, Mary E., Minneapolis.
 —Biddle, Ethel G., Kerkhoven.
 Bolstad, Alfred C., Dawson.
 —Bomberger, Edna O., Minneapolis.
 —Bonham, Mary D., Zumbrota.
 —Boyd, Edith Houck, Greenleaf.
 —Briggs, Jennie May, Minneapolis.
 —Brown, Eliza Kay, Minneapolis.
 Brown, William A., Glencoe.
 —Bruce, Ellen Mary, Minneapolis.
 —Bucknam, Ella White, Minneapolis.
 —Buell, Mary Emma, Minneapolis.
 —Bullock, Carrie, Crookston.
 —Burns, Ellen, St. Paul.
 —Burns, Maria, St. Paul.
 —Cadwell, Edith I., Le Sueur.
 —Cadwell, Lucy, Hastings.
 —Carter, Mary W., Minneapolis.
 —Case, Cleona Louise, Minneapolis.
 Casey, John M., Elk River.
 —Casey, Jennie M., Elk River.
 —Cashman, Nellie M., Owatonna.
 —Cashman, Sadie, Minneapolis.
 —Chapman, Anna, St. Paul.
 —Chapman, Elizabeth K., Minneapolis.
 —Choate, Antoinette, Minneapolis.
 Clevon, Nels A. N., Wist, S. D.
 Clinch, Anthony B., Dayton.
 —Cohen, Lillian, Minneapolis.
 —Cole, Ruth Law, Minneapolis.
 —Colligan, Laura E., Stillwater.
 —Cook, Myra Georga, Minneapolis.
 —Cook, Vinnie, Hannibal, Mo.
 —Cornish, Josephine, Vernon Center.
 —Cornish, Vesta M., Minneapolis.
 Cosgrove, Bertram M., Henry, S. D.
 —Cotton, Anna L., Fredericksburg, Ia.
 —Cox, Harriet M., Minneapolis.
 —Coy, Lizzie, Dubuque, Ia.
 —Cross, Clare A., Minneapolis.
 —Crowther, Elizabeth Dec., Minneapolis.
 —Cummings, Ida Grace, Glencoe.
 —Daly, Alice L., St. Paul.
 Dankwardt, Joachim M., Lake City.
 —Daum, Augusta, Minneapolis.
 —Davis, Mary F., Glencoe.
 Dickinson, Burr A., Lakeland.
 —Diesem, Louise K., St. Paul.
 Dime, Samuel E., Grove City.
 —Diamond, Clara M., Minneapolis.
 Dobbyn, Frank W., Atwater.
 —Donaldson, Eleanor, Minneapolis.
 —Donaldson, Mabel R., Tracy.
 Edmunds, Herbert, Drayton, N. D.
 —Ferguson, Mary G., Minneapolis.
 Firkins, Chester, Minneapolis.
 —Fish, Florence, Minneapolis.
 —Forbes, Mary F., Waseca.
 —Foss, Bertha G., Minneapolis.
 —Foss, Lota Alice, Minneapolis.
 —Fosseen, Mabelle H., Minneapolis.
 Foster, Guy A., Campbell.
 —Francis, Helena L., St. Paul.
 —Franklin, Laura G., Blue Earth.
 Frelin, Julius, Gaylord.
 —French, Alice W., Minneapolis.
 —Frye, Nora, Elk River.
 —Funk, Gertrude E., Minneapolis.
 —Gallagher, Mary A., St. Cloud.
 Gallaway, Lee, Minneapolis.
 —Garbett, Louise, Minneapolis.
 —Gibbs, Elsie C., Monticello.
 Gieschen, Claus, St. Paul.
 —Gillespie, Anna, Carlton.
 —Gillette, Alma, St. Paul.
 —Goodwin, Mina, Minneapolis.
 —Gould, Ellen T., Minneapolis.
 Goodrich, George D., Anoka.

- Goodrich, Florence E., Minneapolis.
- Griffin, Patrick J., Shakopee.
- Grosscap, Mabel E., St. Paul.
- Gurney, Elizabeth Keeler, St. Cloud.
- Haldeman, John E., Montevideo.
- Halvorson, Oscar, Two Harbors.
- Hamilton, Elizabeth H., Minneapolis.
- Hansen, Tillie K., Alden.
- Harn, Margaritta H., Minneapolis.
- Harrington, Mary M., Minneapolis.
- Harrington, Helen, Minneapolis.
- Hatch, Edwin S., Pipestone.
- Hauser, Jacob N., St. Paul.
- Hawes, Harriet M., Minneapolis.
- Hawk, Ella M., Redwood Falls.
- Heffner, Emma C., Minneapolis.
- Hellesen, Anne, Deer Park, Wis.
- Heneghan, Anna E., Herman.
- Higman, Nellie, Minneapolis.
- Hill, Helen G., St. Paul.
- Hitchcock, Agnes G., St. Paul.
- Hoagland, Althea M., Brookpark.
- Hoffman, Alberta, Charles City, Ia.
- Holmstedt, Victor E., Minneapolis.
- Holt, Charles M., Minneapolis.
- Holt, Daisy E., Minneapolis.
- Holt, Madeline B., Minneapolis.
- Hudec, Fannie, Silver Lake.
- Hughes, William Vance, Minneapolis.
- Huseid, Marie, Clinton.
- Hutchinson, Harriett Jane, Minneapolis.
- Ide, M. Alice, Minneapolis.
- Isaacs, Louis N., Blooming Prairie.
- Jacobson, Clara, Willow River.
- Jacobson, Katherine, St. Paul.
- Jahnke, Clara L., Dover.
- Jamieson, Gertrude E., Minneapolis.
- Jerome, Waldron M., Minneapolis.
- Johnson, Axel P., Minneapolis.
- Johnson, Antoinette W., Minneapolis.
- Johnson, Anna C., Minneapolis.
- Johnson, Gertie Mann, Preston.
- Johnston, Fannie, Minneapolis.
- Jones, Ammon V., Sparta.
- Jones, Elizabeth M., Minneapolis.
- Kantrud, Christian O., Elizabeth.
- Kelsey, Grace L., St. Paul.
- Kipp, Mary A., Minneapolis.
- Kipp, Mary, Minneapolis.
- Kreger, Alanson J., Minneapolis.
- Lambert, Agnes Jeanette, Minneapolis.
- Lambert, Edwin M., Young America.
- Larsen, Catherine Rowell, Minneapolis.
- Larson, John Frederick, So. Stillwater.
- Leonard, Frank Osborn, Jackson.
- Leubner, Bernhard O., Minneapolis.
- Lewis, Leona, Campbell, Cal.
- Lilly, Gene, Minneapolis.
- Lily, Mary, Jaesville.
- Lindmark, Theresa E., Rush City.
- Lindquist, Ida Pauline, Minneapolis.
- Lindsley, Pearl May, Minneapolis.
- Link, Lillian C., Marshall.
- Linkfield, Alice E., Minneapolis.
- Linwell, Susanna, Minneapolis.
- Livingston, Grace, Minneapolis.
- Lloyd, Hiram John, Lake Crystal.
- Lyon, Fannie M., St. Paul.
- McBee, Allan, Shakopee.
- McGillis, Annie, Minneapolis.
- McKay, Walter, St. Paul.
- McLaughlin, Anna, Minneapolis.
- McLaughlin, Elizabeth, Mapleton.
- McLaughlin, Unell Adelbert, Madelia.
- McMullen, Jennie May, Minneapolis.
- McPherson, Gertrude B., Stillwater.
- Maher, Minnie, Minneapolis.
- Mann, Hattie Elvida, Claremont.
- Mann, Josephine, St. Paul.
- Marlow, Kyle F., Morris.
- March, Mabel Henrietta, Olivia.
- Marsh, Olive Vincent, Minneapolis.
- Mathes, Elizabeth Helen, Minneapolis.
- Mattesen, Frank E., Eyota.
- May, Lillian, Minneapolis.
- Merrill, Nellie Louise, Minneapolis.
- Miller, Pearl C., Hamline.
- Moores, Alida Elvira, Buffalo.
- Meare, Edwin H., Big Lake.
- Morgan, Oregon, F., Elysian.
- Newcomb, Olive May, Minneapolis.
- Nickerson, Alice Maude, Elk River.
- Nisbit, Jane, Moorhead.
- Norling, Nels P., Glenwood.
- Nott, Lottie Jessie, Brownton.
- O'Brien, Frances P., St. Paul.
- O'Brien, Harriet, Minneapolis.
- Olberg, Clara Mable, Albert Lea.
- O'Leary, Annie M., St. Paul.
- Olsen, Sigurd, St. Ansgar, Ia.
- O'Neill, Mary Gertrude, Minneapolis.
- Parish, John Leonard, Pine City.
- Parshall, Dana H., Faribault.
- Payne, Dorothy Mae, Brownton.
- Peake, Ora O., Minneapolis.
- Pearce, John Henry, Minneapolis.
- Peck, Edith Lewis, Minneapolis.
- Penfound, Rena, West Superior, Wis.
- Pennington, Georgiana, Minneapolis.
- Peterson, Amanda A., Minneapolis.
- Petterson, Sophie, Princeton.
- Peyton, Theresa B., St. Paul.
- Phillips, Bertha L., Minneapolis.
- Plumb, Alice, Minneapolis.

