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*The Annual Catalogue, published at Commencement by authority of the Board of Regents, is a record of the membership and condition of the University for the given University year, and also contains the courses of study and other announcements for the University year following.*

*The Catalogue will be sent gratuitously, postage paid, to all persons who apply for it.*

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THE UNIVERSITY OF MINNESOTA.

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CATALOGUE

FOR THE YEAR

1887-88,

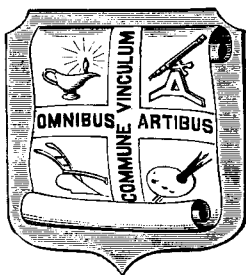
AND

ANNOUNCEMENT

FOR THE YEAR

1888-89.

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BY THE UNIVERSITY.

MINNEAPOLIS.

1888.

## ALMANAC, 1888-'89.

SEPTEMBER.		OCTOBER.		NOVEMBER.	
4 T.	Year 1888-'89 begins. Entrance examinat'ns. " " " " " " " " " " " " " "	1 M.	Medical College opens.	1 T.	
5 W.		2 T.	Entrance exam., 9 a.m.	2 F.	
6 T.		3 W.	Open'g address 7:30 pm	3 S.	
7 F.		4 T.	Medical lectures begin.	4 S.	
8 S.		5 F.		5 M.	
9 S.		6 S.		6 T.	ELECTION DAY.
10 M.		7 W.		7 W.	
11 T.		8 M.		8 F.	
12 W.		9 T.		9 S.	
13 T.	10 W.		10 S.		
14 F.	11 T.		11 S.		
15 S.	12 F.		12 M.		
16 S.	13 S.		13 T.		
17 M.	14 S.		14 W.		
18 T.	15 M.		15 T.		
19 W.	16 T.		16 F.		
20 T.	17 W.		17 S.		
21 F.	18 T.		18 S.		
22 S.	19 F.		19 M.		
23 S.	20 S.		20 T.		
24 M.	21 S.		21 W.		
25 T.	22 M.		22 T.		
26 W.	23 T.		23 F.		
27 T.	24 W.		24 S.		
28 F.	25 T.		25 S.		
29 S.	26 F.		26 M.	Term examinations.	
30 S.	27 S.		27 T.	Term examinations.	
31 S.	28 S.		28 W.	THANKSGIVING DAY.	
	29 M.		29 T.	Examinations for con-	
	30 T.		30 F.	ditioned students.	
	31 W.		Dec. 1	2ND TERM ENDS... 13 w.	
DECEMBER.		JANUARY.		FEBRUARY.	
2 S.		1 T.	NEW YEAR'S DAY.	1 F.	
3 M.		2 W.	Medical work resum'd.	2 S.	
4 T.	SECOND TERM BEGINS.	3 T.	Work in School of Ag-	3 S.	
5 W.		4 F.	riculture resumed.	4 M.	
6 T.		5 S.		5 T.	
7 F.		6 S.		6 W.	
8 S.		7 M.		7 T.	
9 S.		8 T.	[ments resum'd.	8 F.	
10 M.		9 W.	Work in other depart-	9 S.	
11 T.		10 T.		10 S.	
12 W.		11 F.		11 M.	
13 T.		12 S.		12 T.	
14 F.		13 S.		13 W.	
15 S.		14 M.		14 T.	
16 S.		15 F.		15 F.	
17 M.		16 W.		16 S.	
18 T.		17 T.		17 S.	
19 W.		18 F.		18 M.	University charter 1868.
20 T.		19 S.		19 T.	
21 F.		20 S.		20 W.	
22 S.		21 M.		21 T.	
23 S.		22 T.		22 F.	[DAY.
24 M.		23 W.		23 S.	WASHINGTON'S BIRTH-
25 W.		24 T.		24 S.	.....10 w.
26 W.		25 F.		25 M.	
27 T.		26 S.		26 T.	
28 F.		27 S.		27 W.	
29 S.		28 M.		28 T.	
30 S.		29 T.			
31 M.		30 W.			
		31 F.			

ALMANAC, 1888-'89.

MARCH.		APRIL.		MAY.	
1 F.		1 M.	Spring term Medical	1 W.	
2 S.	11 w.	2 T.	[College begins.	2 T.	
3 S.		3 W.		3 F.	
4 M.	Term examinations.	4 T.		4 S.	8 w.
5 T.	Term examinations.	5 F.		5 S.	
6 W.	Term examinations.	6 S.	4 w.	6 M.	
7 T.	Examinations for con- ditioned students.	7 S.		7 T.	
8 F.		8 M.		8 W.	
9 S.	2D TERM CLOSES. 12 w	9 T.		9 T.	
10 S.		10 W.		10 F.	
11 M.		11 T.		11 S.	9 w.
12 T.	THIRD TERM BEGINS	12 F.		12 S.	
13 W.		13 S.	5 w.	13 M.	
14 T.		14 S.		14 T.	
15 F.		15 M.		15 W.	
16 S.	1 w.	16 T.	[closes.	16 T.	
17 S.		17 W.	School of Agriculture	17 F.	
18 M.		18 T.		18 S.	10 w.
19 T.		19 F.	Good Friday.	19 S.	
20 W.		20 S.	Holiday. 6 w.	20 M.	
21 T.		21 S.	Easter Day.	21 T.	Senior examinations.
22 F.		22 M.		22 W.	Senior examinations.
23 S.	2 w.	23 T.		23 T.	
24 S.		24 W.		24 F.	
25 M.	Examinations for pro- motion and degrees in Medical College.	25 T.		25 S.	11 w.
26 T.		26 F.		26 S.	
27 W.		27 S.	7 w.	27 M.	
28 T.		28 S.		28 T.	
29 F.		29 M.		29 W.	Library closes.
30 S.	3 w.	30 T.		30 T.	Term examinations.
31 S.				31 F.	Term examinations.
				June 1.	Term exam's. 12 w.

COMMENCEMENT WEEK, 1889.

SUNDAY,	JUNE 2.	BACCALAUREATE SERVICE.	-	-	3:00 P. M.
MONDAY,	JUNE 3.	FIELD DAY SPORTS,	-	-	2:00 P. M.
		ORATORICAL CONTEST,	-	-	8:00 P. M.
TUESDAY,	JUNE 4.	SENIOR CLASS DAY EXERCISES,	-	-	2:00 P. M.
WEDNESDAY,	JUNE 5.	ALUMNI DAY—			
		Business Meeting,	-	-	10:00 A. M.
THURSDAY,	JUNE 6.	COMMENCEMENT DAY—			
		Graduating Exercises,	-	-	9:00 A. M.
		Commencement Dinner,	-	-	1:00 P. M.
		President's Reception,	-	-	8:00 P. M.
FRIDAY,	JUNE 7.	SUMMER VACATION BEGINS.			

The year 1889-'90 will begin September 3d, 1889.

**BOARD OF REGENTS.**


---

The HON. GREENLEAF CLARK, M. A., ST. PAUL,	- - -	1889.
The HON. CUSHMAN K. DAVIS, M. A., ST. PAUL,	- - -	1889.
The HON. KNUTE NELSON, ALEXANDRIA,	- - -	1890.
The HON. JOHN S. PILLSBURY, MINNEAPOLIS,	- - -	1890.
The HON. HENRY H. SIBLEY, ST. PAUL,	- - -	1891.
The HON. GORDON E. COLE, FARIBAULT,	- - -	1891.
The HON. WILLIAM LEGGETT, BENSON,	- - -	1891.
The HON. A. R. MCGILL, ST. PAUL,	- - -	<i>Ex-Officio.</i>
The Governor of the State.		
The HON. DAVID L. KIEHLE, M. A., ST. PAUL,	- - -	<i>Ex-Officio.</i>
The State Superintendent of Public Instruction.		
CYRUS NORTHROP, LL. D., MINNEAPOLIS,	- - -	<i>Ex-Officio.</i>
The President of the University.		

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**OFFICERS OF THE BOARD.**

The HON. HENRY H. SIBLEY,	- - -	<i>President.</i>
The HON. DAVID L. KIEHLE,	- - -	<i>Recording Secretary.</i>
PRESIDENT CYRUS NORTHROP,	- - -	<i>Corresponding Secretary.</i>
H. P. BROWN [Address care of Commercial Bank],	- - -	<i>Treasurer.</i>

---

**THE EXECUTIVE COMMITTEE.**

The HON. JOHN S. PILLSBURY, <i>Chairman.</i>
The HON. DAVID L. KIEHLE.
CYRUS NORTHROP, <i>Clerk.</i>

## FACULTY AND INSTRUCTORS.

---

- CYRUS NORTHROP, LL. D., President, 519 Tenth Avenue S. E.
- WILLIAM W. FOLWELL, LL. D., 1020 Fifth Street S. E.  
Professor of Political Science and Librarian.
- JABEZ BROOKS, D. D., 1708 Laurel Avenue.  
Professor of the Greek Language and Literature.
- NEWTON H. WINCHELL, M. A., 10 State Street S. E.  
Professor of Geology and Mineralogy.  
State Geologist and Curator of the General Museum.
- CHARLES N. HEWITT, M. D., Red Wing.  
University Professor of Sanitary Science.
- JOHN G. MOORE, B. A., 2850 University Avenue S. E.  
Professor of the German Language and Literature.
- CHRISTOPHER W. HALL, M. A., 803 University Avenue S. E.  
Professor of Geology, Mineralogy and Biology.
- JOHN C. HUTCHINSON, B. A., 3806 Nicollet Avenue.  
Associate Professor of Greek and Mathematics.
- JOHN S. CLARKE, B. A., 1525 University Avenue S. E.  
Professor of the Latin Language and Literature.
- MATILDA J. WILKIN, B. L., 618 Fifteenth Avenue S. E.  
Instructor in English and German.
- MARIA L. SANFORD, 1401 Sixth Street S. E.  
Professor of Rhetoric and Elocution.
- WILLIAM A. PIKE, S. B., 2525 University Avenue S. E.  
Professor of Engineering.

- JOHN F. DOWNEY, M. A., C. E., 9 Florence Court.  
Professor of Mathematics and Astronomy.
- JAMES A. DODGE, Ph. D., 813 Fifth Street S. E.  
Professor of Chemistry.
- CHARLES W. BENTON, B. A., 419<sup>1</sup>/<sub>2</sub> Eighth Avenue S. E.  
Professor of the French Language and Literature.
- EDWARD D. PORTER, M. A., Ph. D., St. Anthony Park.  
Professor of the Theory and Practice of Agriculture.
- THOMAS PEEBLES, B. A., 3210 Fourth Street S. E.  
Instructor in Mental and Moral Philosophy and Logic.
- O. J. BREDÁ, 11 Florence Court.  
Professor of the Scandinavian Languages and Literatures.
- GEORGE EDWIN MACLEAN, Ph. D., 328 Tenth Avenue S. E.  
Professor of the English Language and Literature.
- CHARLES F. SIDENER, B. S., 1316 Fifth Street S. E.  
Instructor in Chemistry.
- HENRY F. NACHTRIEB, B. S., 515 Fifteenth Avenue S. E.  
Assistant Professor of Biology.
- HARRY PRATT JUDSON, M. A., 316 Tenth Avenue S. E.  
Professor of History and Lecturer on Pedagogics.
- FREDERICK S. JONES, B. A., Absent on leave in Europe.  
Instructor in Physics.
- WILLIAM R. HOAG, B. C. E., 1623 University Avenue S. E.  
Assistant Professor in Civil Engineering.
- JOHN H. BARR, B. M. E., 428 University Avenue S. E.  
Instructor in Mechanical Engineering.
- JOHN WHITMORE, A. B., Florence Court  
Instructor in Physics.
- CONWAY McMILLAN, M. A., 803 University Avenue S. E.  
Instructor in Botany.



*Faculty and Instructors.*

9

- JOHN DEWEY, PH. D. Minneapolis.  
Professor of Mental and Moral Philosophy and Logic.
- HON. WILLIAM S. PATTEE, M. A., Northfield.  
Dean of the Department of Law and Professor of the  
Law of Contracts.
- HON. S. J. R. McMILLAN, St. Paul.  
Lecturer on Constitutional Law.
- HON. GORDON E. COLE, Faribault.  
Lecturer on Corporations.
- HON. CHARLES D. KERR, St. Paul.  
Lecturer on the Law of Partnership.
- G. C. RIPLEY, B. A., Minneapolis.  
Lecturer on Equity Jurisprudence and Procedure.
- CHARLES A. WILLARD, Minneapolis.  
Lecturer on the Law of Bailments.
- JUDGE JAMES O. PIERCE, Minneapolis.  
Lecturer on the Law of Domestic Relations.
- HON. CHARLES E. FLANDREAU, St. Paul.  
Lecturer on the Law of Torts.
- JOHN B. ATWATER, B. A., Minneapolis.  
Lecturer on the Law of Real Property.
- HON. C. D. O'BRIEN, St. Paul.  
Lecturer on Criminal Law and Procedure.
- GEORGE N. BAXTER, St. Paul.  
Lecturer on Common Law and Code Pleading.
- HON. W. D. CORNISH, St. Paul.  
Lecturer on Life and Fire Insurance.
- JUDGE JOHN M. SHAW, Minneapolis.  
Lecturer on Evidence.
- JUDGE P. M. BABCOCK, Minneapolis.  
Lecturer on Wills and Administration.

- CHARLES W. BUNN, St. Paul.  
Lecturer on Suretyship and Mortgages, Practice in  
United States Courts.
- SUMNER LADD, Minneapolis.  
Lecturer on the Law of Taxation.
- HON. GEORGE B. YOUNG, St. Paul.  
Lecturer on the Conflict of Laws.
- A. F. RITCHIE, M. D., Duluth.  
Professor of Anatomy.
- RICHARD O. BEARD, M. D., Minneapolis.  
Professor of Physiology.
- C. J. BELL, Baltimore, Md.  
Professor of Chemistry.
- H. M. BRACKEN, M. D., Minneapolis.  
Professor of Materia Medica and Therapeutics.
- ALBERT E. SENKLER, M. D., St. Paul.  
Professor of Theory and Practice of Medicine.
- CHARLES H. HUNTER, A. M., M. D., Minneapolis.  
Professor of Clinical Medicine and Pathology.
- EVERTON J. ABBOTT, A. B., M. D., St. Paul.  
Professor of Clinical Medicine.
- CHARLES A. WHEATON, M. D., St. Paul.  
Professor of Principles and Practice of Surgery.
- FREDERICK A. DUNSMOOR, M. D., Minneapolis.  
Professor of Clinical and Operative Surgery.
- PERRY H. MILLARD, M. D., St. Paul.  
Dean of the Department of Medicine and Surgery and  
Professor of Clinical Surgery.
- PARKS RITCHIE, M. D., St. Paul.  
Professor of Obstetrics.