- Porter, Gertrude, Dassel.
 Pratt, Martin Luther, Wood Luther.
 —Prindle, Florence T., Lanesboro.
 Pringle, William Allen, Lidgerwood, N. D.
 —Pulham, May, Wykoff.
 —Purdy, Lucy M., St. Paul.
 —Quinn, Mary Patryca, Owatonna.
 —Race, May, Faulkton, S. D.
 —Ralph, Olive M., Minneapolis.
 Randall, John Ralph, Minneapolis.
 —Rankin, Margaret, Northfield.
 Ran, Albert E., Wykoff.
 —Raymond, Lulu J., Rhineland, Wis.
 Reichmuth, Frederic C., St. Paul.
 —Reid, Eva Christie, Minneapolis.
 —Requier, Zulma, St. Paul.
 Reynolds, Jennie S., Minneapolis.
 —Rich, Lucy D., St. Paul.
 Richardson, James Willard, New Auburn.
 Rickard, Truman Elwell, Minneapolis.
 —Rink, Kuno, St. Paul.
 —Roundy, Agnes Mabel, Wabasha.
 Sage, Charles W., Minneapolis.
 —Sardeson, Eva R., Minneapolis.
 —Sawyer, Marian Lucy, Viola.
 —Schibursky, Louise Hildegard, Preston.
 —Schirmer, Helen, Minneapolis.
 Selvig, Conrad G., Rushford.
 —Sevatson, Carrie, Windom.
 Sigmundstad, Richard, Frost.
 —Sister, M. Blanche, Winona.
 —Sister, M. Florentine, Owatonna.
 —Sister, M. Gertrude, Winona.
 —Sister, Hyacinth, St. Paul.
 —Sjoberg, Martha H., Duluth.
 Skinney, John Wentworth, Minneapolis.
 —Sliney, Elizabeth J., St. Paul.
 Slye, Ralph, White Bear.
 —Smith, Ada E., Algona, Iowa.
 —Smith, Edna L., Minneapolis.
 —Snyder, Louise Evelyn, Minneapolis.
 —Sornsen, Martha, A., Minneapolis.
 —Spees, Edith, Minneapolis.
 —Steele, Edith C., Princeton, Ill.
 —Steele, Katherine D., Princeton, Ill.
 Stene, A. Edward, Ashby.
 —Stephens, Stella M., Minneapolis.
 Stevens, Fred Harding, Minneapolis.
 —Stevenson, Martha Cornelia, Minneapolis.
 —Stewart, Anna B., Minneapolis.
 Strang, David M., Alexandria.
 —Stromberg, Ida E., Hector.
 —Struble, Clara, Minneapolis.
 —Swanson, Mabel M., Cottage Grove.
 —Swanson, R. Esther, Cottage Grove.
 —Sweeney, Kate G., Virginia.
 —Taber, Mary A., Mabel.
 Tambling, William Leicester, Fergus Falls.
 Taylor, Fred Joe, Merriam Park,
 —Taylor, Sara Vore, So. Omaha, Neb.
 —Thelen, Lucy A., Stillwater.
 —Thelen, Rose L., Stillwater.
 —Thompson, Claire V., Cottage Grove.
 —Thomson, Eva F., St. Paul.
 Titrud, Ole L., Cokato.
 —Tuseth, Jeannette Lenora, Osseo.
 —Vaughan, Jessie Mabel, New Auburn.
 —Velikanje, Johanna, Minneapolis.
 —Vetting, Ida F., Rhineland, Wis.
 Wallace, B. A., Mayville, N. D.
 —Walters, Henrietta, Merrill, Wis.
 —Webb, Leuella Orange, Hamline.
 Webster, George Burbank, Minneapolis.
 —Westfall, Adah E., Redwood Falls.
 —Wheeler, Clara Kingwell, Minneapolis.
 —Whiting, Winona, Rhineland, Wis.
 —Wilcox, Marion E., Minneapolis.
 Williams, Friend L., Watertown.
 —Wilson, Mary Russell, Minneapolis.
 —Wood, Isabel, Waseca.
 —Woodruff, Harriet Isabella, Minneapolis.
 —Woodworth, Eva Wheeler, Minneapolis.
 —Woodworth, Ida B., Minneapolis.
 —Wyman, Kate, Northfield.

Summary of Students.

THE GRADUATE DEPARTMENT.

	Men	Women	Total
Candidates for the degree of doctor of philosophy.....	35	6	41
doctor of civil law.....	11		11
master of laws.....	12	1	13
master of arts.....	59	23	82
master of agriculture.....	1		1
Others doing grauate work.....	9	19	28
Total.....	127	49	176

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

	Men	Women	Total
<i>Senior class</i>	86	95	181
<i>Junior class</i>	80	107	187
<i>Sophomore class</i>	133	130	263
<i>Freshman class</i>	188	191	379
Unclassed students.....	36	112	148
Total.....	523	635	1158

SCHOOL OF CHEMISTRY.

	Men	Women	Total
Senior class.....	3		3
Junior class.....	2		2
Sophomore class.....	5		5
Freshman class.....	11		11
Total.....	21		21

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS.

	Men	Women	Total	
<i>Senior class</i>	civil engineering section.....	10	10	
	mechanical engineering section.....	11	11	
	electrical engineering section.....	6	6	
	science and technology.....	1	1	28
<i>Junior class</i>	civil engineering section.....	16	16	
	mechanical engineering section.....	5	5	
	electrical engineering section.....	14	14	
<i>Sophomore class</i>	science and technology.....	2	2	37
	civil engineering section.....	31	1	32
	mechanical engineering section.....	32		32
<i>Freshman class</i>	mechanical engineering section.....	30		94
	all sections.....	132		132
	art course.....	1	23	24
Unclassed students.....	30		30	
Total.....	321	24	345	

THE SCHOOL OF MINES

	Men	Women	Total	
Senior class.....	4		4	
Junior class.....	17		17	
Sophomore class.....	29		29	
Freshman class.....	59		59	
Total.....	109		109	107

THE DEPARTMENT OF AGRICULTURE.

	Men	Women	Total	
College of agriculture graduate students.....	1		1	
senior class.....	2		2	
junior class.....	3		3	
sophomore class.....	7	2	9	22
freshman class.....	7		7	
Intermediate course.....	4	5	9	9
	Men	Women	Total	
The school of agriculture class A.....	47	23	70	
class B.....	72	25	97	
class C.....	162	55	217	
preparatory class.....	42	14	56	440
the dairy school.....	114		114	114
unclassed students.....		1	1	1
short course for farmers.....	33		33	
Total.....	494	125	619	619

COLLEGE OF LA'W.

	Men	Women	Total	
Graduate students—for doctor of civil law.....	11		11	
for master of laws.....	12	1	13	
Senior class.....	119	1	120	
Middle class.....	131	3	134	
Junior class.....	225	1	226	
Total.....	498	6	504	503

THE DEPARTMENT OF MEDICINE.

THE COLLEGE OF MEDICINE AND SURGERY.

	Men	Women	Total	
Graduate students.....	1		1	
Senior class.....	63	3	66	
Junior class.....	71	5	76	
Sophomore class.....	82	1	83	
Freshman class.....	126	10	136	
Total.....	343	19	362	362

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.

Senior class.....	3		3	
Junior class.....	7		7	
Sophomore class.....	2	1	3	
Freshman class.....	7		7	
Total.....	19	1	20	20

Summary of Students.

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THE COLLEGE OF DENTISTRY.

Senior class.....	33		33
Junior class.....	35		35
Freshman class.....	29		29
Unclassed students.....	10		10
	<hr/>		<hr/>
Total.....	107		107
			<hr/>
			107

THE COLLEGE OF PHARMACY.

Graduate course.....	1		1
Senior class.....	23	3	26
Junior class.....	26	9	35
	<hr/>	<hr/>	<hr/>
Total.....	50	12	62
			<hr/>
			62

SUMMER SCHOOL FOR TEACHERS.

University section.....	77	223	300
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SUMMARY OF TOTALS.

	Men	Women	Total
Graduate students.....	127	49	176
The college of science, literature and the arts.....	544	635	1179
The college of engineering and the mechanic arts.....	321	24	345
The school of mines.....	109		109
Department of agriculture.....	494	125	619
The college of law.....	498	6	504
The department of medicine.....	519	32	551
The summer school—University section, less duplicates....	64	173	237
	<hr/>	<hr/>	<hr/>
Total.....	2676	1044	3720
Duplicates.....	62	2	64
	<hr/>	<hr/>	<hr/>
Total, excluding duplicates.....	2614	1042	3656

Appendix A.

ACCREDITED SCHOOLS.

The following is a list of the high schools, in the State of Minnesota accredited to the University of Minnesota:

Ada.	Glencoe.	Minneapolis—	St. James.
Adrian.	Glenwood.	Central.	St. Paul—
Aitkin.	Graceville.	East Side.	Central.
Albert Lea.	Grand Rapids.	North Side.	Cleveland.
Alexandria.	Granite Falls.	South Side.	Humboldt.
Anoka.	Hastings.	Montevideo.	Mechanic Arts.
Appleton.	Henderson.	Monticello.	St. Peter.
Austin.	Heron Lake.	Moorhead.	Sauk Center.
Barnesville.	Hutchinson.	Morris.	Shakopee.
Benson.	Jackson.	New Paynesville.	Slayton.
Blue Earth City.	Janesville.	New Ulm.	Sleepy Eye.
Brainerd.	Kasson.	Northfield.	Springfield.
Caledonia.	Kenyon.	Ortonville.	Spring Valley.
Canby.	Lake City.	Owatonna.	Stewartville.
Cannon Falls.	Lake Crystal.	Park Rapids.	Stillwater.
Chatfield.	Lakefield.	Pine Island.	Tracy.
Cloquet.	Lanesboro.	Pipestone.	Wabasha.
Crookston.	Le Roy.	Plainview.	Wadena.
Dawson.	Le Sueur.	Preston.	Warren.
Delano.	Litchfield.	Princeton.	Waseca.
Detroit.	Little Falls.	Red Lake Falls.	Waterville.
Dodge Center.	Long Prairie.	Red Wing.	Wells.
Duluth.	Luverne.	Redwood Falls.	White Bear.
Elgin.	Madelia.	Renville.	Willmar.
Elk River.	Madison.	Rochester.	Windom.
Excelsior.	Mankato.	Rush City.	Winnebago.
Fairmont.	Mantorville.	Rushford.	Winona.
Faribault.	Mapleton.	St. Charles.	Worthington.
Farmington.	Marshall.	St. Cloud.	Zumbrota.
Fergus Falls.			

The following private schools are also accredited to the University:

Saint Mary's Hall, Fairbault,	Concordia College, Moorhead
Shattuck Military Academy, Fairbault.	Pillsbury Academy, Owatonna.
Stanley Hall, Minneapolis.	St. Joseph's Academy, St. Paul.
Minneapolis Academy, Minneapolis.	
Windom Institute, Montevideo.	St. Paul's College, St. Paul Park.

Appendix B.

AWARD OF PRIZES.

The Moses Marston Scholarship was awarded to Allen R. Benham.

The '89 Memorial Prize was awarded to George B. Otte, for a thesis entitled "The Sources of the Northwest Ordinance."

Gillette-Herzog Prizes.—First Prize—to Paul Iver Gunstad, for a thesis entitled "The Effect of Freezing on Concrete."

Second Prize—To Martin E. Anderson and S. Gerhard Reque, for a thesis entitled "Train Lighting by Electricity."

Third Prize—To Guy J. Houts and Jake Danner, for a "Re-design for Power for Chicago, Milwaukee and St. Paul Railway Shops."

The Shurmeier Prize was awarded to George Webb, for an essay upon "The Relation of the City to Political Problems."

The William Jennings Bryan Prize was not awarded.

The Albert Howard Scholarship was awarded to Clara E. Fanning.

The Pillsbury Dunwoody Prizes for 1922: First Prize—Thomas D. Schall.

Second Prize—John A. Layne.

Third Prize—James G. Steenson.

The Peavey Prizes: Debate—Freshman team, Messrs. Weiskoff, Joss, Devaney, won.

Oratory—George Ward, a sophomore, won first place.

The Burton Prize offered by the University Art Club was awarded to Charles W. Jerome.

H. W. WILSON SHORT STORY PRIZE CONTEST.

First Prize of \$50 was awarded to Mary Olcott for a story entitled "Jim Brown's Mother."

Second Prize of \$25 was awarded to Roy W. Allis, for a story entitled "In the Garb of the Gaul."

Appendix C.

THE GILFILLAN TRUST.

MINNEAPOLIS, Feb. 8th, 1901.

To the Board of Regents of the University of Minnesota—Gentlemen:

Your favorable consideration of the proposition hereinafter set forth in detail is hereby solicited:

Actuated by my own experience from early life, I have had in mind for some time the establishing of a fund in trust, the income from which might be used in aid of such deserving youths of our state as might be found struggling for an education beyond their own means of obtaining. As your board represents and is invested with the government of the chief educational institution of the state, it has occurred to me that you might with propriety be made the repository of such a trust and the agency for the suitable execution thereof, and the bestowal of the benefits to accrue therefrom. In case an enlargement of your powers is found to be necessary or desirable, that can be accomplished by enactment of the legislature now in session.

The fund proposed to be established will be for the present, the sum of fifty thousand dollars, to be conveyed to you by deed defining the purposes and conditions of the trust, the beneficiaries thereof and the basis upon which the benefactions shall be bestowed. The principal of such trust shall be designated "The Gilfillan Trust," and shall remain inviolate and kept invested in the same manner and by the same persons, or officers, as the permanent fund of the University. and so as to yield the best income therefrom.

The income of the said fund shall be subject to the use and disposal of the said Board of Regent for the educational purposes hereinbefore specified, either in the form of a gift or temporary loan as the said regents may deem best, the beneficiaries to be and to continue to be, within the following limitations, that is to say:

First—They must be youths of the state of Minnesota, without regard to sex.

Second—They must be and continue of unblemished moral character, and of temperate and industrious habits.

Third—They must be such as, by examination and trial, shall evince and maintain a taste, habit and aptitude for study.

Fourth—The aid herein provided may be bestowed upon students in any of the departments of the State University, or in schools preparatory thereto.

The forgoing provisions shall be strictly construed, and as to any student who shall fail to come, or shall cease to be, within the said conditions, as so construed, shall forfeit all claim to the benefits of such fund.

It will be seen that the spirit of this benefaction is to aid and encourage such as are worthy, susceptible and willing to help themselves; none other may share its benefits.

Deeming this the best gift in my power to the state in which my whole active life has been spent, and craving your early consideration and acceptance of the same, I remain,

Sincerely yours,

J. B. GILFILLAN.

The foregoing generous offer was accepted by the Board of Regents and the following regulations were adopted by the Regents to govern the administration of the income from the trust fund.

RULES FOR THE ADMINISTRATION OF THE INCOME.

RULE 1. The income derived from the fund shall be passed over, as it accrues, to the Treasurer of the University of Minnesota, and held by him as a separate fund, and not mingled with the other funds of the University, and shall be paid out by him on warrants drawn by authority of the Executive Committee of the Board of Regents.

RULE 2. The University accountant shall also open a separate account with the Gilfillan Trust, to which he shall credit all income received therefrom, and charge all disbursements from such income, so that this account shall at all times show the condition of the income fund.

RULE 3. The administration of the income from said Trust shall be in the hands of the Executive Committee of the Board of Regents, who are hereby given full power and authority in the premises, subject to these rules; but they may refer any matter to the Board for its action.

RULE 4. Allowances made to beneficiaries shall be payable out of the income of the fund only, and in case it shall fail for any cause, to meet the requirements upon it in any academic year, the amount actually available in such year shall be distributed to the beneficiaries *pro rata* to the amounts allowed them respectively, and in full satisfaction thereof, and in no case shall there be any legal liability upon the University for allowances made from such income fund.