*Faculty and Instructors.*

11

- ALEX. J. STONE, LL. D., M. D.,  
Professor of Diseases of Women. St. Paul.
- JOHN F. FULTON, M. D.,  
Professor of Ophthalmology and Otology. St. Paul.
- C. EUGENE RIGGS, A. M., M. D.,  
Professor of Diseases of the Nervous System. St. Paul.
- AMOS W. ABBOTT, M. D.,  
Clinical Professor of Diseases of Women. Minneapolis.
- CHARLES H. BOARDMAN, M. D.,  
Professor of Medical Jurisprudence. St. Paul.
- ARTHUR B. ANCKER, M. D.,  
Professor of Hygiene. St. Paul.
- JAMES H. DUNN, M. D.,  
Professor of Diseases of the Genito Urinary Organs. Minneapolis.
- CHAS. L. WELLS, A. M., M. D.,  
Professor of Diseases of Children. Minneapolis.
- JAMES E. MOORE, M. D.,  
Professor of Orthopædic Surgery. Minneapolis.
- M. P. VANDERHORCK, M. D.,  
Professor of Diseases of the Skin. Minneapolis.
- W. S. LATON, M. D.,  
Professor of Laryngology. Minneapolis.
- J. CLARK STUART, A. B., M. D.,  
Professor of Histology and Bacteriology. Minneapolis.
- J. M. BELL, M. D.,  
Professor of Physical Diagnosis. Minneapolis.
- E. C. SPENCER, A. B., M. D.,  
Professor of Surgical Anatomy. St. Paul.
- A. B. CATES, A. M., M. D.,  
Adjunct to the Chair of Obstetrics. Minneapolis.

- W. A. JONES, M. D.,  
Adjunct to the Chair of Diseases of the Nervous System. Minneapolis.
- BURNSIDE FOSTER, M. D.,  
Demonstrator of Anatomy. Minneapolis.
- WILLIAM E. LEONARD, A. B., M. D.,  
Professor of Materia Medica and Therapeutics in the  
College of Homeopathy. Minneapolis.
- HENRY HUTCHINSON, M. D.,  
Professor of Theory and Practice of Medicine in the  
College of Homeopathy. St. Paul.
- GEORGE E. RICKER, A. B., M. D.,  
Professor of Clinical Medicine in the College of Homeo-  
pathy. Minneapolis.
- ROBT. D. MATCHAN, M. D.,  
Professor of Principles and Practice of Surgery in the  
College of Homeopathy. Minneapolis.
- HENRY C. LEONARD, B. C. E., B. S., M. D.,  
Professor of Obstetrics in the College of Homeopathy. Fergus Falls.
- ALBERT E. HIGBEE, M. D.,  
Professor of Gynecology in the College of Homeopathy. Minneapolis.
- JOHN F. BEAUMONT, M. D.,  
Professor of Ophthalmology in the College of Homeo-  
pathy. Minneapolis.
- HENRY W. BRAZIE, M. D.,  
Professor of Pædology in the College of Homeopathy. Minneapolis.
- SALATHIEL M. SPAULDING, M. D.,  
Professor of Diseases of the Nervous System in the Col-  
lege of Homeopathy. Minneapolis.
- WARREN S. BRIGGS, B. S., M. D.,  
Professor of Clinical Surgery in the College of Homeo-  
pathy. St. Paul.
- EUGENE L. MANN, A. M., M. D.,  
Professor of Laryngology in the College of Homeo-  
pathy. St. Paul.

## ERRATA.

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After the name of John F. Fulton, add—

FRANK ALLPORT, M. D., Minneapolis.  
Clinical Professor of Ophthalmology and Otology.

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J. Clark Stuart should be J. Clark Stewart.

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J. M. Bell, M. D., Professor of Physical Diagnosis, should be J. W.  
Bell, M. D., Professor of Physical Diagnosis and Diseases of the Chest.

*Faculty and Instructors.*

13

B. HARVEY OGDEN, A. M., M. D., St. Paul.  
Professor of the Genito Urinary Diseases in the College  
of Homeopathy.

HENRY C. ALDRICH, D. D. S., M. D., Minneapolis.  
Professor of Dermatology in the College of Homeopathy.

D. A. STRICKLER, M. D., Duluth.  
Professor of Otolaryngology in the College of Homeopathy.

CHAS. M. BAILEY, D. M. D., Minneapolis.  
Professor of Prosthetic Dentistry and Materia Medica  
in the College of Dentistry.

THOMAS C. WEEKS, D. D. S., Minneapolis.  
Professor of Operative and Clinical Dentistry.

EDWARD H. ANGLE, D. D. S., Minneapolis.  
Professor of Histology and Orthodontia in the College  
of Dentistry.

L. D. LEONARD, Minneapolis.  
Professor of Pathology and Therapeutics in the Col-  
lege of Dentistry.

HENRY T. ARDLEY, 638 E. Nineteenth Street.  
Instructor in Wood Carving, Design, &c.

CHARLES G. TREFETHEN, Nicollet Island.  
Instructor in Metal Working.

ALBERT J. SCHUMACHER.  
Instructor in Mechanical Drawing.

\*—————, U. S. A.,  
Professor of Military Science.

SAMUEL B. GREEN, B. S. St. Anthony Park.  
Horticulturist of the Experiment Station.

WILLET S. HAYES, B. S. A., St. Anthony Park.  
Assistant in Agriculture.

\*To be appointed before the opening of the next school year.

CHARLES POU-MEROU-LIE, St. Anthony Park.  
Assistant in Horticulture.

OTTO LUGGER, St. Anthony Park.  
Entomologist and Botanist of the Experiment Station.

† —————.  
Chemist of the Experiment Station.

† —————.  
Veterinarian of the Experiment Station.

#### OTHER OFFICERS.

OSCAR W. OESTLUND, B. A., 1315 Seventh Street S.  
Entomologist, Assistant on Geological Survey.

FRANK A. JOHNSON, B. S., 408 Fourth Street S. E.  
Secretary and Registrar.

LETTIE M. CRAFTS, B. L., 610 Fifth Street S. E.  
Assistant Librarian.

WILLIAM H. YATTAW, Main Building.  
Janitor.

EDWIN ANTHONY CUZNER, 214 State Street S. E.  
Superintendent of the Plant House.

CHARLES H. WHIPPS, 814 Humboldt Avenue N.  
Engineer and Janitor, College Mechanic Arts.

† To be appointed at an early date.

## STUDENTS.

## ALPHABETICAL ROLL BY CLASSES, 1887-8.

## I. GRADUATE STUDENTS, 21.

George Briggs Aiton, M. A., '87.	University of Minnesota.
John Henry Barr, B. M. E., '83.	University of Minnesota.
—Mary Lathrop Benton, B. A., '85.	University of Minnesota.
—Matilda Jane Campbell [Wilkin], B. L., '77.	University of Minnesota.
—Leila Moss Crandon, M. L.,	Northwestern University.
Charles Lincoln Edwards, B. S.,	Lombard University.
Charles Burke Elliott, LL. B., '81.	Iowa State University.
Samuel Freuder, B. A., '85.	Mercer University.
Edward C. Gale, B. A., '84.	Yale College.
Alfred Bert Gould, B. A., '87.	University of Minnesota.
Andrew J. Graham, B. D.,	Seabury.
John Blackstock Hawley, B. S., '87.	University of Minnesota.
William Ricketson Hoag, B. C. E., '84.	University of Minnesota.
Joseph H. C. Hutchinson, B. A., '84.	University of Minnesota.
William Leslie King, B. A., '81.	University of Minnesota.
Ralph Murdock McKenzie, B. A., '87.	University of Minnesota.
Oscar William Oestlund, B. A.,	Augustana College.
Charles Frederick Sidener, B. S.,	University of Minnesota.
George Washington Soublette, B. A., '78.	Kirksville College, Mo.
—Etta Thompson, B. S., '79.	University of Minnesota.
John Whitmore, A. B., '86.	Yale College.



## II. UNDERGRADUATE STUDENTS, 370.

### SENIOR CLASS, 36.

—Adams, Alice Anna,	Minneapolis,	Literary.
Anderson, Christian,	Spring Valley,	Civil Engr'g.
—Baker, Lucy Lloyd,	Minneapolis,	Literary.
Benson, Percival Ramsey,	Anoka,	Classical.
Bierbauer, Bruno,	Mankato,	Scientific.
—Blanchard, Mary Lizzie,	Zumbrota,	Literary.
—Cook, Edna,	Minneapolis,	Scientific.
Fillmore, Albert Ernest,	Minneapolis,	Classical.
Finch, Albert Ames,	Hastings,	Scientific.
—Firkins, Ina,	Minneapolis,	Literary.
Germo, Severt,	Medo,	Literary.
—Gideon, Florence Ellen,	Excelsior,	Literary.
Graber, Albert,	Minneapolis,	Classical.
Grant, Ulysses Sherman,	Minneapolis,	Scientific.
Hobbs, Fred Ezra,	Winona,	Literary.
Holmes, Walter Benjamin,	Faribault,	Scientific.
Johnson, Elwin Bird,	Marshall,	Scientific.
*Johnson, Rollin Erastus,	Medford,	Classical.
Loe, Eric Haldorson,	Minneapolis,	Mech. Engr'g.
Mann, Arthur Teall,	Minneapolis,	Scientific.
Matteson, Sumner Warren, Jr.,	Decorah, Ia.	Scientific.
Morris, John,	Bristol,	Mech. Engr'g.
—Olmstead, Susan Hawley,	New Haven, Ct.,	Literary.
—Pillsbury, Sadie Belle,	Minneapolis,	Literary.
—Porter, Olivia Canby,	Minneapolis,	Literary.
Reed, Melville Emerson,	Hastings,	Scientific.
Rowell, Warren Cogswell,	Winona,	Scientific.
—Shillock, Anna,	Minneapolis,	Literary.
Skørdalsvold, Johannes Jens,	Minneapolis,	Literary.
Smith, Dow Samuel,	Minneapolis,	Scientific.
Stacy, Francis Newton,	Monticello,	Classical.
Thompson, Charles,	No. Yarmouth, Me.,	Literary.
Thompson, Helmus Wells,	Wells,	Classical.
Torrens, John Lucius,	Oakland,	Scientific.
Willard, William Dodsworth,	Mankato,	Classical.
—Winchell, Ima Caroline,	Minneapolis,	Literary.

\*Died March, 1888.

## JUNIOR CLASS, 33.

Abernethy, Frank Sherman,	Minneapolis,	Scientific.
Babcock, Earle Jay.	Minneapolis,	Scientific.
Babcock, Kendric Charles,	So. Brookfield, N. Y.,	Literary.
—Baker, Rebecca Virginia,	Minneapolis,	Literary.
—Baker, Sibyl Belle,	Minneapolis,	Literary.
Cheney, William Whittelsey,	Minneapolis,	Classical.
Coe, Clarence Stanley,	Iowa City, Ia.,	Civil Engr'g.
—Countryman, Gratia Alta,	Minneapolis,	Scientific.
—Elwell, Mattie Laura,	Minneapolis,	Literary.
Faries, John Culbert,	Minneapolis,	Classical.
Giddings, Arthur,	Anoka,	Classical.
Goode, John Paul,	Marion,	Scientific.
Johnson, Henry,	Sauk Centre,	Literary.
Jones, Frank Du Mars,	Minneapolis,	Scientific.
Ladue, William Baker,	Salem, Oregon,	Classical.
Lind, Alfred,	Winthrop,	Scientific.
McGregor, Lane,	Oxford, O.,	Classical.
—McMillan, Jessie,	Minneapolis,	Literary.
Meacham, George Henry,	Prescott, Wis.,	Scientific.
Meeds, Alonzo Draper,	Stillwater,	Scientific.
Moffett, Robert Leslie,	Minneapolis,	Literary.
—Montgomery, Louise,	St. Cloud,	Scientific.
Nowell, James Albert,	St. Paul,	Classical.
Sacre, Bertie Leverett,	Minneapolis,	Civil Engr'g.
—Sewall, Margaret Louise,	St. Paul,	Classical.
—Smith, Ada Emily,	Algona, Ia.,	Scientific.
Stockwell, Walter Lincoln,	Anoka,	Scientific.
—Strohmeier, Lydia Kathrina,	Minneapolis,	Classical.
—Thompson, Maud,	Minneapolis,	Literary.
Triggs, Oscar Lovell,	Taopi,	Classical.
Voge, Christopher Elisha,	Minneapolis,	Scientific.
—Waters, Helen Edith,	Minneapolis,	Literary.
—Weber, Mary Louise,	Rice Lake,	Literary.

## SOPHOMORE CLASS, 71.

Abbott, Howard,	Minneapolis,	Scientific.
—Abernethy, Antoinette Judson,	Minneapolis,	Literary.
—Aiton, Hannah,	St. Peter,	Literary.
Allen, Edmund Pratt,	Minneapolis,	Scientific.
—Andrews, Hattie Louise,	Minneapolis,	Classical.
Baily, Henry Patterson,	Minneapolis,	Scientific.
Beach, William Artemus,	Minneapolis,	Scientific.
Brabec, Frank,	Hutchinson,	Scientific.