RULE 5. The amount allowed to each beneficiary shall be fixed by the Executive Committee, and the time which it shall cover; but such amount shall not in any case exceed \$200 for an academic year, and the time of such allowance shall not exceed one academic year, but it may be renewed from time to time in the discretion of the Committee. In case of an allowance for a year one-half of it shall be paid at the end of each semester.

RULE 6. Only undergraduates who are studying in the courses leading to a degree shall be beneficiaries of the fund.

RULE 7. No student shall be or continue a beneficiary of the fund who is not in such pecuniary situation that the means for his education depends

wholly, or in part, upon the results of his own labor; nor unless he shall be and continue of unblemished moral character, and of temperate and industrious habits; nor unless he shall, by examination and trial, evince and maintain a taste, habit and aptitude for study; and the decision and action of the Executive Committee shall be final and conclusive upon these matters, and shall not be questioned anywhere, except by this Board; but in case of any violation of the rules of the University, or any misconduct charged against a beneficiary, he shall before action by the committee on such charges have opportunity to make his defence before it, or such authority as it may designate.

RULE 8. The benefactions shall be in the form of gifts or loans as the Executive Committee shall determine, and in case of a loan the beneficiary shall execute to the University his obligation in writing to repay the amounts advance him as soon as he shall become able, with interest at the rate of 5% per annum.

RULE 9. No allowance shall be made to an undergraduate upon an application made after his matriculation before the applicant has been a student in the University for one semester.

RULE 10. The masculine gender is used in these rules for brevity, but they shall apply equally to female students.

RULE 11. Applications for the benefit of the fund may first be informally made to the President of the University, who shall thereupon, if the condition of the fund shall be deemed to warrant it, forward to the applicant a copy of this and the preceding rules and of the blank application appended to this rule, which blank shall be filled up by the applicant with full answers to all the inquiries contained therein, signed by him, and returned to the President.

Appendix D.

COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

FACULTY COMMITTEES FOR 1902-03.

Enrollment: Professors Hutchinson, Anderson, Wilde, Nicholson, Bauer

Curriculum: Professors Moore, Brooks, Jones, West, Klaeber.

Graduate studies and degrees: Professors Brooks, Folwell, MacMillan
McClumpha, Jewett.

Program: Professors Clark, Hall, and Schlenker.

Students' work: Professors Downey, Leavenworth, McVey, Sigerfoos, Pike

Relations of the University to the public schools: Professors Kiehle, West,
Wilkin, Carlson, Benton.

Music and public lectures: Professors Frankforter, Schlenker, Smith.

Debate and oratory: Professors White, McDermott, Sanford, Schaper.

Athletics and military affairs: Professors Jones, Nachtrieb, Westbrook.

Student publications: Professors Anderson, Zeleny, Sidener.

Appendix E.

COLLEGE OF ENGINEERING AND THE MECHANIC ARTS.

FACULTY COMMITTEES FOR 1902-03.

Enrollment.—Professors Constant, Flather, Springer.

Curriculum.—Professors Eddy, Flather, Hoag, Jones, Shepardson.

Degrees.—Professors Flather, Shepardson, Hoag.

Library.—Professors Springer, Constant, Kavanaugh.

Military Affairs and Athletics.—Professors Hoag, Haynes, Nicholson.

Students' Work.—Professors Haynes, Kirchner, Hoag, Shepardson
Flather, Brooke.

Graduate Studies and Degrees.—Professor Eddy.

Program.—Professors Shepardson, Bass.

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 medicine, 246.
 pharmacy, 316.

- Courts, college of law, 228.
 Crown and bridge work, 307.
 Dairy husbandry, 178, 197.
 Dairy school, 205-207.
 Danish, 97.
 Deans of colleges, 8.
 Degrees, 3, 4.
 Dental anatomy, 301.
 Department of medicine, 233-327.
 Diseases—
 of children, 259, 285.
 of nose and throat, 259, 286.
 of skin, 259.
 of women, 285.
 Dispensary, 264.
 Drawing, 73, 115, 157, 197.
 industrial art, 106, 133.
 Economics, 93.
 '89 memorial prize, 35.
 Electro-therapeutics, 285.
 Electrical engineering, 125.
 Elliott scholarship law fund, 39, 150.
 Elocution, 95.
 Embryology, 68.
 English, 73, 198.
 Entomology, 179, 198.
 Equipment, 27, 30, 99.
 engineering, 127.
 agricultural, 166.
 Examinations, 69.
 entrance program, 12.
 Executive officers, 8.
 Expenses, 38, 39, 148, 178, 231.
 Experiment station, 213, 214.
 Faculty and instructors, 13-26.
 academic, 51, 52.
 engineering, 105.
 school of mines, 143.
 agriculture, 171.
 school of agriculture, 185.
 dairy school, 205.
 law, 219.
 medicine and surgery, 237.
 homeopathic medicine and surgery, 269.
 dentistry, 299.
 pharmacy, 315.
 committees, appendix C, 381.
 Fees, 61, 106, 148.
 Fine arts, 115.
 Forestry, 179.
 French, 75.
 General information, 27, 39, dental, 308-313.
 Geological and natural history survey, officers, 8.
 Geology, 76, 157.
 German, 78.
 Graduate department, 41-47.
 masters' degrees, 43.
 engineers' degrees, 45.
 agricultural degrees, 45, 182.
 master of laws, 45.
 doctors' degrees, 46.
 law, 225.
 pharmacy, 325.
 Graduation, 61.
 Greek, 76.
 Gymnasium, 29.
 Gynecology, 256.
 Hebrew, 97.
 Highway engineering, 120.
 History, 80.
 History of medicine, 260, 287.
 Histology, 68, 247.
 Home economics, 179, 198.
 Homeopathic pharmacy, 321.
 Horticulture, 179, 199.
 Hospitals, 265, 280.
 Household science, 180.
 Hygiene, 260.
 Icelandic, 97.
 Italian, 75.
 Latin, 83.
 Librarians, 8.
 Libraries, 27, 134, 169, 227.
 Machine design, 122.
 Materia medica, 252, 281.
 Mathematics, 84, 114, 173.
 Mechanical engineering, 122, 137, 174.
 Mechanics, 117, 159.
 Mechano-therapy, 260.
 Medical jurisprudence, 260.
 Mental and nervous diseases, 285.
 Metallurgy, 154, 160.
 Military science, 86.
 Mining engineering, 151, 160.
 Mineralogy, 87, 171.
 Moses Marston scholarship, 35.
 Moot courts, 228.
 Museums, 28, 100.
 Nervous and mental diseases, 285.
 Norwegian, 97.
 Observatory, astronomical, 26.
 Obstetrics, 257, 284.
 Officers, cadet, 86.
 One mile liquor law, 31.
 Operative dentistry, 303, 306.
 Ophthalmology, 258, 285.
 Oral surgery, 305.
 Ore testing, 155.
 Organization of University, 5, 6.
 Orthodontia, 304, 306.

- Orthopedia, 284.
 Otology, 259.
 Paleontology, 76.
 Pathology, 253.
 Pedagogy, 88.
 Penmanship and accounts, 200.
 Pharmacognosy, 318.
 Pharmacy, 317.
 Philosophy, 88.
 Photography, 150.
 Physical culture, 92, 200.
 Physical diagnosis, 255, 283.
 Physics, 92, 118, 200.
 Physiology, 200, 250.
 Pillsbury prizes, 35.
 Political science, 93.
 Poultry, 202.
 Practice of medicine, 255.
 President, 8.
 Prizes, 35, 37, 229.
 appendices, 376-381.
 Program, school of agriculture, 192, 193.
 Prosthetic dentistry, 302, 304, 306.
 Psychology, 89.
 Publications, 37, 215.
 Railway engineering, 119, 124.
 Regents, 7.
 Registrar, 8.
 Rhetoric, 95.
 Rhetorical work, 95.
 Rules and regulations, (medical), 239, 270.
 Sanitary science, 97.
 Scandinavian, 97.
 Scholars, 26.
 Science and technology, 137, 140.
 Scholarships, 34.
 School of mines, 141-161.
 School of chemistry, 99-102.
 Schurmeier prize, 36.
 Semitic language and history, 97.
 Sewing, 202.
 Short course for farmers, 208-210.
 Smith, C. A., prize, 35.
 Societies, 31, 39.
 religious, literary, philosophical, athletic,
 alumni.
 engineers, 134.
 dental, 307.
 Sociology, 97.
 Spanish, 97.
 Special students, 222, 246.
 Steam engineering, 122.
 Stock judging, 195.
 Structural engineering, 120.
 Students 329-375.
 Summer school, 62.
 Superintendent of buildings, 8.
 Surgery, 256, 283.
 Swedish, 97.
 Teachers' certificate, 88.
 Text books, 260, 295.
 Theory and practice of medicine, 282.
 Therapeutics, 252.
 Theses, engineering, 135.
 Times good road prize, 36, 135.
 Topographical engineering, 121.
 Tuition, 226, 245, 276, 312, 326.
 Unclassed students, 61-106.
 University, 3, 4.
 Veterinary science, 181, 202.
 Weyerhauser chair of Semitic languages and
 history, 97.
 William Jennings Bryan prize, 36.
 Wyman prize, 36.
 Year, the University, 31, 303.
 Zoology, 68, 202.

COLLEGE OF PHARMACY.

GRADUATE CLASS, 1.

O'Connell, Charles J., New Rockford, S. D.

SENIOR CLASS, 26.

Anderson, Oscar C. J., Kerkhoven.
 —Aubrecht, Anna F., Minneapolis.
 Bollman, Frank Frederick, Harmony.
 Cleveland, Zina R., Northfield.
 Dreis, Walter Frank, St. Paul.
 Erkel, Arthur George, Minneapolis.
 Fuller, Paul C., Rochester.
 —Harr, Cecile Inez, Belmont, Iowa.
 Hawley, Herbert C., Walhalla, N. D.
 Irwin, George Wilson, Minneapolis.
 Jamieson, Roy R., Drayton, N. D.
 Kellam, Alex S., Heron Lake.
 Kuhn, Arthur, Red Wing.

Jewell, Scott W., Pine Island.
 Nielsen, Max Nels, Denmark.
 Norse, Herbert N., Sauk Centre.
 Netzer, Edward Franklin, Crookston.
 Peterson, Harvie Orrie, Colfax, N. D.
 Porter, Oliver Milton, Willmar.
 Rood, Adolph F., Minneapolis.
 —Rubeck, Belle, Elk River.
 Rutherford, Charles Franklin, Stillwater.
 Tilson, Frank H., Duluth.
 Torgeson, Thomas, Sombre, Iowa.
 Whittemore, Lee A., Elk River.
 Zander, Charles H., Rochester.

JUNIOR CLASS, 35.

—Armitage, Anna D., Minneapolis.
 —Byrnes, Helen, Minneapolis.
 —Campbell, Lulu, Minneapolis.
 —Carroll, Laura M., Fargo, N. D.
 —Clune, Phoebe M., Minneapolis.
 Carlson, Albin C., Willmar.
 —Dolenty, Emma C., St. Paul.
 Fiemming, Herman F., Tracy.
 Gifford, O. Bailey, Canton, S. D.
 Gash, Thomas C., Wadena.
 Graves, Claud W., Warsaw
 Harms, Fred J., Norwood.
 Hartmann, Bert F., Alma Centre, Wis.
 Holton, Vincent, Elgin.
 Hubbard, Henry F., Rochester.
 Kelly, John V., St. Paul.
 Kelly, Paul H., St. Paul.
 Kohlhoff, Emil C., Hendrick.

—Mober, Nellie V., Minneapolis.
 —Muedekling, Galena, Minneapolis.
 Milne, George W., Minneapolis.
 McCormick, Leslie J., Tracy.
 Passer, W. F., New Paynesville.
 Richard, Henry J., Little Falls.
 Shaffer, George E., Elkton, S. D.
 Skartum, Paul G., Lake Benton.
 Sladek, Achilles Lp., St. Paul.
 Swendseid, Ralph Eugene, Peterborough
 N. D.
 Thorp, Clarence McK., Hancock.
 —Todd, Alice M., Minneapolis.
 Warren, Edward F., Little Falls.
 Weibler, Peter H., Belle Plaine.
 Wiley, Ross Arthur, Tracy.
 Vermilyea, Avery J., Dexter.
 Vaughn, Patrick H., Morris.

SUMMER SCHOOL.

UNIVERSITY SECTION, 300.

- Ackermann, Adolphus, New Ulm.**
Adams, Arthur T., Sacred Heart.
 —Alexander, Ida Mary, Carver.
 —Anderson, Albertina Cecilia, Starbuck.
Anderson, George N., Bellingham.
 —Anderson, Medora Christina, Maple Plain.
 —Anderson, Nettie, St. James.
 —Andrews, Dolly Sarah, Minneapolis.
 —ap Roberts, Elisabeth, Wilder.
 —Arneson, Anna, Cologne.
Arp, Julius B., Breckenridge.
 —Atwood, Agnes Lowe, St. Paul.
 —Avery, Bertha C., Minneapolis.
Aygarn, Edwin, Choice.
Aygarn, Magnus, Choice.
 —Baker, Helen May, Brownton.
 —Baillif, Matilda Victorine, Osakis.
Ball, William R., Minneapolis.
 —Ballou, Lois Bates, Lake Preston, S. D.
Barnard, Robert T., Minneapolis.
 —Bassford, Adelia M., St. Paul.
 —Battelle, Violet P., St. Paul.
Beaven, Arthur H., Sanborn, N. D.
 —Behrens, Kate W., Red Wing.
 —Bell, Mary E., Minneapolis.
 —Biddle, Ethel G., Kerkhoven.
Bolstad, Alfred C., Dawson.
 —Bomberger, Edna O., Minneapolis.
 —Bonham, Mary D., Zumbrota.
 —Boyd, Edith Houck, Greenleaf.
 —Briggs, Jennie May, Minneapolis.
 —Brown, Eliza Kay, Minneapolis.
Brown, William A., Glencoe.
 —Bruce, Ellen Mary, Minneapolis.
 —Bucknam, Ella White, Minneapolis.
 —Buell, Mary Emma, Minneapolis.
 —Bullock, Carrie, Crookston.
 —Burns, Ellen, St. Paul.
 —Burns, Maria, St. Paul.
 —Cadwell, Edith I., Le Sueur
 —Cadwell, Lucy, Hastings.
 —Carter, Mary W., Minneapolis.
 —Case, Cleona Louise, Minneapolis.
Casey, John M., Elk River.
 —Casey, Jennie M., Elk River.
 —Cashman, Nellie M., Owatonna.
 —Cashman, Sadie, Minneapolis.
 —Chapman, Anna, St. Paul.
 —Chapman, Elizabeth K., Minneapolis.
 —Choate, Antoinette, Minneapolis.
Cleven, Nels A. N., Wist, S. D.
- Clinch, Anthony B., Dayton.**
 —Cohen, Lilhan, Minneapolis.
 —Cole, Ruth Law, Minneapolis.
 —Colligan, Laura E., Stillwater.
 —Cook, Myra Georga, Minneapolis.
 —Cook, Vinnie, Hannibal, Mo.
 —Cornish, Josephine, Vernon Center.
 —Cornish, Vesta M., Minneapolis.
Cosgrove, Bertram M., Henry, S. D.
 —Cotton, Anna L., Fredericksburg, Ia.
 —Cox, Harriet M., Minneapolis.
 —Coy, Lizzie, Dubuque, Ia.
 —Cross, Clare A., Minneapolis.
 —Crowther, Elizabeth Dee., Minneapolis.
 —Cummings, Ida Grace, Glencoe.
 —Daly, Alice L., St. Paul.
Dankwardt, Joachim M., Lake City.
 —Daum, Augusta, Minneapolis.
 —Davis, Mary F., Glencoe.
Dickinson, Burr A., Lakeland.
 —Diesem, Louise K., St. Paul.
Dime, Samuel E., Grove City.
 —Diamond, Clara M., Minneapolis.
Dobbyn, Frank W., Atwater.
 —Donaldson, Eleanor, Minneapolis.
 —Donaldson, Mabel R., Tracy.
Edmunds, Herbert, Drayton, N. D.
 —Ferguson, Mary G., Minneapolis.
Firkins, Chester, Minneapolis.
 —Fish, Florence, Minneapolis.
 —Forbes, Mary F., Waseca.
 —Foss, Bertha G., Minneapolis.
 —Fosse, Lota Alice, Minneapolis.
 —Fosseen, Mabelle H., Minneapolis.
Foster, Guy A., Campbell
 —Francis, Helena L., St. Paul.
 —Franklin, Laura G., Blue Earth.
Frelin, Julius, Gaylord.
 —French, Alice W., Minneapolis.
 —Frye, Nora, Elk River.
 —Funk, Gertrude E., Minneapolis.
 —Gallagher, Mary A., St. Cloud.
Galloway, Lee, Minneapolis.
 —Garbett, Louise, Minneapolis.
 —Gibbs, Elsie C., Monticello.
Gieschen, Claus, St. Paul.
 —Gillespie, Anna, Carlton.
 —Gillette, Alma, St. Paul.
 —Goodwin, Mina, Minneapolis.
 —Gould, Ellen T., Minneapolis.
Goodrich, George D., Anoka.