Brown, Walter Reynolds,	Minneapolis,	Classical.
Burt, John Lucius,	Minneapolis,	Civil Engr'g.
Christianson, Christian H.,	Bath,	Scientific.
Christianson, Peter,	Bath,	Scientific.
Clark, Victor Selden,	Minneapolis.	Literary.
—Comfort, Sarah Catherine.	Minneapolis.	Literary.
Conger, Charles Thompson,	New York, N. Y.,	Classical.
—Countryman, Lana Mariah,	Minneapolis.	Classical.
Covell, Frank,	Minneapolis,	Scientific.
Crosby, Frank Noble,	Hastings.	Classical.
Cutts, Chas. Rollin Edw. Murray,	Forest City,	Scientific.
Dahl, John Albin.	Minneapolis,	Literary.
Dann, Wilber Wainwright,	Minneapolis,	Civil Engr'g.
Dodge, Warren Maynard,	Farmington,	Scientific.
Douglas, Fred. Luke,	Jericho Center, Vt.,	Civil Engr'g.
Erf, James Edward,	Monroeville, O.,	Literary.
Fryberger, Harrison Lucien Earle.	Red Wing,	Classical.
Gerry, Martin Hugh, Jr.,	Minneapolis,	Scientific.
Gilman, Fred Howard,	Rosemount,	Scientific.
Gould, Charlie Devereaux,	Spring Valley,	Classical.
Grant, James Colfax,	Minneapolis,	Scientific.
Greenwood, Williston Wirt,	Mankato,	Civil Engr'g.
Grinager, William Fred,	Worthington,	Literary.
Gross, Otis Carsley,	Pickwick,	Scientific.
Hayden, John Foot,	Fargo, D. T.,	Civil Engr'g.
Higgins, John Turner,	Hutchinson,	Civil Engr'g.
Hoyt, William Hausmer,	Minneapolis,	Civil Engr'g.
Jackson, Charles William,	Brookln Centre,	Scientific.
—Jones, Jennie Louise,	Minneapolis,	Scientific.
Kennedy, Henry Martin,	Litchfield,	Scientific.
Kennedy, Louis Henry,	Litchfield,	Classical.
Kennedy, Patrick,	Oshawa,	Scientific.
Leeds, Warner Mifflin,	Lisbon, D. T.,	Scientific.
Lum, Burt Frank,	Minneapolis,	Scientific.
*Magny, Fred.,	Minneapolis,	Classical.
—Mills, Mary,	Elk River,	Literary.
—Morin, Maggie Belle,	Albert Lea,	Scientific.
Morrill, Forrest Albert,	Randolph.	Civil Engr'g.
—Nicol, Jessie May,	Minneapolis,	Literary.
Nilson, Thorwald Eid,	Atwater,	Mech. Engr'g.
—Phillips, Edith Viola,	Minneapolis,	Literary.
Pike, Joseph Brown,	St. Paul,	Classical.
Rex, Milton.	Minneapolis,	Classical.

\*Died March, 1888.

Richardson, Herbert Gilman,	Minneapolis,	Scientific.
Rutherford, Wm. Henry Andrew,	Rockford,	Literary.
Savage, Charles Albert,	St. Paul,	Classical.
—Sawyer, Harriet Eliza,	Stillwater,	Literary.
—Schleuder, Julia Emily,	St. Peter,	Literary.
Serungard, Siever,	Cooperstown, D. T.,	Literary.
Shaw, Albert Woodward,	Minneapolis,	Scientific.
Smith, William Carpenter,	St. Cloud,	Civil Engr'g.
Sommers, Charles Lyesring,	St. Paul,	Literary.
Spaulding, Edward Martin,	Minneapolis,	Scientific.
Spottswood, Edward Whipple,	Minneapolis,	Scientific.
Stacy, Albert Wallace,	Washburn,	Scientific.
Thomas, Nathaniel Seymour,	St. Paul,	Classical.
Trask, Birney Elias,	Minneapolis,	Civil Engr'g.
Veblen, John Edward,	Nerstrand,	Civil Engr'g.
Wait, Fred. Cogswell,	Winona,	Classical.
West, Max,	Minneapolis,	Scientific.
Wilson, Ole Knute,	Gilchrist,	Scientific.
Winslow, Walter Edwin,	Minneapolis,	Scientific.
Woodward, Herbert Milton,	Richfield,	Mech. Engr'g.

## FRESHMAN CLASS, 106.

—Abbott, Birdie,	Minneapolis,	Literary.
Anderson, Andrew Curtin,	Minneapolis,	Literary.
Anderson, Christopher August,	Nicollet,	Literary.
Aslakson, Baxter Martin,	Willmar,	Scientific.
Avery, Bertrand,	Albert Lea,	Scientific.
—Bebb, Rose Ann,	Minneapolis,	Literary.
Bebb, William Bennett,	Minneapolis,	Scientific.
—Beck, Lucy Campbell,	Crawfordsville, Ind.,	Scientific.
—Bell, Gertrude Grosvenor,	Minneapolis,	Literary.
Bentley, Ernest Eugene,	Spring Valley,	Classical.
Blethen, Alden Joseph, Jr.,	Minneapolis,	Classical.
Boehm, John Charles,	Rich Prairie,	Scientific.
Boyum, Sjur Johnson,	De Lamere, D. T.,	Scientific.
Bray, Charles,	Norwood,	Classical.
Browne, Squire Fred,	Kalamazoo, Mich.,	Classical.
Butterfield, George Arthur,	Wasioja,	Classical.
Carrroll, James Edward,	Minneapolis,	Scientific.
Case, Carl Delos,	Minneapolis,	Classical.
—Chapman, Grace,	Minneapolis,	Literary.
Chappel, Benjamin Philip,	Ellsworth, Wis.,	Literary.
Chase, Charles Lincoln,	Hastings,	Scientific.
Chilgren, Gustaf A.,	Norseland,	Literary.

Chowen, Walter Abraham,	Chowen P. O.,	Scientific.
Clark, George Archibald,	Eden Prairie,	Literary.
—Connor, Myrtle,	Minneapolis,	Literary.
Cross, John Grosvenor,	Rochester,	Scientific.
—Cross, Nellie Malura,	Minneapolis,	Literary.
Dahl, John Frithiof,	St. Peter,	Classical.
Dakin, William Wesley,	Royalton,	Scientific.
Dodge, Albert Arthur,	Farmington,	Scientific.
Eitel, Fred John,	Chaska,	Scientific.
Flaten, Nils,	Dennison,	Classical.
—Frost, Flora Joy,	Jackson,	Literary.
—Frye, Nora,	Elk River,	Classical.
Gardner, Edward Brown,	Minneapolis,	Scientific.
—Getschell, Charlotte Hannah,	St. Cloud,	Scientific.
Gibbs, Milton Traverse,	Rochester,	Scientific.
—Gotwald, Mary Susan,	St. Paul,	Literary.
Gregerson, Lawrence,	Geneva,	Scientific.
—Guthrie, Anna Loraine,	Minneapolis,	Classical.
Guthrie, Charles Elise,	Minneapolis,	Classical.
—Guthrie, Dora May,	Minneapolis,	Scientific.
Hall, Theodore Dwight,	St. Paul,	Scientific.
—Hamblin, Susie,	Minneapolis,	Literary.
Hammar, John Theodore,	St. James,	Literary.
Hammond, Asa John,	Lake City,	Classical.
Hanft, Frank William,	New Ulm,	Scientific.
—Hannum, Jennie Sophia,	Hadley, Mass.,	Literary.
Hardenberg, Collis Rodgers,	Minneapolis.	Classical.
—Harris, Sally Prime,	Minneapolis,	Literary.
Higgins, Elvin Lydiard,	Hutchinson,	Scientific.
House, Everett Jay,	Paynesville, O.,	Classical.
Huhn, George Philip,	Minneapolis,	Scientific.
—Jordan, Nellie,	Winnebago City,	Scientific.
Jorgens, Joseph Oscar,	Grand Meadow,	Literary.
Knappen, Theodore McFarlane,	Minneapolis,	Scientific.
Knauff, Muhlenberg Keller,	St. Paul,	Scientific.
Leach, Harlan Edward,	Spring Valley.	Classical.
Lynch, George Bell,	St. Paul,	Scientific.
—McHenry, Beulah Richardson,	Fargo, D. T.,	Literary.
—McOuat, Mary,	St. Peter,	Scientific.
Mann, Fred Maynard.	Minneapolis,	Scientific.
March, Harry John,	Minneapolis,	Scientific.
—Martin, Lillie May,	Minneapolis,	Literary.
Matteson, Charles Dickerman,	Decorah, Iowa,	Scientific.
Merrill, John Ernest,	Minneapolis,	Classical.

—Montgomery, Frances,	St. Cloud,	Scientific.
Morris, Henry Stephen,	Sisseton Agency, D. T.,	Classical.
Morris, William Beaumont,	Montclair, N. J.,	Classical.
Nickerson, Ernest,	Elk River,	Scientific.
—Owings, Olive May,	Faribault,	Scientific.
Parrish, Herbert,	Grand Rapids, Mich.,	Classical.
—Pearson, Adelaide,	Howard Lake,	Literary.
Peirson, Homer Francis,	Grand Meadow,	Literary.
Peterson, Carl Christian,	Newark, D. T.,	Scientific.
Pierce, Stephen,	Broadhead, Wis.,	Scientific.
Pillsbury, Alfred Fisk,	Minneapolis,	Scientific.
Plowman, George Taylor,	Le Sueur,	Scientific.
Purdy, Milton Dwight,	White Hall, Ill.,	Classical.
Rexford, Minnie Agnes,	Spring Valley,	Literary.
Reynolds, Frank,	Austin,	Classical.
Richardson, Oscar Kelsey,	Minneapolis,	Scientific.
—Robinson, Louise Florence,	Minneapolis,	Literary.
Rustgard, John,	Minneapolis,	Scientific.
—Rutherford, Fanny,	Minneapolis,	Literary.
Sardeson, Fred William,	Minneapolis,	Literary.
Schoonmaker, Fred Palen.	St. Paul,	Classical.
Schurch, John Frederick,	Hastings,	Scientific.
—Sheldon, Bessie Harris,	Madison, Wis.,	Literary.
Sherman, Sidney,	Eau Claire, Wis.,	Agriculture.
Sias, Edgar Daniel,	Rochester,	Literary.
Skilling, George Wilbert,	Minneapolis,	Scientific.
Smith, Fred Pearson,	Le Sueur,	Scientific.
Smith, George Arthur,	Brown's Valley,	Scientific.
Soares, Theodore Geraldo,	Minneapolis,	Scientific.
Stearns, Victor Alonzo,	Duluth,	Literary.
—Sumbardo, Ava,	Hamline,	Literary.
Sweigle, Curtiss,	Milbank, D. T.,	Classical.
Taylor, Henry Hurlbut,	Minneapolis,	Scientific.
Timberlake, Byron Haney,	Milo, Iowa,	Literary.
Todd, Frank Chisholm,	Minneapolis,	Scientific.
Trussell, Will Francis,	Minneapolis,	Scientific.
—Watson, Mary Christiana.	Lakeland,	Literary.
Webster, Albert Martin,	Hastings,	Classical.
Weeks, Leonard Casc,	Litchfield,	Scientific.
White, Frank Archelaus,	Brainerd,	Scientific.

## SUB-FRESHMAN CLASS, 52.

Babcock, William George,	Elk River,	Scientific.
Baldwin, Daniel Eugene,	St. Cloud,	Scientific.

Brown, Justin Edgar.	Dodge Centre,	Scientific.
Burch, Edward Parris,	Menomonie,	Scientific.
—Cheney, May Moulton,	St. Anthony Park,	Literary.
Clarke, Benjamin Franklin,	Rich Valley,	Classical.
Coffin, Benjamin Franklin,	Minneapolis,	Classical.
Covell, Arthur Eugene,	Minneapolis,	Literary.
—Dodge, Edith Lucinda,	Janesville,	Literary.
Duncan, Edward Harwood,	Elk Point, D. T.,	Scientific.
—Elwell, Jessie Helen Campbell,	Minneapolis,	Literary.
Evans, Thos. Bladdyn Carriadawc,	Muskoda,	Agriculture.
Flinn, William Brainerd,	Redwood Falls,	Scientific.
Fridley, Don Phelps,	Becker,	Scientific.
—Gibbs, Gertrude Ethel,	Monticello,	Scientific.
Gill, James H.,	Cottage Grove,	Scientific.
Goodsell, Charles Ernest,	Fergus Falls,	Literary.
Graves, John Westley,	Spokane Falls, W. T.,	Classical.
Hankenson, John,	Glencoe,	Scientific.
Harris, Alfred James,	McCauleysville,	Scientific.
Harris, John Addison,	McCauleysville,	Scientific.
Holtz, Fred Leopold,	Wayzata,	Scientific.
Howard, Monroe Sherman,	Lake City,	Scientific.
Jellum, Stenton Peter,	Lake Park,	Scientific.
—Jenkins, Alfaretta Harmon,	Elk River,	Literary.
Kalnback, Wesley Albert,	Ft. Howard, Wis.,	Scientific.
Keefer, George Lenfestey,	Fairbault,	Classical.
Leary, William Conner,	Appleton,	Classical.
McCauley, John William,	Menomonie, Wis.,	Scientific.
McLeod, Roderick Alexander Wm.,	Rushford,	Scientific.
—Manson, Kathrina Emaline,	Shakopee,	Literary.
—Manley, Mary Ellen,	Menomonie, Wis.	Scientific.
—Morse, Minnie Frances,	Minneapolis,	Literary.
Nelson, Henry Knute,	Alexandria,	Scientific.
Ohnstad, John Christian,	Menomonie, Wis.,	Scientific.
Packard, Frank Alton,	Minneapolis,	Scientific.
Phoenix, Edward Chauncey,	Cumberland, Wis.,	Scientific.
Robinson, George,	Alexandria,	Classical.
Scott, Peter Pardie,	Freeborn,	Scientific.
Sheldon, Edmund Perry,	Prospect Park,	Agriculture.
Smith, Fred Andrews,	Gilman, D. T.,	Scientific.
Sølsness, Lars,	Minneapolis,	Classical.
Sylvester, Charles Albert,	Madelia,	Scientific.
Thompson, Rolfe Lyons,	Sleepy Eye,	Literary.
—Tombs, Helen Huntington,	Grafton, D. T.,	Literary.
Trench, Martin Edward,	Dennison,	Scientific.

Triggs, Floyd Willding,	Taopi.	Scientific.
Tunnell, George,	Albert Lea,	Scientific.
Turrell, Robert Arthur.	Redwood Falls.	Scientific.
Upton, Wendall Phillips,	Big Lake,	Scientific.
—White, Mira May.	Kasson.	Literary.
Wiswell, Edwin,	Wadena,	Scientific.

## SPECIALS, 57.

—Amy, Laura Anna,	Minneapolis.
—Anderson, Maggie Ellen,	Minneapolis.
—Ankeny, Martha Virginia,	Minneapolis.
—Bailey, Gertrude Clara,	Waseca.
Batchelder, Edwin Josiah,	Stillwater.
—Benton, Mary Lathrop	Minneapolis.
—Berry, Blanche Parker,	Minneapolis.
—Blake, Clara Julia,	Minneapolis.
—Blodgett, Jean Blanche,	Faribault.
*Brohough, Gustav O.,	Red Wing.
—Brooks, Lucy May,	Minneapolis.
—Burton, Georgia Heeney,	Minneapolis.
Campbell, Johnston,	Marine Mills.
—Carter, Mrs. Alice W.,	Minneapolis.
—Coan, Mrs. Emma Smith,	Minneapolis.
Corliss, John Harry,	Fergus Falls.
—Cohen, Mrs. Nina Morais,	Minneapolis.
Cowles, William Henry,	Minneapolis.
—Cross, Kate Bird,	Minneapolis.
Dickinson, Horace Danforth,	Minneapolis.
Eastman, Alfred Farrington,	Minneapolis.
—Fanning, Jennie Louise,	Minneapolis.
Fanning, Rennie Bensley,	Minneapolis.
—Gale, Isabel,	Minneapolis.
—Gardiner, Mary,	Minneapolis.
Garnes, Botoif Hans,	Mabel.
—Gilbert, Priscilla Grace,	Minneapolis.
Groat, Benjamin Feland,	St. Paul.
—Harris, Emily Ruth,	Faribault.
—Hartley, Minnie,	Minneapolis.
—Kellogg, Ella May,	St. Paul.
—Kemp, May Emma,	Minneapolis.
—Lathrop, Mrs. Lodicea N.,	Minneapolis.
Ludemann, William Frederick,	St. Michael.
Marini, Edwin de,	Minneapolis.

\*Studying in absentia.



Matteson, Matts Theodore, . . . . .	Red Wing.
—Mitchell, Lizzie Payson, . . . . .	Minneapolis.
—Miner, Mrs. Viola Fuller, . . . . .	Minneapolis.
—Moore, Agnes Ruth, . . . . .	Minneapolis.
Neiler, Samuel Graham, . . . . .	Minneapolis.
Northrup, William Bartlett, . . . . .	Hamilton.
—Parker, Mary Louise, . . . . .	Minneapolis.
—Preston, Elizabeth, . . . . .	Tower City, D. T.
Ravndal, Gabriel Bil, . . . . .	Minneapolis.
—Roberts, Mary R., . . . . .	Minneapolis.
* Rollitt, Charles C., . . . . .	Faribault.
Russell, Ralph, . . . . .	St. Paul.
Schumacher, Albert John, . . . . .	Henderson.
—Severance, Carrie, . . . . .	Minneapolis.
Stack, William Evin, . . . . .	Harvey, N. B.
—Stevens, Mary Florence, . . . . .	Minneapolis.
—Talbot, Esther Bernice, . . . . .	East Machias, Me.
Thorson, Hans Thorwald, . . . . .	Willmar.
—Tucker, Gertrude Prutzman, . . . . .	Minneapolis.
Wheelock, Edward James, . . . . .	Philadelphia, Pa.
White, Samuel Morris, . . . . .	Lake City.
Winberg, Osten Kristenson, . . . . .	Minneapolis.

## A DIVISION—15.

Baier, Ethelbert, . . . . .	Minneapolis.
Beard, Elmer Ellsworth, . . . . .	Hunter, D. T.
Brandt, Henry Charles, . . . . .	New Uln.
Clark, Harry Canfield, . . . . .	Dodge Centre.
Herrmann, Frank Llongenius, . . . . .	Minneapolis.
Hilgedick, Ralph, . . . . .	Minneapolis.
Lackor, Harry Daniels, . . . . .	Minneapolis.
Lyman, Albert, . . . . .	Minneapolis.
Lyon, Everett, . . . . .	Minneapolis.
Parker, Earl Hendrick, . . . . .	Prospect Park.
Pettibone, Orrin Harmon, . . . . .	Hastings.
Stalker, Benjamin Franklin, . . . . .	Harriston, Ind.
Strand, Martin Adolph, . . . . .	Minneapolis.
Turner, George Everett, . . . . .	Minneapolis.
Verge, Harold Houghton, . . . . .	Minneapolis.

## B DIVISION—4.

Anderson, Josiah, . . . . .	Minneapolis.
Derreninger, Edward, . . . . .	Minneapolis.

\* Studying in absentia.

Heidemann, Reinhard Fred,	Sleepy Eye.
McShane, John,	Faribault.

## C DIVISION—36.

Ackermann, August,	Young America.
Bousquet, Joseph Henry,	St. Paul.
Bull, Alvah Milton,	Edina Mills.
Carpenter, Charles Edwin,	Big Flats, N. Y.
Chapman, John Charles,	Minneapolis.
Clark, Francis,	Minneapolis.
Corbett, Michael Timothy,	Minneapolis.
Devereaux, William,	Minneapolis.
Garden, F. M.,	Minneapolis.
Gilbert Asa Doughty,	Lake City.
Gonstead, John A.,	Minneapolis.
Gunderson, Edward,	Minneapolis.
Hagelund, Martin N.,	Sacred Heart.
Halverson, Charley,	Minneapolis.
Held, Albert,	New Ulm.
Hurd, Bradford Coryelle,	Minneapolis.
Jones, Arthur Vaughn,	Minneapolis.
Jordan, Prescott,	Minneapolis.
Kerr, Thomas,	Montreal, Canada.
Larson, Gustav,	Minneapolis.
Lyman, Ansel Pomeroy,	Excelsior.
Marks, William George,	Minneapolis.
Michelet, Ove,	Minneapolis.
O'Mara, William	Minneapolis.
Osterhout, Fred Horace,	Minneapolis.
Parisault, John Nels,	Minneapolis.
Peteler, Charles,	Minneapolis.
Seaton, Walter Lane,	Minneapolis.
Simpson, William,	Minneapolis.
Smith, Charles Benjamin,	Minneapolis.
Snyde, Albert,	Minneapolis.
*Strandberg, Oliver,	Minneapolis.
Sweeney, Robert Ormsby,	St. Paul.
Thosker, A.,	Minneapolis.
Tromanhauser, Seneca Haver,	Minneapolis.
Whitten, Frank Andrew,	Minneapolis.

## D DIVISION—58.

—Alden, Mrs. W. A.,	Minneapolis.
Aldrich, Charles R.,	Minneapolis.

\*Died October, 1887.

—Barr, Mrs. J. H.,	Minneapolis.
Barwisa, George H.,	Minneapolis.
Bebb, David P.,	Minneapolis.
Blackstone, John W.,	Minneapolis.
—Blair, Nellie,	Minneapolis.
—Bowdish, Jennie E.,	Minneapolis.
—Buell, Mrs. C. J.,	Minneapolis.
—Burton, Georgia Heeney,	Minneapolis.
—Byers, Mrs. J. F.,	Minneapolis.
Donnell, Edwin C.,	Minneapolis.
—Drullard, Mrs. M. B.,	Minneapolis.
Faries, John C.,	Minneapolis.
French, Eustis F.,	St. Paul.
Folwell, Russell,	Minneapolis.
Ford, Edward A.,	Minneapolis.
Fournier, Edward,	Minneapolis.
—Fox, Etta G.,	Minneapolis.
—Gifford, Mrs. S.,	Minneapolis.
—Graham, Mrs. D. M.,	Minneapolis.
Hall, Charles C.,	Minneapolis.
—Hood, May,	Minneapolis.
—House, Elizabeth A.,	Minneapolis.
—Jackson, Mrs. Jennie M.,	St. Anthony Park.
Johnson, F. A.,	Minneapolis.
Jones, Paul,	Minneapolis.
Joy, E. T.,	Minneapolis.
Joy, F. R.,	Minneapolis.
—Kellogg, Ella M.,	Minneapolis.
—Linsley, Mrs. L. F.,	Minneapolis.
—Linton, Laura A.,	Minneapolis.
Loe, E. H.,	Minneapolis.
—Long, Mrs. Charlotte B.,	Minneapolis.
—Luther, Mrs. M. L.,	Minneapolis.
—McMullen, Minnie,	Minneapolis.
—Millspaugh, Sarah Hamberton,	Minneapolis.
Nachtrieb, Richard F.,	St. Paul.
Nymand, Robert,	Minneapolis.
—Odlum, Lillian P.,	St. Anthony Park.
Ohnstad, John C.,	Minneapolis.
Orff, Julia E.,	Wayne, Ind.
—Patten, Mary R.,	Minneapolis.
Perkins, Walter,	St. Paul.
—Perry, Mrs. P. H.,	Minneapolis.
Piper, Horace M.,	Minneapolis.

Place, Washington N. G.,	Duluth.
—Pyle, L. Emma,	Toughkenamon, Pa.
Rodgers, William S.,	Minneapolis.
Sayfried, Edward L.,	Minneapolis.
—Shepard, Mrs. J. R.,	Minneapolis.
Sherburne, Walter,	Minneapolis.
—Sparrell, Delia S.,	Lake City.
Stone, Alfred P.,	Minneapolis.
—Van Anda, Lizzie,	Minneapolis.
—Waite, Dora E.,	Minneapolis.
—Walls, Lila E.,	Minneapolis.
Washburn, Charles H.,	Minneapolis.

SCHOOL OF PRACTICAL AGRICULTURE, 10.

Brown, William S.,	Granite Falls.
Dunnford, James W.,	England.
Evans, Thoms B. C.,	Murcoda.
Guthrie, J. De Mott.	Minneapolis.
Munz, Emil,	Otter Tail Co.
Mura, John,	Bloomington.
Sherman, Sidney,	Eau Claire, Wis.
Sheldon, Edwin P.,	Minneapolis.
Stagen, Martin,	Bird Island.
Tunnell, George,	Albert Lea.

SUMMARY, 1887-'88.

DEPARTMENT.	Class.	Gentle- men.	Ladies.	Total.
Graduate Students.....		17	4	21
College of Science, Literature and Arts.....	{ Senior .....	22	11	33
	{ Junior .....	20	12	32
College of Mechanic Arts.....	{ Senior .....	3		3
	{ Junior .....	1		1
College of Science, Literature and Arts, and Mechanic Arts .....	{ Sophomore.....	59	12	71
	{ Freshman .....	78	28	106
	{ Sub-Freshman .....	43	9	52
	{ Special .....	24	33	57
School of Practical Mechanics and Design.....	{ Division A .....	15		15
	{ Division B .....	4		4
	{ Division C .....	36		36
	{ Division D .....	28	30	58
School of Practical Agriculture .....		10		10
		360	139	499
Twice counted .....		3	5	8
Totals .....		357	134	491

## THE UNIVERSITY.

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The University of Minnesota is a State institution, endowed by the general government and supported by the State, being a part of the State educational system. It is situated in the city of Minneapolis, about a mile below and in full view of the Falls of St. Anthony. The grounds are now about forty-five acres in extent, undulating in surface, well wooded with native trees, and by reason of the natural advantages of situation and contour, very attractive.

The experimental farm of the Agricultural College is situated on Como avenue, about two miles distant.

### DEPARTMENTS.

The University is divided into five distinct departments: A College of Science, Literature and Arts, a College of Mechanic Arts, a College of Agriculture, a Department of Law and a Department of Medicine, the latter consisting of three separate colleges.

I. In the COLLEGE OF SCIENCE, LITERATURE, AND ARTS there are three courses of study, called Classical, Scientific, and Literary. The Classical course has for its leading studies the Greek and Latin languages; the Scientific course, the natural sciences; the Literary course, the modern languages. The regular college courses are of four years duration. A year of preparatory work is given to those whose schools at home do not prepare for the Freshman class. The completion of these courses leads respectively to the degrees: Bachelor of Arts, Bachelor of Science, and Bachelor of Literature.

II. The COLLEGE OF MECHANIC ARTS offers courses of study in civil engineering, mechanical engineering, electrical engineering, and architecture, leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, Bachelor of Electrical Engineering, and Bachelor of Architecture. The "School of Practical Mechanics and Design," a department of this college, offers courses of practical instruction in shopwork and drawing, but no degrees are conferred. It is expected that a School of Mines will soon be established in connection with this college.

III. The COLLEGE OF AGRICULTURE offers a regular college course in agriculture of four years of college work and one year of preparatory

work. The degree of Bachelor of Agriculture is granted upon completion of the course. The requisites for admission are such as to give free access to students who are well grounded in the ordinary English branches. The School of Agriculture is a training school for the College of Agriculture and also for practical farm life. An experiment station has just been organized at the University farm.

IV. The DEPARTMENT OF LAW offers a two years' course of instruction leading to the degree of Bachelor of Laws. The terms and vacations of this department are the same as those of the College of Science, Literature and Arts.

V. The DEPARTMENT OF MEDICINE. This department is composed of the following colleges: The College of Medicine and Surgery, the College of Homeopathic Medicine and Surgery and the College of Dentistry. The course of study extends through three years of six months each.

THE GRADUATE DEPARTMENT. In all the colleges, except those of Law and Medicine, there is an advanced course of study leading to the Master's degree. These courses are open to graduates of any reputable college, upon presentation of diploma.

SPECIAL COURSES. In all the departments students of an advanced age are permitted to pursue, under direction of the faculty, one or two distinct lines of study and investigation.