- Goodrich, Florence E., Minneapolis.
- Griffin, Patrick J., Shakopee.
- Grosscap, Mabel E., St. Paul.
- Gurney, Elizabeth Keeler, St. Cloud.
- Haldeman, John E., Montevideo.
- Halvorson, Oscar, Two Harbors.
- Hamilton, Elizabeth H., Minneapolis.
- Hansen, Tillie K., Alden.
- Harn, Margaritta H., Minneapolis.
- Harrington, Mary M., Minneapolis.
- Harrington, Helen, Minneapolis.
- Hatch, Edwin S., Pipestone.
- Hauser, Jacob N., St. Paul.
- Hawes, Harriet M., Minneapolis.
- Hawk, Ella M., Redwood Falls.
- Heffner, Emma C., Minneapolis.
- Helsesen, Anne, Deer Park, Wis.
- Heneghan, Anna E., Herman.
- Higman, Nellie, Minneapolis.
- Hill, Helen G., St. Paul.
- Hitchcock, Agnes G., St. Paul.
- Hoagland, Althea M., Brookpark.
- Hoffman, Alberta, Charles City, Ia.
- Holmstedt, Victor E., Minneapolis.
- Holt, Charles M., Minneapolis.
- Holt, Daisy E., Minneapolis.
- Holt, Madeline B., Minneapolis.
- Hudec, Fannie, Silver Lake.
- Hughes, William Vance, Minneapolis.
- Huseld, Marie, Clinton.
- Hutchinson, Harriett Jane, Minneapolis.
- Ide, M. Alice, Minneapolis.
- Isaacs, Louis N., Blooming Prairie.
- Jacobson, Clara, Willow River.
- Jacobson, Katherine, St. Paul.
- Jahnke, Clara L., Dover.
- Jamieson, Gertrude E., Minneapolis.
- Jerome, Waldron M., Minneapolis.
- Johnson, Axel P., Minneapolis.
- Johnson, Antoinette W., Minneapolis.
- Johnson, Anna C., Minneapolis.
- Johnson, Gertie Mann, Preston.
- Johnston, Fannie, Minneapolis.
- Jones, Ammon V., Sparta.
- Jones, Elizabeth M., Minneapolis.
- Kantrud, Christian O., Elizabeth.
- Kelsey, Grace L., St. Paul.
- Kipp, Mary A., Minneapolis.
- Kipp, Mary, Minneapolis.
- Kreger, Alanson J., Minneapolis.
- Lambert, Agnes Jeanette, Minneapolis.
- Lambert, Edwin M., Young America.
- Larsen, Catherine Rowell, Minneapolis.
- Larson, John Frederick, So. Stillwater.
- Leonard, Frank Osborn, Jackson.
- Leubner, Bernhard O., Minneapolis.
- Lewis, Leona, Campbell, Cal.
- Lilly, Gene, Minneapolis.
- Lily, Mary, Jaesville.
- Lindmark, Theresa E., Rush City.
- Lindquist, Ida Pauline, Minneapolis.
- Lindsley, Pearle May, Minneapolis.
- Link, Lillian C., Marshall.
- Linkfield, Alice E., Minneapolis.
- Linwell, Susanna, Minneapolis.
- Livingston, Grace, Minneapolis.
- Lloyd, Hiram John, Lake Crystal.
- Lyon, Fannie M., St. Paul.
- McBee, Allan, Shakopee.
- McGillis, Annie, Minneapolis.
- McKay, Walter, St. Paul.
- McLaughlin, Anna, Minneapolis.
- McLaughlin, Elizabeth, Mapleton.
- McLaughlin, Unell Adelbert, Madelia.
- McMullen, Jennie May, Minneapolis.
- McPherson, Gertrude B., Stillwater.
- Maher, Minnie, Minneapolis.
- Mann, Hattie Elvida, Claremont.
- Mann, Josephine, St. Paul.
- Marlow, Kyle F., Morris.
- March, Mabel Henrietta, Olivia.
- Marsh, Olive Vincent, Minneapolis.
- Mathes, Elizabeth Helen, Minneapolis.
- Mattesen, Frank E., Eyota.
- May, Lillian, Minneapolis.
- Merrill, Nellie Louise, Minneapolis.
- Miller, Pearl C., Hamline.
- Moore, Alida Elvira, Buffalo.
- Meare, Edwin H., Big Lake.
- Morgan, Oregon, F., Elysian.
- Newcomb, Olive May, Minneapolis.
- Nickerson, Alice Maude, Elk River.
- Nisbit, Jane, Moorhead.
- Norling, Nels P., Glenwood.
- Nott, Lottie Jessie, Brownton.
- O'Brien, Frances P., St. Paul.
- O'Brien, Harriet, Minneapolis.
- Olberg, Clara Mable, Albert Lea.
- O'Leary, Annie M., St. Paul.
- Olsen, Sigurd, St. Ansgar, Ia.
- O'Neill, Mary Gertrude, Minneapolis.
- Parish, John Leonard, Pine City.
- Parshall, Dana H., Faribault.
- Payne, Dorothy Mae, Brownton.
- Peake, Ora O., Minneapolis.
- Pearce, John Henry, Minneapolis.
- Peck, Edith Lewis, Minneapolis.
- Penfound, Rena, West Superior, Wis.
- Pennington, Georgiana, Minneapolis.
- Peterson, Amanda A., Minneapolis.
- Pettersen, Sophie, Princeton.
- Peyton, Theresa B., St. Paul.
- Phillips, Bertha L., Minneapolis.
- Plumb, Alice, Minneapolis.

- Porter, Gertrude, Dassel.
- Pratt, Martin Luther, Wood Luther.
- Prindle, Florence T., Lanesboro.
- Fringle, William Allen, Lidgerwood, N. D.
- Pulham, May, Wykoff.
- Purdy, Lucy M., St. Paul.
- Quinn, Mary Patryca, Owatonna.
- Race, May, Faulkton, S. D.
- Ralph, Olive M., Minneapolis.
- Randall, John Ralph, Minneapolis.
- Rankin, Margaret, Northfield.
- Rau, Albert E., Wykoff.
- Raymond, Lulu J., Rhinelander, Wis.
- Reichmuth, Frederic C., St. Paul.
- Reid, Eva Christie, Minneapolis.
- Requier, Zulma, St. Paul.
- Reynolds, Jennie S., Minneapolis.
- Rich, Lucy D., St. Paul.
- Richardson, James Willard, New Auburn.
- Rickard, Truman Elwell, Minneapolis.
- Rink, Kuno, St. Paul.
- Roundy, Agnes Mabel, Wabasha.
- Sage, Charles W., Minneapolis.
- Sardeson, Eva R., Minneapolis.
- Sawyer, Marian Lucy, Viola.
- Schibursky, Louise Hildegarde, Preston.
- Schirmer, Helen, Minneapolis.
- Selvig, Conrad G., Rushford.
- Sevatson, Carrie, Windom.
- Sigmundstad, Richard, Frost.
- Sister, M. Blanche, Winona.
- Sister, M. Florentine, Owatonna.
- Sister, M. Gertrude, Winona.
- Sister, Hyacinth, St. Paul.
- Sjoberg, Martha H., Duluth.
- Skinney, John Wentworth, Minneapolis.
- Slincy, Elizabeth J., St. Paul.
- Slye, Ralph, White Bear.
- Smith, Ada E., Algona, Iowa.
- Smith, Edna L., Minneapolis.
- Snyder, Louise Evelyn, Minneapolis.
- Sornsen, Martha, A., Minneapolis.
- Spees, Edith, Minneapolis.
- Steele, Edith C., Princeton, Ill.
- Steele, Katherine D., Princeton, Ill.
- Stene, A. Edward, Ashby.
- Stephens, Stella M., Minneapolis.
- Stevens, Fred Harding, Minneapolis.
- Stevenson, Martha Cornelia, Minneapolis.
- Stewart, Anna B., Minneapolis.
- Strang, David M., Alexandria.
- Stromberg, Ida E., Hector.
- Struble, Clara, Minneapolis.
- Swanson, Mabel M., Cottage Grove.
- Swanson, R. Esther, Cottage Grove.
- Sweeney, Kate G., Virginia.
- Taber, Mary A., Mabel.
- Tambling, William Leicester, Fergus Falls.
- Taylor, Fred Joe, Merriam Park.
- Taylor, Sara Vore, So. Omaha, Neb.
- Thelen, Lucy A., Stillwater.
- Thelen, Rose L., Stillwater.
- Thompson, Claire V., Cottage Grove.
- Thomson, Eva F., St. Paul.
- Titrud, Ole L., Cokato.
- Tuseth, Jeannette Lenora, Osseo.
- Vaughan, Jessie Mabel, New Auburn.
- Velikanje, Johanna, Minneapolis.
- Vetting, Ida F., Rhinelander, Wis.
- Wallace, B. A., Mayville, N. D.
- Walters, Henrietta, Merrill, Wis.
- Webb, Leuella Orange, Hamline.
- Webster, George Burbank, Minneapolis.
- Westfall, Adah E., Redwood Falls.
- Wheeler, Clara Kingwell, Minneapolis.
- Whiting, Winona, Rhinelander, Wis.
- Wilcox, Marion E., Minneapolis.
- Williams, Friend L., Watertown.
- Wilson, Mary Russell, Minneapolis.
- Wood, Isabel, Waseca.
- Woodruff, Harriet Isabella, Minneapolis.
- Woodworth, Eva Wheeler, Minneapolis.
- Woodworth, Ida B., Minneapolis.
- Wyman, Kate, Northfield.