#### BUILDINGS.

The main or academic building is 168 feet in length and 90 feet in breadth, exclusive of porches, having three stories above the basement. The walls are of blue limestone. The rooms, 53 in number, as well as all the corridors, are heated by an efficient steam apparatus. Water is supplied from the city mains, and there is a standpipe running from the basement through the roof, with hose attached on all the floors, for protection against fire. The assembly hall, in the third story, 87x55 feet and 24 feet high, will seat with comfort 700 people, and 1,200 can be accommodated.

THE AGRICULTURAL COLLEGE is of brick on a basement of bluestone, 146x54 feet. The central portion is two stories in height. The south wing, 56x37, is a plant house of double sash and glass. The north wing contains the chemical laboratory. There are class rooms for chemistry and agriculture, and private laboratories for the professors. A large room in the second story is occupied by the museums of technology and agriculture. A model farm house and barn have been erected on the experimental farm.

THE MILITARY BUILDING was completed in the summer of 1884. It is the largest drill hall in the country, and is so constructed as to serve

the additional purpose of a large assembly hall. It will seat with comfort 3,500 people.

THE COLLEGE OF MECHANIC ARTS building is of red brick, with brown stone trimmings and a slate roof. It has two stories, with a high basement, and a one story wing to the rear; and is 89x53 feet, not including the wing. The building contains 20 rooms, exclusive of the cloak and wash rooms, including large engineering and physical recitation rooms, drawing rooms, physical and testing laboratories, shops and apparatus rooms. It is thoroughly ventilated, heated by steam and supplied with water from the city mains.

SCIENCE HALL AND MUSEUM. A new building for the purposes of instruction in science, and for a museum, is now being erected, and is expected to be ready for use at the opening of the next college year. This building is of stone, and has a frontage of 245 feet.

#### MUSEUMS.

THE GENERAL MUSEUM comprises the collections of the geological and natural history survey of the state, augmented by purchases and donations. The specimens are contained, so far as they are ready for exhibition, in rooms 51 and 52 of the main University building. In the south room; No. 52, are the geological and mineralogical specimens, in cases suitably arranged about the room; the suite of typical Minnesota rocks and minerals being in the large case in the center of the room. Upwards of 4,700 entries and 12,000 specimens, including duplicates, indicate the volume of this department of the Museum, embracing species not only from the state of Minnesota, but from all parts of the world. Among these is a complete series of the zinc and iron minerals and their associates, from Franklin, Ogdensburg, and Bergen, N. J., and a collection of sixty-four meteoric stones and irons from different parts of the world.

An archæological collection of several hundred specimens, chiefly from the region of the Mound Builders in Ohio, has also been deposited by Dr. H. E. Twichell. It is expected that this collection will ultimately become the property of the University.

In the north room, No. 51, are upright cases filled with zoological specimens. These embrace specimens of some of the larger mammals and fur animals of the Northwest, birds, marine invertebrates, alcoholic preparations, and a set of Prof. Ward's cast of fossils.

The General Museum has lately acquired by purchase a large number of specimens representing specially the bird and mammalian fauna of the Northwest, and particularly of Minnesota.

Sets of the collections of the United States Fish Commission from the Atlantic and Pacific coasts, have also been presented by the Smithsonian Institution.

The Museum is rapidly growing in value by the accumulations of the geological survey of the state, and is constantly used for the illustration of scientific instruction. The rooms are open daily during the university year for the convenience and use of students and visitors.

Contributions and correspondence should be addressed to the curator, Prof. N. H. Winchell.

THE MUSEUM OF AGRICULTURE is designed to assist in illustrating the instruction in agriculture and horticulture. It comprises models of agricultural implements, seeds of grasses, grains and noxious weeds in jars; grasses and grains in the straw; drawings and lithographs of machines and animals; fruits preserved in alcohol; fertilizers, and other articles of interest to the farmer. Contributions are respectfully requested, and should be addressed to Prof. Edward D. Porter.

THE PLANT HOUSE is similar in purpose to the museum of agriculture. It is designed to furnish (1) means of illustrating the subject of botany, viz: specimens for analysis before the class, and living plants of botanic or economic interest that cannot be grown in the open air in Minnesota; (2) means of illustrating the subject of horticulture, and the construction, heating, and management of plant houses.

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. This collection will embrace 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 woollen goods, earthenware, pottery, etc. Contributions are respectfully solicited, for which due credit will be given. They should be addressed in care of Prof. James A. Dodge.

THE CLASSICAL MUSEUM, a beginning of which has been made, will comprise all *materia* that may illustrate classical geography, topography, chronology, mythology, archæology, and art, such as plans of ancient cities, temples, battle-fields, camps, etc.; busts (original and plaster casts); coins and medals; specimens (original and plaster casts) of ancient sculpture, friezes, capitals, columns, vases, etc.; books and plates of costumes, military weapons, armor, household and agricultural affairs, and naval illustrations, etc.; architecture; ancient books and manuscripts; specimens of inscriptions and implements used in writing, and in the arts. Contributions may be sent to Prof. Jabez Brooks, D. D.

#### THE LIBRARY.

The bound volumes number more than 21,000.

The alphabetical list of authors, printed from year to year, serves a good purpose and furnishes the titles for the printed card catalogue.



There is a catalogue of subjects, called "Finding Lists," kept for sale at 10 cents per copy.

The library and reading room occupy rooms 18, 20, 22, 24 to 28 in the first story of the main building. The books are shelved according to a simple classification, upon a so-called "elastic system," which allows additions indefinitely without disturbing the existing arrangement and numbering.

The library is open to everybody from 8:15 A. M. to 4:15 P. M. every day of the university year, except Sundays and holidays. During the vacation the library is open on Wednesday and Saturday evenings at 7:30 o'clock for the issue and receipt of books borrowed. Members of the University are allowed to borrow books for home reading, to be kept seventeen days; but works marked in the catalogue with a \* (called "starred books,") comprising books of reference, illustrated works, and rare and costly books cannot be removed. These works, as well as others, may be read and consulted in the reading room.

About eighty periodicals are received regularly by the library, including the leading quarterlies, bi-monthlies, monthlies, weeklies, and semi-weeklies.

#### EXPENSES.

These depend largely upon the tastes and habits of the individual. The University has no dormitories, but students find no difficulty in obtaining board among the people of the city. Good board can be obtained in private families at prices ranging from \$4 upwards. Some of the students board in clubs at a cost of from \$2.50 to \$3 a week.

The University cannot promise employment to those desiring to earn their own living. The public bounty stops at furnishing free instruction. Many of the students support themselves while in college, and a young man who really wants work, and will look for it, can generally find it.

The only University charge except in the professional schools, is the annual fee of \$5.00 for incidental expenses. This fee must be paid before the student can join his classes, and no deduction is made for absence or late entrance. Students provide their own books. Laboratory charges depend upon the amount of material used.

The average necessary expenses of students boarding in families appear to be about \$275.; those of students boarding in clubs about \$200.

In the departments of law and medicine tuition fees are charged. See announcements of these departments *infra*.

#### STUDENTS' SOCIETIES.

THE STUDENTS' CHRISTIAN ASSOCIATION. This society was formed by

students for the purpose of mutual moral and spiritual improvement. Devotional meetings are held weekly, and students are cordially invited to attend its meetings and aid in its work. The constitution provides for including all and excluding none who sympathize with the object of the association and desire to share in its work and benefits. A building of brown stone, costing between eleven and twelve thousand dollars has been erected for the use of the association, funds having been contributed by personal benevolence.

**THE STUDENT'S LIBERAL ASSOCIATION.** This is a moral and religious association, whose main work is to secure lectures of such a kind as to give an impartial presentation of the different creeds and beliefs of the world.

**THE YOUNG MEN'S CHRISTIAN ASSOCIATION** is a vigorous organization and is connected with the Y. M. C. A. brotherhood of the colleges of the country.

**LITERARY SOCIETIES.** There are two literary societies, meeting every Monday evening during the school year, which furnish excellent and much prized opportunity for practice in extemporaneous speaking and parliamentary procedure. Besides these two societies which are open to all students, several of the college classes have debating clubs of a similar nature.

**THE ATHLETIC ASSOCIATION** is a university organization, having for its object the general physical culture of the students, and the encouragement of a proper spirit in favor of hearty, manly sports. The Monday before Commencement is the Annual Field Day of the association.

#### ALUMNI ASSOCIATION.

This association was organized in 1875. All graduates of the existing colleges of the university are members. The members of the Board of Regents and the general Faculty are honorary members. There are the usual officers charged with the customary duties. An Executive Committee conducts business not otherwise provided for. The annual meeting is on the day preceding Commencement, at 3 o'clock P. M. The Alumni attending commonly dine together after the public exercises on Commencement day. The following are the officers of the Association for the present year: President, J. F. Miner; Vice-President, Laura Linton; Secretary, Lizzie A. House; Treasurer, J. W. Perkins; Historian, J. C. Hutchinson; Orator, T. E. Byrnes; Poet, Agnes Bonniwell.

#### PRIZES.

Three prizes of \$30, \$25 and \$20, offered by the Hon. J. S. Pillsbury, will be awarded the coming year for the best work in the Rhetorical Department as evidenced finally by an oration in public.

**MILITARY.**

Instruction in military science will be given the coming year by an officer of the U. S. Army.

**GEOLOGICAL SURVEY.**

The University is charged by law with the work of the geological and natural history survey of the state, under direction of the board of regents. This survey has been in operation since 1872, but has been confined principally to the geological portion of the work. More lately the regents have also ordered the beginning of botanical collections, with a view to the creation of a full herbarium of the flora of the state, and instituted systematic observation and reports on the birds, mammals and insects of Minnesota.

The law creating the survey embraces not only a geological survey, including a complete account of the rocks and minerals of the state and their chemical analysis, but also a natural history survey, comprising an examination of all species of trees, shrubs, herbs, grasses, native or naturalized, and a complete account of the animal kingdom as represented in the state, including all mammalia, fishes, reptiles, birds and insects. It also orders the tabulation of meteorological statistics and an investigation of the climatic peculiarities of Minnesota. It orders the collection of topographical and hypsometrical data, and the compilation of an accurate map, which, with the approval of the governor, is to be the official map of the state. The law also requires a permanent exhibition to be made in the buildings of the University for public inspection, free of cost, in well warmed and furnished rooms. The regents make annual reports of progress, and on the completion of any portion of the work, the final report is made to the governor. The first volume of the final report was published in August, 1884. The second volume is in press. These reports are placed in all the public libraries in the state, and in each High School working under the regulation of the High School Board. The remainder of the edition is sold at the cost of printing (\$3.50 per copy), and can be had by addressing the state geologist, Prof. N. H. Winchell.

THE COLLEGE OF SCIENCE, LITERATURE  
AND THE ARTS.

THE FACULTY.

CYRUS NORTROP, LL. D.

*President.*

WILLIAM W. FOLWELL, LL. D.

*Professor of Political Science.*

JABEZ BROOKS, D. D.

*Professor of Greek.*

JOHN G. MOORE, B. A.

*Professor of German.*

CHRISTOPHER W. HALL, M. A.

*Professor of Geology, Mineralogy and Biology.*

JOHN C. HUTCHINSON, B. A.

*Associate Professor of Greek and Mathematics.*

JOHN S. CLARK, B. A.

*Professor of Latin.*

MATILDA J. WILKIN, B. L.

*Instructor in English and German.*

MARIA L. SANFORD.

*Professor of Rhetoric and Elocution.*

WILLIAM A. PIKE, S. B.

*Professor of Drawing.*

JOHN F. DOWNEY, M. A., C. E.

*Professor of Mathematics and Astronomy.*

JAMES A. DODGE, PH. D.

*Professor of Chemistry.*

CHARLES W. BENTON, B. A.

*Professor of French.*

THOMAS PEEBLES, B. A.

*Instructor in Mental and Moral Philosophy and Logic.*

O. J. BREA.

*Professor of Scandinavian.*

CHARLES F. SIDENER, B. S.

*Instructor in Chemistry.*

HENRY F. NACHTRIEB, B. S.

*Assistant Professor of Biology.*

GEORGE EDWIN MACLEAN, PH. D.

*Professor of English.*

HARRY PRATT JUISSON, M. A.

*Professor of History.*

CONWAY McMILLAN, M. A.

*Instructor in Botany.*

JOHN WHITMORE, B. A.

*Instructor in Physics.*

HENRY T. ARDLEY,

*Instructor in Drawing.*

\*JOHN DEWEY, PH. D.

*Professor of Mental and Moral Philosophy and Logic.*

\* To commence work at the opening of the next school year, September, 1888.

**TERMS.**


The University year embraces thirty-eight weeks, beginning on the Tuesday before the first Thursday in September, and is divided into three terms. The first term has thirteen, the second twelve, and the third thirteen weeks. Commencement day comes on the first Thursday in June. See calendar for days and dates on page five.

**COURSES OF STUDY.**

The College of Science, Literature and the Arts offers three courses of study, called the Classical, Scientific, and Literary. Applicants desiring to pursue Greek and Latin will select the Classical course. Those desiring specially to pursue English, German, and French, with or without Latin, will select the Literary course. Those desiring specially to pursue scientific studies, will select the Scientific course. Mathematics is required to the same extent in all. These courses lead, respectively, to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Literature. Applicants are free to select their courses of study on admission, but cannot thereafter change them except as allowed by vote of the General Faculty.

The courses of this college are open, free of all charges for instruction, to all persons over fourteen years of age, whether residents of the state or not, who may pass the required examinations. Applicants will not, however, be admitted to the preparatory class (Sub-Freshman), provided they can get instruction in the subjects taught in this class in the school district in which they live.

**ADMISSION.**

[ Candidates who have been preparing themselves for admission according to the requisites announced in the catalogue for 1886-'87, will be examined accordingly.]

Applicants for admission to the Sub-Freshman Class will be examined in the following studies :

**\*LATIN GRAMMAR.**—This will include the subjects of orthography, etymology and syntax as found in Harkness, or etymology and syntax as found in Allen & Greenough's Latin Grammar. Greater proficiency than has hitherto been shown is particularly desired in the following subjects: Classification of the letters. Rules of phonetic changes as given in sections 19-36 inclusive, in Harkness or sections 9-11 (and elsewhere) in Allen & Greenough. The analysis of the verb forms. The rules of syntax, and the principal parts of the irregular verb.