Summary of Students.

THE GRADUATE DEPARTMENT.

	Men	Women	Total
Candidates for the degree of doctor of philosophy.....	35	6	41
doctor of civil law.....	11		11
master of laws.....	12	1	13
master of arts.....	59	23	82
master of agriculture.....	1		1
Others doing grauate work.....	9	19	28
Total.....	127	49	176

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

	Men	Women	Total
<i>Senior class</i>	86	95	181
<i>Junior class</i>	80	107	187
<i>Sophomore class</i>	133	130	263
<i>Freshman class</i>	188	191	379
Unclassed students.....	36	112	148
Total.....	523	635	1158

SCHOOL OF CHEMISTRY.

	Men	Women	Total
Senior class.....	3		3
Junior class.....	2		2
Sophomore class.....	5		5
Freshman class.....	11		11
Total.....	21		21

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS.

		Men	Women	Total
<i>Senior class</i>	civil engineering section.....	10		10
	mechanical engineering section.....	11		11
	electrical engineering section.....	6		6
	science and technology.....	1		1
<i>Junior class</i>	civil engineering section.....	16		16
	mechanical engineering section.....	5		5
	electrical engineering section.....	14		14
<i>Sophomore class</i>	science and technology.....	2		2
	civil engineering section.....	31	1	32
	mechanical engineering section.....	32		32
<i>Freshman class</i>	electrical engineering section.....	30		30
	all sections.....	132		132
	art course.....	1	23	24
Unclassed students.....		30		30
Total.....		321	24	345

THE SCHOOL OF MINES

	Men	Women	Total
Senior class.....	4		4
Junior class.....	17		17
Sophomore class.....	29		29
Freshman class.....	59		59
Total.....	109		109

THE DEPARTMENT OF AGRICULTURE.

	Men	Women	Total
College of agriculture graduate students.....	1		1
senior class.....	2		2
junior class.....	3		3
sophomore class.....	7	2	9
freshman class.....	7		7
Intermediate course.....	4	5	9
The school of agriculture class A.....	47	23	70
class B.....	72	25	97
class C.....	162	55	217
preparatory class.....	42	14	56
the dairy school.....	114		114
unclassified students.....		1	1
short course for farmers.....	33		33
Total.....	494	125	619

COLLEGE OF LA W.

	Men	Women	Total
Graduate students—for doctor of civil law.....	11		11
for master of laws.....	12	1	13
Senior class.....	119	1	120
Middle class.....	131	3	134
Junior class.....	225	1	226
Total.....	498	6	504

THE DEPARTMENT OF MEDICINE.

THE COLLEGE OF MEDICINE AND SURGERY.

	Men	Women	Total
Graduate students.....	1		1
Senior class.....	63	3	66
Junior class.....	71	5	76
Sophomore class.....	82	1	83
Freshman class.....	126	10	136
Total.....	343	19	362

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.

Senior class.....	3		3
Junior class.....	7		7
Sophomore class.....	2	1	3
Freshman class.....	7		7
Total.....	19	1	20

Summary of Students.

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THE COLLEGE OF DENTISTRY.

Senior class.....	33		33
Junior class.....	35		35
Freshman class.....	29		29
Unclassed students.....	10		10
Total.....	107		107

THE COLLEGE OF PHARMACY.

Graduate course.....	1		1
Senior class.....	23	3	26
Junior class.....	26	9	35
Total.....	50	12	62

SUMMER SCHOOL FOR TEACHERS.

University section.....	77	223	300
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SUMMARY OF TOTALS.

	Men	Women	Total
Graduate students.....	127	49	176
The college of science, literature and the arts.....	544	635	1179
The college of engineering and the mechanic arts.....	321	24	345
The school of mines.....	109		109
Department of agriculture.....	494	125	619
The college of law.....	498	6	504
The department of medicine.....	519	32	551
The summer school—University section, less duplicates.....	64	173	237
Total.....	2676	1044	3720
Duplicates.....	62	2	64
Total, excluding duplicates.....	2614	1042	3656

Appendix A.

ACCREDITED SCHOOLS.

The following is a list of the high schools, in the State of Minnesota accredited to the University of Minnesota:

Ada.	Glencoe.	Minneapolis--	St. James.
Adrian.	Glenwood.	Central.	St. Paul--
Aitkin.	Graceville.	East Side.	Central.
Albert Lea.	Grand Rapids.	North Side.	Cleveland.
Alexandria.	Granite Falls.	South Side.	Humboldt.
Anoka.	Hastings.	Montevideo.	Mechanic Arts.
Appleton.	Henderson.	Monticello.	St. Peter.
Austin.	Heron Lake.	Moorhead.	Sauk Center.
Barnesville.	Hutchinson.	Morris.	Shakopee.
Benson.	Jackson.	New Paynesville.	Slayton.
Blue Earth City.	Janesville.	New Ulm.	Sleepy Eye.
Brainerd.	Kasson.	Northfield.	Springfield.
Caledonia.	Kenyon.	Ortonville.	Spring Valley.
Canby.	Lake City.	Owatonna.	Stewartville.
Cannon Falls.	Lake Crystal.	Park Rapids.	Stillwater.
Chatfield.	Lakefield.	Pine Island.	Tracy.
Cloquet.	Lanesboro.	Pipestone.	Wabasha.
Crookston.	Le Roy.	Plainview.	Wadena.
Dawson.	Le Sueur.	Preston.	Warren.
Delano.	Litchfield.	Princeton.	Waseca.
Detroit.	Little Falls.	Red Lake Falls.	Waterville.
Dodge Center.	Long Prairie.	Red Wing.	Wells.
Duluth.	Luverne.	Redwood Falls.	White Bear.
Elgin.	Madelia.	Renville.	Willmar.
Elk River.	Madison.	Rochester.	Windom.
Excelsior.	Mankato.	Rush City.	Winnebago.
Fairmont.	Mantorville.	Rushford.	Winona.
Faribault.	Mapleton.	St. Charles.	Worthington.
Farmington.	Marshall.	St. Cloud.	Zumbrota.
Fergus Falls.			

The following private schools are also accredited to the University:

Saint Mary's Hall, Fairbault,	Concordia College, Moorhead
Shattuck Military Academy, Fairbault.	Pillsbury Academy, Owatonna.
Stanley Hall, Minneapolis.	St. Joseph's Academy, St. Paul.
Minneapolis Academy, Minneapolis.	
Windom Institute, Montevideo.	St. Paul's College, St. Paul Park.

Appendix B.

AWARD OF PRIZES.

The Moses Marston Scholarship was awarded to Allen R. Benham.