**ENGLISH GRAMMAR.**—The examination will cover, in general, the essentials of grammar as indicated in the following particulars: The derivation and composition of words; the inflection of words: declension and synopsis of conjugation; the classification of words, according to their office, as parts of speech, their definitions, and their properties or attributes. The syntax; the relations of agreement and government; the various

\* Those who have not had Latin Grammar will be given an opportunity of taking it in the sub-Freshman year.

kinds of sentences, simple, compound, or complex as to form, and declarative, etc., as to meaning. Sentential analysis; definition of parts or elements of a given sentence, whether primary or secondary elements, and whether words only or phrases or clauses, and the office of each of these elements. In short, the candidate should be prepared to parse, including the etymology and syntax, each word, and to analyze each sentence in a given exercise. He should be trained to illustrate by specimen-words, phrases, clauses and sentences selected or composed by himself. He should be able to correct grammatical errors and give reasons for the corrections.

**ENGLISH COMPOSITION.**—The candidate should have such knowledge of form, penmanship, orthography, punctuation, syntax and construction as will enable him to write with ease and elegance any letter of business or friendship; to draft resolutions and petitions; to prepare for the press, reports of meetings and brief notices of current events. Accuracy upon these fundamental points will cover three-fourths of the examination. In addition to this some knowledge of English composition as a fine art is expected; of the power and beauty gained by the right use of rhetorical figures; of what is meant by purity, precision, brevity and harmony and style; and this not merely by committing to memory definitions and rules, but by studying the English classics and learning to appreciate the life and vigor of the great masters of English poetry and prose.

**ARITHMETIC.**—The examination in arithmetic will cover the following topics: The fundamental rules, cancellation, greatest common divisor, least common multiple, common fractions, decimal fractions, denominate numbers, ratio and proportion, percentage (including profit and loss, commission, stocks, taxes, duties, and other applications), simple and compound interest, discount, partial payments, equation of payments, simple and compound partnership, alligation, involution, evolution, and the metric system. Proofs by casting out the nines, circulating decimals, continued fractions, exchange, permutations, and combinations are omitted, and arithmetical and geometrical progression are reserved for algebra.

**ELEMENTARY ALGEBRA.**—Any one of the following books will furnish the necessary preparation in this subject: Ray's Elementary Algebra, Greenleaf's New Elementary Algebra, Davies' Elementary Algebra, Olney's Introduction to Algebra. If Olney's Complete Algebra or Wentworth's Elements of Algebra be used, selections can be made equivalent of the above.

**HISTORY OF GREECE AND ROME.**—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, such as the books of Wilkin and Mahaffy in the History Primer series. It should be noted that a definite portion of the examination will be devoted to the geography of the country.

**HISTORY OF THE UNITED STATES.**—For grammar school grades the text-book prepared by Horace E. Scudder, is recommended. But if, as is much better, this subject is systematically studied in the high school, with elementary work in lower grades, the book of Alexander Johnston will be found valuable. In either case it is suggested that much more time be given to the development of the United States since the revolutionary war than to the story of the colonial period. The main features of the Constitution should be clearly understood, and its practical working as interpreted by the Supreme Court, and seen in operation in the growth of the nation. The chief object of this study should be that the student may understand the institutions of the republic, by learning how they came to be what they are. It should be noted that a definite portion of the examination will be devoted to the geography of the country.

† **NATURAL PHILOSOPHY.**—As much as is contained in Gage's Introduction to Physical Science.

† Classical and Literary students who have not had Natural Philosophy will take it the first term in the sub-Freshman class during the coming year.

**PHYSIOLOGY**,—The candidate should be thoroughly familiar with as much anatomy, histology and physiology of the human body as is given in Martin's "Human Body," brief course. As much knowledge of hygiene and the effect of the use of stimulants and narcotics on the human body as can be gained from both the general text and the special chapter on narcotics and stimulants in the briefer course of the "Human Body," is also required.

In addition to the above subjects, those intending to pursue Latin will be examined in:

**CÆSAR**,—First three books of the Gallic war. Translations of passages of the text into correct 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 the *oratio recta* all the passages in the *oratio obliqua* that occur in these books. The life of Cæsar and an account of his wars, especially those carried on in Gaul, with the geography of that country and the location of the different tribes mentioned in the text. The organization of the Roman army, the method of reckoning time, distance, etc., etc.

**CICERO**,—Two orations against Catiline. Translations as in Cæsar. Grammatical questions, more especially on the syntax of the cases, the infinitive mood and participles. Next year (September, 1889), four orations will be required.

Those who do not intend to pursue Latin will be examined in Cæsar and Cicero as above or, in lieu thereof:

**PHYSICAL GEOGRAPHY**,—As contained in Geikie's text-book or equivalent.

**HISTORY OF ENGLAND**,—Gardiner's English History will sufficiently cover the ground of the examination in this subject.

Applicants for admission to the Freshman Class will be further examined in the work of the sub-Freshman year, in the course chosen.

Examinations for admission will be held at the beginning of the year. See calendar on page 4 and program of examinations in appendix. Entrance examinations cannot be held at any other time unless permission be granted by the General Faculty. 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 faculty in examining them privately. Such students are, however, at a great disadvantage, being behind the class, and all students expecting to enter the University during the year are earnestly requested to be present at the beginning of the year.

Apply to the registrar for a blank application and registration number. Fill up the blank as indicated, retaining the coupon containing the number. Preserve this number as long as you have any connection with the university. If you do not enter at once, use the same number when you apply again.

Present yourself in the examination room at the hour appointed, and bring with you a lead pencil and eraser; paper will be furnished. Put your number, not your name, at the top of every sheet you use.

A box in the post-office on the first floor of the main building will be assigned to each candidate. As soon after the close of the examination as the papers can be read, the results will be made known through the post-office.

### ADMISSION ON DIPLOMA.

By a special resolution of the Board of Regents, graduates of St. Paul and Minneapolis High Schools, and the Minneapolis Academy, will be admitted to the Freshman class without examination upon presentation of their diploma. The State High School Board has inspected and classified the schools of the State under its supervision. Graduates of schools of the first rank are admitted to the Freshman class upon presentation of their diploma. At present the following schools are in this rank: Duluth, Hastings, Lake City, Mankato and Red Wing. Candidates holding diplomas from High Schools of the first rank should present their diplomas on making application. Candidates holding certificates of the High School Board or records from other Colleges or Normal Schools should present their credentials on making application.

### REGISTRATION.

All students of this college are required to pay an annual incidental fee of five dollars. No reduction is made for late entrance or for withdrawal before the end of the year. On payment of this fee, a registration card is issued which admits the holder to the recitations and lectures.

### INSTRUCTION.

It would be impracticable to attempt to give a full description of the work in the various departments, and of the methods used in teaching. The courses of study given below will sufficiently indicate the scope of the work of the different subjects offered in this college. It will be noticed that in the earlier years of all the courses the studies are required, while in the junior year more than half are elective, and in the senior year all studies are elective. The object of this arrangement is to secure, in the earlier years, a thorough discipline, and to help the student to form correct habits of study and investigation, by compelling him to pursue the studies chosen long enough to enable him to master them in a good degree. He is then prepared to take up the work of the later years and to make selections for himself, guided by his own tastes and judgment.

### CURRICULUM,

The following schedule shows the studies for the different courses, classes, and terms. The figures in brackets indicate the number of exercises a week.



**CLASSICAL COURSE.****SUB-FRESHMAN YEAR.****FIRST TERM.**

**GREEK** [5].—Brooks' Introduction to Attic Greek.

**LATIN** [5].—Cicero : four orations, with particular attention to the rules for composition of words as given in sections 313-343 of Harkness' Grammar; historical and geographical references found in the text; the life of Cicero and the history of his times, and of the Catilinian conspiracy; the antiquities connected with the text, particularly the Roman Senate, its origin, constitution, powers, duties, etc., the functions of the consulship, praetorship and other offices.

**MATHEMATICS** [2].—Higher Algebra: factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, and radicals.

\* **NATURAL PHILOSOPHY** [3].—Gage's Introduction to Physical Science.

**RHETORICAL WORK**.—Compositions.

**SECOND TERM.**

**GREEK** [5].—Brooks' Introduction (continued). Xenophon's Anabasis (begun).

**LATIN** [5].—Virgil: two books of the Aeneid; peculiarities in the form and construction of words; general review of grammar; the geography, antiquities, biographies, and mythology connected with the text.

**MATHEMATICS** [5].—Plane Geometry: Olney's text-book, including the unsolved problems.

**RHETORICAL WORK**.—Elocution.

**THIRD TERM.**

**GREEK** [5].—Xenophon's Anabasis (completed).

**LATIN** [5].—Virgil: four books of the Aeneid; peculiarities in the form and construction of words; general review of the grammar; prosody and composition of words; the life of Virgil and an account of his times and writings, the geography, antiquities, biographies, and mythology connected with the text.

**MATHEMATICS** [5].—Solid Geometry: Olney's text-book, including the exercises.

**FRESHMAN YEAR.****FIRST TERM.**

**GREEK** [5].—Xenophon's Cyropædia (begun).

**LATIN** [5].—Livy, with review of syntax; Latin composition and Roman history.

**MATHEMATICS** [5].—Higher Algebra: simple equations, proportion, progression, variation, quadratic equations, simultaneous equations of the second degree, inequalities, binomial theorem, indeterminate coefficients.

\* This subject will not be taught in the University after the fall term of 1888.

## CLASSICAL COURSE—Continued.

### FRESHMAN YEAR.—Continued.

#### SECOND TERM.

- GREEK [5].—Cypœdia (completed); Smith's and Grote's Histories of Greece.  
LATIN [5].—Livy (continued).  
MATHEMATICS [5].—Logarithms and Plane and Spherical Trigonometry with numerous applications.  
FREE-HAND DRAWING [3].—Six hours a week (OPTIONAL).  
RHETORICAL WORK.—Elocution.

#### THIRD TERM.

- GREEK [5].—Demosthenes, Olynthiacs and Phillipics.  
ENGLISH [5].—Old English (Anglo-Saxon) elements, and history of the English language.  
BOTANY [5].—Gray's Lessons and Manual, with lectures on the leading characters of the lower forms, and on the physiology of plants.  
SURVEYING [2].—Four hours a week (OPTIONAL).  
RHETORICAL WORK.—Compositions.

### SOPHOMORE YEAR.

#### FIRST TERM.

- LATIN [4].—Horace, with history of Roman literature.  
RHETORIC [4].—Geunig's text book ; study and criticism of authors ; essays.  
PHYSICS [4].—Mechanics, Sound and Heat as given in Olmsted's College Philosophy.  
FRENCH [4].—Böcher's Otto's French OR ENGLISH [4].—Milton's Paradise Lost. Grammar and Reader.

#### SECOND TERM.

- GREEK [4].—Greek Tragedy: Antigone or Prometheus, with essays; Smith's History of Greece; collateral readings.  
HISTORY [4].—Europe during the Middle Ages.  
PHYSICS.—Light, Magnetism and Electricity as given in Olmsted's College Philosophy.  
FRENCH [4].—Böcher's course OR ENGLISH [4].—Shakspeare (Rolfe's) with Abbott's Shakspearean Grammar.  
RHETORICAL WORK.—Elocution.

#### THIRD TERM.

- GREEK [4].—Plato's Apology and Crito; Homer's Iliad or Odyssey (begun); Smith's History of Greece; Essays on Plato and collateral readings.  
HISTORY [4].—England during the Middle Ages.  
CHEMISTRY [4].—A brief course in General Chemistry, consisting of lectures, recitations and laboratory work  
LATIN [4].—Tacitus ; Pliny's Letters with the history of Rome and Roman society under the Emperors.  
RHETORICAL WORK.—Orations.

## CLASSICAL COURSE—Continued.

### JUNIOR YEAR.

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#### FIRST TERM.

**ENGLISH LITERATURE** [4].—History of New English Literature. Lectures and "Seminary" with reading of authors.

**GREEK** [4].—Homer's Iliad or Odyssey (completed); Grote's history; Blackie's Horae Hellenicæ (articles on theology of Homer and interpretation of myths in Grecian mythology).

**RHETORICAL WORK**.—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected.

**HISTORY** [4].—Modern History of England.

**MATHEMATICS** [4].—Analytical Geometry: the conic sections, both by rectilinear and polar co-ordinates; producing equations of loci whose law of development is known; constructing and discussing such equations; transformation of co-ordinates; properties of loci by means of their equations.

**GERMAN** [4].—(begun) With the sub-Freshman Class.

**SCANDINAVIAN** [4].—Peterson's Norwegian Reader with exercises in writing and speaking.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work eight hours a week.

**PHYSIOLOGY AND HISTOLOGY** [4].—Lectures and laboratory work: Martin's Human Body. (This term's work can be taken by all.)

**PHYSICS** [4].—With the Scientific section.

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#### SECOND TERM.

**LOGIC** [4].

**LATIN** [4].—Plautus with study of early Latin language and literature.

**RHETORICAL WORK**.—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected:

**MATHEMATICS** [4].—Differential Calculus: differentiation of algebraic and transcendental functions; development of functions; maxima and minima; treatment of tangents, sub-tangents, normals, sub-normals, asymptotes, direction and rate of curvature, evolutes and envelopes. The text-book used is based on the infinitesimal method, but the fluxionary method is given orally, and the system fully developed.

**GERMAN** [4].—With the sub-Freshman Class.

**HISTORY** [4].—Colonial History of the United States.

**ENGLISH** [4].—Shakspeare.

**PHYSIOLOGY AND HISTOLOGY** [4].—Can be taken only by those who have had the first term's work.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work 8 hours a week.

**SCANDINAVIAN** [4].—B. Björnson's "En Glad Gut," with exercises in writing and speaking.

**MINERALOGY** [4].—With the Scientific section.

**FRENCH** [4].—With the Literary section.

**PHYSICS** [4].—With the Scientific section.

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#### THIRD TERM.

The studies for this term are the same for all courses; see page 50.

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### SENIOR YEAR.

The studies for this year are the same for all courses; see pages 50 and 51.

## SCIENTIFIC COURSE.

### SUB-FRESHMAN YEAR.

#### FIRST TERM.

- CHEMISTRY** [3].—Recitations and laboratory work; non-metallic elements and their compounds.
- BOTANY** [2].—Four hours a week—Bessy's Essentials used as a guide. A study is made of slime moulds, bacteria, yeast green, slimes, desmids, diatoms, pond scums, volvox, the moulds, the blights, the rusts, mushrooms, lichens, mosses, etc.
- MECHANICAL DRAWING** [3].—Six hours a week.
- MATHEMATICS** [2].—Higher algebra: factoring, highest common divisor, lowest common multiple, fractions, involution, evolution and radicals.
- \*LATIN** [5].—Cicero: four orations, with collateral work as in the Classical Course. OR **\*GERMAN** [5].—MacMillan's German Course, with blackboard exercises in translating English into German. OR **\*ENGLISH** § [5].—Latin elements (inflections), study of Latin Grammar, exercises in writing and conversation.
- RHETORICAL WORK**,—Compositions.

#### SECOND TERM.

- MECHANICAL DRAWING** [2].—Four hours a week.
- FREE-HAND DRAWING** [3].—Six hours a week.
- MATHEMATICS** [5].—Plane Geometry: Olney's text-book, including the unsolved problems.
- LATIN** [5].—Virgil, two books of the Aeneid, with collateral work as in the Classical Course. OR **GERMAN** [5].—Boisen's German Prose (34 pages) and Whitney's Brief German Grammar, with oral and blackboard exercises. OR **ENGLISH** [5].—Latin elements, (etymologies), selections from Latin Grammar and Reader with special reference to vocabulary and the structure of sentences.
- RHETORICAL WORK** [1].—Elocution.

#### THIRD TERM.

- CHEMISTRY** [2].—A continuation of the work of the first term. The work of the two terms corresponds nearly with the first 150 pages of Eliot and Storer's Elementary Manual of Chemistry.
- BOTANY** [3].—Six hours a week—a continuation of the work of the first term.
- MATHEMATICS** [5].—Solid Geometry: Olney's text-book, including the exercises.
- LATIN** [5].—Virgil, four books of the Aeneid; with collateral work as in the Classical Course. OR **GERMAN** [5].—Boisen's German Prose (102 pages) and Whitney's Grammar completed, with oral and blackboard exercises. OR **ENGLISH** [5].—Etymologies of Latin and later Romance origin illustrated by selections from Bacon, Dr. Johnson, and scientific text-books.

\*The language chosen this term must be continued during the sub-Freshman and Freshman years.

§ Students entering the Freshman Class may offer one year's thorough work in Latin Grammar as an equivalent for the English of the sub-Freshman year.

**SCIENTIFIC COURSE—Continued.****FRESHMAN YEAR.****FIRST TERM.**

**DRAWING** [5].—Ten hours a week—Free-hand or Mechanical.

**MATHEMATICS** [5].—Higher Algebra:—Same as for the Classical Course.

**LATIN** [5].—Livy. with OR **GERMAN** [5].—Schiller's OR **ENGLISH** [5].—Old English (Anglo Saxon) review of syntax; Latin Egmont and Siege of Antwerp, with a review of the complete Grammar. and prose masterpieces.

**SECOND TERM.**

**MATHEMATICS** [5].—Logarithms and Plane and Spherical Trigonometry with numerous applications.

**LATIN** [5].—Livy OR **GERMAN** [5].—Wagner's OR **ENGLISH** [5].—Old and German Historical Ballads with history and geography. Middle English poetry.

\* **CHEMISTRY** [5].—Lectures, recitations and laboratory work: chemistry of the metals (begun). OR \* **PHYSICS** [5].—Mechanics of solids, liquids and gases. Dana's *Mechanics* and Ganot's *Physics* are used.

**RHETORICAL WORK**.—Elocution.

**THIRD TERM.**

**ENGLISH** [5].—History of the English language with Chaucer for those in the English course. Old English (Anglo Saxon) elements, and history of the English language, for those not in the English course.

**GERMAN** [5].—Lessing's *Minna von Barnhelm* and German composition. OR **DRAWING** [5].—Ten hours a week—Free-hand or Mechanical.

† **SURVEYING** [2].—Four hours a week.

\* **BOTANY** [5].—Lectures and laboratory work—study of living matter, analogies and differences between plants and animals, principles of classification, general anatomy of mosses, ferns and flowering plants. OR \* **ZOOLOGY** [5].—Lectures and laboratory work—a general study of: the phenomena of living matter, the cell, and the biology of a plant, with a general survey of vegetal biology. Sedgwick and Wilson's *General Biology*, Part I, is used as a reference book and laboratory guide; Animal Biology begun with protozoa.

**RHETORICAL WORK** [1].—Compositions

\* Whichever of these subjects is chosen, it must be continued during the three terms of the Sophomore year.

† Not required of lady students.

SCIENTIFIC COURSE—Continued.

SOPHOMORE YEAR.

[During the coming year 1888-'89, the course of study that will be offered is the same as was announced in the catalogue for 1886-'87].

FIRST TERM.

- RHETORIC [4].—Genung's text book; study and criticism of authors; essays.
- CHEMISTRY [4].—Lectures, recitations and laboratory work—study of metallic elements completed; brief study of organic compounds. OR PHYSICS [4].—Ganot's Physics: Sound and Heat.
- BOTANY [4].—Study of the Compositae, and general vegetable histology, using Bessey's Elements of Botany as a manual. OR ZOOLOGY [4].—Lectures and laboratory work; Animal Biology continued.
- FRENCH [4].—Bocher's OR LATIN [4].—Horace, with OR ENGLISH [4].—Milton's Otto's French Grammar and Reader. history of Roman literature. Paradise Lost.

SECOND TERM.

- HISTORY [4].—Europe during the Middle Ages.
- CHEMISTRY [4].—Qualitative Analysis (begun). OR PHYSICS [4].—Ganot's Physics: Electricity.
- BOTANY [4].—A continuation of histological work and lectures upon general physiology and the physiology of nutrition, following the lines of Sachs, Strasbruger and Nageli. OR ZOOLOGY [4].—Lectures and laboratory work—Animal Biology (continued).
- FRENCH [4].—Bocher's course (continued). OR ENGLISH [4].—The English of Shakspeare (Rolfe's) with Abbott's Shakspearean Grammar.
- RHETORICAL WORK.—Elocution.

THIRD TERM.

- HISTORY [4].—England in the Middle Ages.
- CHEMISTRY [4].—Qualitative Analysis (completed). OR PHYSICS [4].—Ganot's Physics: Light.
- BOTANY [4].—Physiology of growth, irritability and reproduction; lectures and experiments; special histology of ferns and flowering plants with comparative anatomy and theoretical deductions; a brief course of lectures upon evolution; thesis work. OR ZOOLOGY [4].—Lectures and laboratory work—Animal Biology, closing with development of the chick.
- FRENCH [4].—Bocher's course completed; Fénelon's Télémaque; exercises in writing and speaking French. OR LATIN [4].—Tacitus; Pliny's Letters with the history of Rome and Roman society under the Emperors. OR ENGLISH [4].—History of Old and Middle English literature; lectures with the reading of authors.
- RHETORICAL WORK.—Orations.

**SCIENTIFIC COURSE—Continued.****JUNIOR YEAR.****FIRST TERM.**

**ENGLISH LITERATURE** [4].—History of New English Literature—Lectures and "Seminary" with reading of authors.

**PHYSICS** [4].—Electricity, recitations and laboratory work; Ayrton and Perry's Practical Electricity and Kempe's Electrical Testing or Sophomore Physics. OR **PHYSIOLOGY AND HISTOLOGY** [4].—Lectures and laboratory work—Martin's Human Body. This term's work is open to all.

**RHETORICAL WORK**.—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected:

**HISTORY** [4].—Modern History of England.

**MATHEMATICS** [4].—Analytical Geometry.—Same as in the Classical Course.

**GERMAN** [4].—(begun) With the sub-Freshman Class, or with the Junior Class, Literary section, for those who had the subject in the sub-Freshman and Freshman years.

**SCANDINAVIAN** [4].—Peterson's Norwegian Reader with exercises in writing and speaking.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work eight hours a week.

**SECOND TERM.**

**LOGIC** [4].

**MINERALOGY** [4].—Lectures and laboratory work eight hours a week; general principles of the science; an outline of crystallography accompanied by blow-pipe analysis.

**RHETORICAL WORK**.—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected:

**MATHEMATICS** [4].—Differential Calculus.—Same as in the Classical Course.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work 8 hours a week.

**PHYSICS** [4].—Work of the first term continued or Sophomore Physics.

**FRENCH** [4].—With the Literary section.

**PHYSIOLOGY AND HISTOLOGY** [4].—Can be taken only by those who have had the first term's work.

**SCANDINAVIAN** [4].—B. Björnson's "En Glad Gut" with exercises in writing and speaking.

**GERMAN** [4].—With the sub-Freshman Class or with the Junior Class, Literary section, for those who had the subject in the sub-Freshman and Freshman years.

**HISTORY** [4].—Colonial History of the United States.

**ENGLISH** [4].—Shakspere.

**LATIN** [4].—Plautus with study of early Latin language and literature.

**THIRD TERM.**

The studies of this term are the same for all courses, see page 50.

**SENIOR YEAR.**

The studies for this year are the same for all courses; see pages 50 and 51.

## LITERARY COURSE.

### SUB-FRESHMAN YEAR.

#### FIRST TERM.

**GERMAN** [5].—MacMillan's German Course, with blackboard exercises in translating English into German.

**NATURAL PHILOSOPHY** [3].—Gage's Introduction to Physical Science.

**MATHEMATICS** [2].—Higher Algebra: factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, and radicals.

\***LATIN** [5].—Cicero: four orations, with collateral work as in the Classical Course. OR \***ENGLISH** † [5].—Latin elements (inflections), study of Latin Grammar, exercises in writing and conversation.

**RHETORICAL WORK**.—Compositions.

#### SECOND TERM.

**GERMAN** [5].—Boisen's German Prose (34 pages) and Whitney's Brief German Grammar, with oral and blackboard exercises.

**MATHEMATICS** [5].—Plane Geometry: Olney's text-book, including unsolved problems.

**LATIN** [5].—Virgil: two books of the Aeneid, with collateral work, as in the Classical Course. OR **ENGLISH**.—Latin elements, (etymologies), selections from Latin Grammar and Reader with special reference to vocabulary and the structure of sentences.

**RHETORICAL WORK**.—Elocution.

#### THIRD TERM.

**GERMAN** [5].—Boisen's German Prose (102 pages) and Whitney's Grammar completed, with oral and blackboard exercises.

**MATHEMATICS** [5].—Solid Geometry: Olney's text-book, including the exercises.

**LATIN** [5].—Virgil: two books of the Aeneid, with collateral work, as in the Classical Course. OR **ENGLISH** [5].—Etymologies of Latin and later Romance origin, illustrated by selections from Bacon, Dr. Johnson, and scientific text-books.

### FRESHMAN YEAR.

#### FIRST TERM.

**GERMAN** [5].—Schiller's Egmont and Siege of Antwerp, with a review of the complete Grammar.

**MATHEMATICS** [5].—Higher Algebra:—Same as for the Classical Course.

**LATIN** [5].—Livy, with review of syntax; Latin composition and Roman history. OR **ENGLISH** [5].—Old English (Anglo Saxon) Grammar, and prose masterpieces.

\* The language chosen this term must be continued to the Junior year.

† Students entering the Freshman Class may offer one year's thorough work in Latin Grammar as an equivalent for the English of the sub-Freshman year.



## LITERARY COURSE—Continued.

## FRESHMAN YEAR—Continued.

## SECOND TERM.

GERMAN [5].—Wagner's German historical ballads, with German history and geography.  
 MATHEMATICS [5].—Logarithms and Plane and Spherical Trigonometry with numerous applications.  
 LATIN [5].—Livy (continued). OR ENGLISH [5].—Old and Middle English poetry.  
 FREE-HAND DRAWING [3].—Six hours a week (OPTIONAL).  
 RHETORICAL WORK.—Elocution.

## THIRD TERM.

ENGLISH [5].—History of the English language with Chaucer, for those in the English course, or Old English (Anglo Saxon) Elements and history of the English language, for those not in the English course.  
 GERMAN [5].—Lessing's Minna von Barnhelm and German composition.  
 BOTANY [5].—Gray's Lessons and Manual, with lectures on the leading characters of the lower forms and on the physiology of plants.  
 SURVEYING [2].—Four hours a week (OPTIONAL).  
 RHETORICAL WORK.—Compositions.

## SOPHOMORE YEAR.

FRENCH [4].—Böcher's Otto's French Grammar and Reader.  
 PHYSICS [4].—Mechanics: sound and Heat as given in Olmsted's College Philosophy.  
 RHETORIC [4].—Genung's text book; study and criticism of authors; essays.  
 LATIN [4].—Horace, with history of OR ENGLISH [4].—Milton's Paradise Lost. Roman literature.

## SECOND TERM.

FRENCH [4].—Böcher's course (continued).  
 HISTORY [4].—Europe during the Middle Ages.  
 PHYSICS [4].—Light, Magnetism and Electricity as given in Olmsted's College Philosophy.  
 ENGLISH [4].—Shakspeare (Rolfe's) with Abbott's Shakspearean Grammar.  
 RHETORICAL WORK.—Elocution.

## THIRD TERM.

FRENCH [4].—Böcher's course completed; Fénelon's Télémaque; exercises in writing and speaking French.  
 HISTORY [4].—England in the Middle Ages.  
 CHEMISTRY [4].—A brief course in General Chemistry consisting of lectures, recitations and laboratory work.  
 LATIN [4].—Tacitus; Pliny's Letters OR ENGLISH [4].—History of Old and Middle English literature; lectures with the reading of authors.  
 RHETORICAL WORK.—Orations.