The '89 Memorial Prize was awarded to George B. Otte, for a thesis entitled "The Sources of the Northwest Ordinance."

Gillette-Herzog Prizes.—First Prize—to Paul Iver Gunstad, for a thesis entitled "The Effect of Freezing on Concrete."

Second Prize—To Martin E. Anderson and S. Gerhard Reque, for a thesis entitled "Train Lighting by Electricity."

Third Prize—To Guy J. Houts and Jake Danner, for a "Re-design for Power for Chicago, Milwaukee and St. Paul Railway Shops."

The Shurmeier Prize was awarded to George Webb, for an essay upon "The Relation of the City to Political Problems."

The William Jennings Bryan Prize was not awarded.

The Albert Howard Scholarship was awarded to Clara E. Fanning.

The Pillsbury Dunwoody Prizes for 1902: First Prize—Thomas D. Schall.

Second Prize—John A. Layne.

Third Prize—James G. Steenson.

The Peavey Prizes: Debate—Freshman team, Messrs. Weiskoff, Joss, Devaney, won.

Oratory—George Ward, a sophomore, won first place.

The Burton Prize offered by the University Art Club was awarded to Charles W. Jerome.

H. W. WILSON SHORT STORY PRIZE CONTEST.

First Prize of \$50 was awarded to Mary Olcott for a story entitled "Jim Brown's Mother."

Second Prize of \$25 was awarded to Roy W. Allis, for a story entitled "In the Garb of the Gaul."

Appendix C.

THE GILFILLAN TRUST.

MINNEAPOLIS, Feb. 8th, 1901.

To the Board of Regents of the University of Minnesota—Gentlemen:

Your favorable consideration of the proposition hereinafter set forth in detail is hereby solicited:

Actuated by my own experience from early life, I have had in mind for some time the establishing of a fund in trust, the income from which might be used in aid of such deserving youths of our state as might be found struggling for an education beyond their own means of obtaining. As your board represents and is invested with the government of the chief educational institution of the state, it has occurred to me that you might with propriety be made the repository of such a trust and the agency for the suitable execution thereof, and the bestowal of the benefits to accrue therefrom. In case an enlargement of your powers is found to be necessary or desirable, that can be accomplished by enactment of the legislature now in session.

The fund proposed to be established will be for the present, the sum of fifty thousand dollars, to be conveyed to you by deed defining the proposes and conditions of the trust, the beneficiaries thereof and the basis upon which the benefactions shall be bestowed. The principal of such trust shall be designated "The Gilfillan Trust," and shall remain inviolate and kept invested in the same manner and by the same persons, or officers, as the permanent fund of the University. and so as to yield the best income therefrom.

The income of the said fund shall be subject to the use and disposal of the said Board of Regent for the educational purposes hereinbefore specified, either in the form of a gift or temporary loan as the said regents may deem best, the beneficiaries to be and to continue to be, within the following limitations, that is to say:

First—They must be youths of the state of Minnesota, without regard to sex.

Second—They must be and continue of unblemished moral character, and of temperate and industrious habits.

Third—They must be such as, by examination and trial, shall evince and maintain a taste, habit and aptitude for study.

Fourth—The aid herein provided may be bestowed upon students in any of the departments of the State University, or in schools preparatory thereto.

The forgoing provisions shall be strictly construed, and as to any student who shall fail to come, or shall cease to be, within the said conditions, as so construed, shall forfeit all claim to the benefits of such fund.

It will be seen that the spirit of this benefaction is to aid and encourage such as are worthy, susceptible and willing to help themselves; none other may share its benefits.

Deeming this the best gift in my power to the state in which my whole active life has been spent, and craving your early consideration and acceptance of the same, I remain,

Sincerely yours,

J. B. GILFILLAN.

The foregoing generous offer was accepted by the Board of Regents and the following regulations were adopted by the Regents to govern the administration of the income from the trust fund.

RULES FOR THE ADMINISTRATION OF THE INCOME.

RULE 1. The income derived from the fund shall be passed over, as it accrues, to the Treasurer of the University of Minnesota, and held by him as a separate fund, and not mingled with the other funds of the University, and shall be paid out by him on warrants drawn by authority of the Executive Committee of the Board of Regents.

RULE 2. The University accountant shall also open a separate account with the Gilfillan Trust, to which he shall credit all income received therefrom, and charge all disbursements from such income, so that this account shall at all times show the condition of the income fund.

RULE 3. The administration of the income from said Trust shall be in the hands of the Executive Committee of the Board of Regents, who are hereby given full power and authority in the premises, subject to these rules; but they may refer any matter to the Board for its action.

RULE 4. Allowances made to beneficiaries shall be payable out of the income of the fund only, and in case it shall fail for any cause, to meet the requirements upon it in any academic year, the amount actually available in such year shall be distributed to the beneficiaries *pro rata* to the amounts allowed them respectively, and in full satisfaction thereof, and in no case shall there be any legal liability upon the University for allowances made from such income fund.

RULE 5. The amount allowed to each beneficiary shall be fixed by the Executive Committee, and the time which it shall cover; but such amount shall not in any case exceed \$200 for an academic year, and the time of such allowance shall not exceed one academic year, but it may be renewed from time to time in the discretion of the Committee. In case of an allowance for a year one-half of it shall be paid at the end of each semester.

RULE 6. Only undergraduates who are studying in the courses leading to a degree shall be beneficiaries of the fund.

RULE 7. No student shall be or continue a beneficiary of the fund who is not in such pecuniary situation that the means for his education depends

wholly, or in part, upon the results of his own labor; nor unless he shall be and continue of unblemished moral character, and of temperate and industrious habits; nor unless he shall, by examination and trial, evince and maintain a taste, habit and aptitude for study; and the decision and action of the Executive Committee shall be final and conclusive upon these matters, and shall not be questioned anywhere, except by this Board; but in case of any violation of the rules of the University, or any misconduct charged against a beneficiary, he shall before action by the committee on such charges have opportunity to make his defence before it, or such authority as it may designate.

RULE 8. The benefactions shall be in the form of gifts or loans as the Executive Committee shall determine, and in case of a loan the beneficiary shall execute to the University his obligation in writing to repay the amounts advance him as soon as he shall become able, with interest at the rate of 5% per annum.

RULE 9. No allowance shall be made to an undergraduate upon an application made after his matriculation before the applicant has been a student in the University for one semester.

RULE 10. The masculine gender is used in these rules for brevity, but they shall apply equally to female students.

RULE 11. Applications for the benefit of the fund may first be informally made to the President of the University, who shall thereupon, if the condition of the fund shall be deemed to warrant it, forward to the applicant a copy of this and the preceding rules and of the blank application appended to this rule, which blank shall be filled up by the applicant with full answers to all the inquiries contained therein, signed by him, and returned to the President.

Appendix D.

COLLEGE OF SCIENCE, LITERATURE AND THE ARTS.

FACULTY COMMITTEES FOR 1902-03.

Enrollment: Professors Hutchinson, Anderson, Wilde, Nicholson, Bauer

Curriculum: Professors Moore, Brooks, Jones, West, Klaeber.

Graduate studies and degrees: Professors Brooks, Folwell, MacMillan
McClumpha, Jewett.

Program: Professors Clark, Hall, and Schlenker.

Students' work: Professors Downey, Leavenworth, McVey, Sigerfoos, Pike
Relations of the University to the public schools: Professors Kiehle, West,
Wilkin, Carlson, Benton.

Music and public lectures: Professors Frankforter, Schlenker, Smith.

Debate and oratory: Professors White, McDermott, Sanford, Schaper.

Athletics and military affairs: Professors Jones, Nachtrieb, Westbrook.

Student publications: Professors Anderson, Zeleny, Sidener.

Appendix E.

COLLEGE OF ENGINEERING AND THE MECHANIC ARTS.

FACULTY COMMITTEES FOR 1902-03.

Enrollment.—Professors Constant, Flather, Springer.

Curriculum.—Professors Eddy, Flather, Hoag, Jones, Shepardson.

Degrees.—Professors Flather, Shepardson, Hoag.

Library—Professors Springer, Constant, Kavanaugh.

Military Affairs and Athletics.—Professors Hoag, Haynes, Nicholson.

Students' Work.—Professors Haynes, Kirchner, Hoag, Shepardson
Flather, Brooke.

Graduate Studies and Degrees.—Professor Eddy.

Progrm.—Professors Shepardson, Bass.

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