## LITERARY COURSE—Continued.

### JUNIOR YEAR.

#### FIRST TERM.

**ENGLISH LITERATURE** [4].—History of New English Literature: Lectures and "Seminary" with reading of authors.

**GERMAN** [4].—Schiller's Wilhelm Tell and Goethe's Faust, first part.

**RHETORICAL WORK** [1].—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected.

**HISTORY** [4].—Modern History of Eng. and.

**MATHEMATICS** [4].—Analytical Geometry:—Same as in the Classical Course.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work eight hours a week,

**SCANDINAVIAN** [4].—Peterson's Norwegian Reader with exercises in writing and speaking.

**PHYSIOLOGY AND HISTOLOGY** [4].—Lectures and laboratory work—Martin's Human Body. This term's work is open to all.

**PHYSICS** [4].—With the Scientific section.

#### SECOND TERM.

**LOGIC** [4].

**FRENCH** [4].—*Sous la Neige* par Jacques Porchat; *Roman d'un Jeune Homme Pauvre* par Octave Feuillet; *Athalie* par Racine; *Petite Grammaire Française: Histoire de la Littérature Française au Moyen Age* par Marcillac.

**RHETORICAL WORK**,—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected:

**MATHEMATICS** [4].—Differential Calculus:—Same as in the Classical Course.

**ANALYTICAL CHEMISTRY** [4].—Laboratory work eight hours a week.

**PHYSIOLOGY AND HISTOLOGY** [4].—Can be taken only by those who have had the first term's work.

**SCANDINAVIAN** [4].—B. Björnson's "En Glad Gut" with exercises in writing and speaking.

**GERMAN** [4].—Lessing's *Laocoön* and *Nathan der Weise*.

**HISTORY** [4].—Colonial History of the United States.

**ENGLISH** [4].—Shakspeare.

**PHYSICS** [4].—With the Scientific section.

**MINEROLOGY** [4].—With the Scientific section.

#### THIRD TERM.

The studies of this term are the same for all courses, see page 50.

### SENIOR YEAR.

The studies for this year are the same for all courses; see pages 50 and 51.

## ALL COURSES.

## JUNIOR YEAR.

## THIRD TERM.

**PSYCHOLOGY** [4].—Lectures.

**ASTRONOMY** [4].—The text-book work is supplemented by lectures, especially upon the history of the science and upon recent astronomical discoveries and theories.

**RHETORICAL WORK**.—One oration or two essays.

In addition to the above required work, two of the following subjects must be selected:  
**MATHEMATICS** [4].—Integral Calculus: 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.

**LATIN** [4].—Outline of the history and elements of Roman Law, embracing lectures and text book work with translations at sight from Latin writers, illustrating the subject.

**GERMAN** [4].—Deutsche Lyric and history or **GERMAN** [4].—With the sub-Freshman of German literature.

**SCANDINAVIAN** [4].—B. Björnson's "Synnöve Solbakken" with exercises in writing and speaking.

**FRENCH** [4].—Le Cid par Corneille; La Philosophie de l' Art par M. Taine; La Philosophie de l' Art en Italie par M. Taine; La Littérature du XVII. siècle par Marcillac.

**ENGLISH** [4].—History of Old and Middle English literature.

**PHYSICS** [4].—Light—Recitations and laboratory work; Wright's Experimental Optics or Sophomore Physics.

**ANIMAL MORPHOLOGY** [4].—Lectures and laboratory work. This can be taken only by those who have had the Zoölogy of Sophomore year.

**CHEMISTRY** [4].—Organic or Analytical.

**MINERALOGY** [4].—Descriptive and d-terminative; lectures and laboratory work; this is essentially a study of minerals and must be preceded by the second term's work.

## SENIOR YEAR.

## FIRST TERM.

**GEOLOGY** [4].—Dynamical and structural. The cosmic aspects of geology, erosion, sedimentation, oscillations of level and geological dynamics with discussions of facts and theories.

**HISTORY OF PHILOSOPHY** [4].—Lectures embracing a historical exposition of ancient and modern philosophy—the principles of the leading philosophers—the historical relations of the succeeding systems—accompanied by recitations and discussions.

**PRACTICAL ASTRONOMY** [4].—The work embraces the theory and use of instruments, the use of the Ephemerides and Nautical Almanac, the various methods of determining time, latitude, and longitude, methods of obtaining the parallax and position of celestial bodies, and of computing eclipses. The student is required to compute several eclipses before the time of their occurrence.

\***FRENCH** [4]. Madame Thérèse on les Vol ntaires de '92 par Erkmann. Chatrian. Maximes par Vauvenargues. La Littérature Française Classique par Marcillac. Tableaux de la Révolution Française. La France par M. Rougemont.

**GREEK** [4].—Lyrics—Lectures.

**POLITICAL ECONOMY** [4].—Lectures on the history of economic science and established principles of private economics. Essays and written exercises.

**HISTORY** [4].—The History of Civilization with lectures on the philosophy of history.

†**SCANDINAVIAN** [4].—Critical reading of masterpieces of Scandinavian literature with essays.

**GERMAN** [4].—with the Junior Class, Literary section.

**MATHEMATICS** [4].—with the Junior Class.

**RHETORICAL WORK**.—Orations or essays.

## ALL COURSES—Continued.

## SENIOR YEAR—Continued.

## SECOND TERM.

**POLITICAL SCIENCE** [4].—Lectures: Historical and analytical outline. Critical reading of the Constitutions of the United States and Minnesota. De Tocqueville's Democracy in America to be privately read by the class. Short course in International Law. Written exercises.

**ETHICS** [4].—Lectures.

**GEOLOGY** [4].—Lithology and Historical Geology: (a) the different forms under which rock masses occur; (b) the classification and composition of rocks; (c) the microscopic examination of typical thin sections; (d) the nature and significance of fossils; (e) a study of the Cambrian and Silurian faunas.

**FRENCH** [4].—La Philosophie de l' Art en Grèce par M. Taine. De l' Idéal dans l' Art. Histoire de la Révolution Française. Lectures in French on the Literature of the Eighteenth Century.

**LATIN** [4].—L. Seneca's Dialogues and "Latin Hymns."

**MATHEMATICS** [4].—Quaternions; Hardy, with Kelland and Tait.

**ENGLISH LITERATURE** [4].—Lectures on oratory by the President, and critical studies in the authors at the opening of the Nineteenth Century.

**SCANDINAVIAN** [4].—Lectures on the History of Danish, Norwegian and Swedish Literature, with selections from the authors. Essays and conversation.

**CHEMISTRY** [4].—History of Chemical Theory and Laboratory Work.

**GERMAN** [4].—With the Junior Class, Literary section.

**RHETORICAL WORK**.—Oration or essays.

## THIRD TERM.

**POLITICAL SCIENCE** [4].—Lectures: American Public Economy.—Syllabus.—with special treatment of taxation, money, banks, public education, protection, transportation, public health, &c. Written exercises.

**FRENCH** [4].—Cinq. Mars par Alfred de Vigny. Hernani par Victor Hugo. La Littérature Contemporaine. Lectures on the Literature of the Nineteenth Century in France.

**GREEK** [4].—Lectures on Greek language and literature with selected readings.

**APPLIED GEOLOGY** [4].—Relation of geology to mining—Nature and origin of ore deposits and a survey of the geological and geographical distribution of the ores of the most important metals, building stones, precious stones, fuels, mineral springs, artesian wells and water supply, the formation and constitution of soils.

**GERMAN** [4].—With the Junior Class, Literary section.

**SCANDINAVIAN** [4].—Lectures on the History of Danish, Norwegian and Swedish Literature, with selections from the authors. Essays and Conversation.

**ENGLISH LITERATURE** [2].—Lectures on the higher criticism of Shakspeare by the President, and on the philosophy of criticism and literature by the professor.

**NATURAL THEOLOGY** [2].—Lectures.

**COMPARATIVE PHILOLOGY** [2].—Lectures: Historical outline, syllabus and treatment of leading topics.

**SHAKSPERE** [1].—Lectures by the President.

**PEDAGOGICS** [1].—Lectures.

**SANITARY SCIENCE** [1].—Lectures.

\* Seniors who have not had French can take this subject with the Sophomore Class.

† Seniors who have not had Scandinavian can take this subject with the Juniors.

**DAILY ROUTINE.**

As a general rule each student has three or four recitations or lectures a day for five days in the week, besides rhetorical exercises. Monday is taken as a holiday. The morning session begins at 8:15 o'clock, and is divided into five periods of fifty-five minutes each. A general assembly of students and faculty is held each day at 11 o'clock, at which there are brief and simple religious exercises. Special students and students in the Sub-Freshman, Freshman and Sophomore classes are required to attend.

**LECTURES TO NEW STUDENTS.**

Members of the Sub-Freshman class and students lately admitted are required to attend courses of lectures, as follows: 1. On the relation of students to the university, delivered by the president during the first term. 2. On the use of the library, by the librarian during the first term. 3. On books and reading, by the professor of English during the second term. The lectures occur in alternate weeks.

**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 sixty-five per cent. of the available marks in the Sub-Freshman class, and seventy-five per cent. in the other classes.

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 are unsuccessful in any subject of any term are reported by the professor as being conditioned or of having failed. Students who fail must take the work over with the next succeeding class. Students who are conditioned will be given one examination and if they fail to pass at that examination, they must take the subject with the next succeeding class. These examinations, for conditioned students, are held at the beginning of the fall term, in the work of the fall term; at the beginning of the winter term, in the work of the winter term; and at the beginning of the spring term, in the work of the spring term. Conditions of any term that are not made up by the beginning of the term must be taken in class.

A student who at any time is deficient in more than three studies of five hours per week or four studies of four hours per week, loses his class rank and is regarded as a member of the next lower class.

**GRADUATION.**

Students completing courses of study to the satisfaction of the faculty of the college, are entitled respectively to receive the appropriate

baccalaureate degrees, to-wit: Bachelor of Arts, Bachelor of Science, Bachelor of Literature.

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.

### SPECIAL STUDENTS.

Persons of mature years and judgment may be admitted to pursue studies to be selected from the regular courses of study. The subjects are arranged in groups. Special students must confine their work to one or two of the groups as tabulated below. All applicants, as conditional to their admission as special students, shall pass an examination in so many of the subjects known as requisites for entrance to the regular courses of study, as properly belong to, or are naturally introductory to the line or lines of study they have elected; for instance, if they have elected mathematics, they shall be examined in entrance mathematics; if history, then entrance history; if science, then entrance science; if English studies, or a modern language, then entrance English; if Latin, then entrance Latin; if Greek, then entrance Latin or English.

The grouping of the subjects is as follows:

- I. MODERN PHILOLOGY.—English, French, German, Scandinavian.
- II. CLASSICAL PHILOLOGY.—Greek, Latin.
- III. COMPARATIVE PHILOLOGY.—
- IV. BIOLOGICAL SCIENCE.—Botany, Zoology, Physiology, Paleontology.
- V. PHYSICAL SCIENCE.—Lithological Geology, Chemistry, Physics, Mineralogy.
- VI. MATHEMATICS.—Algebra, Geometry, Quaternions, Astronomy.
- VII. HISTORY.—
- VIII. POLITICAL SCIENCE.—Political Economy, National Economy, International Law.
- IX. PHILOSOPHY.—Logic, Psychology, Natural Theology, History of Philosophy.

Candidates for admission to pursue special studies make a further application on a blank provided for that purpose. This application must be presented in person to a committee of the General Faculty, Prof. W. A. Pike, Chairman. This application, if approved, is then placed on file with the registrar. Special students desiring to change their lines of study must again present their application to the committee for approval. All special students must renew their application at the beginning of each year.

## THE COLLEGE OF MECHANICAL ARTS.

## FACULTY.

CYRUS NORTROP, LL. D.  
*President.*

WILLIAM A. PIKE, S. B.  
*Professor of Engineering and Director.*

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

JOHN F. DOWNEY, M. A., C. E.  
*Professor of Mathematics.*

JAMES A. DODGE, PH. D.  
*Professor of Chemistry.*

WILLIAM R. HOAG, B. C. E.  
*Assistant Professor of Civil Engineering.*

JOHN H. BARR, B. M. E.  
*Instructor in Mechanical Engineering.*

JOHN WHITMORE, B. A.  
*Instructor in Electricity.*

CHARLES G. TREFETHEN.  
*Instructor in Metal Working, &c.*

HENRY T. ARDLEY.  
*Instructor in Wood Carving, Design, &c.*

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CHARLES H. WHIPPS.  
*Engineer.*

## STUDENTS, 1887-'88.

## CIVIL ENGINEERING:

*Regular*—Andersen, C., Burt, Coe, Dann, Douglass, Gilman, Greenwood, Hayden, Higgins, Hoyt, Mann, F. M., Sacre, Spottswood, Smith, W. C., Trask, Veblen.

*Special*—Morrill, Schumacher, White, Ravndal, Stark.

## MECHANICAL ENGINEERING:

*Regular*—Loe, Morris, J., Gerry, Nilsen, Woodward.

*Special*—Marini, Neiler.

## SCHOOL OF PRACTICAL MECHANICS AND DESIGN:

*A. Division*—Baier, Beard, Brandt, Clark, H. C., Hermann, Hilgedick, Lackor, Lyman, A. H., Lyon, Michelet, Parker, Pettibone, Stalker, Strand, Turner, Verge.

*B. Division*—Anderson, J., Deininger, Heideman, McShane.

*C. Division*—Ackermann, Bousquet, Bull, Carpenter, Chapman, Clark, F. L., Corbett, Devereaux, Garden, Gillett, Gonstead, Gunderson, Hagelund, Halverson, Held, Hurd, Jones, Jordan, Kerr, Larson, Lyman, A. P., Marks, O'Mea, Osterhout, Parisault, Peteler, Seaton, Simpson, Smith, C. B., Snyder, Strandberg, Sweeney, Thosker, Tromanhauser, Whitten.

*D. Division*—Alden, Aldrich, Barr, Barwisa, Bebb, Blackstone, Blair, Bowdish, Buell, Burton, G. H., Burton, H., Byers, Donnell, Drullard, Faries, French, Folwell, Ford, Fournier, Fox, Gifford, Graham, Hall, Hood, House, Jacobson, Johnson, F. A., Jones, Joy, E. J., Kellogg, Linton, Loe, Long, Luther, Millspaugh, Nachtrieb, Nymand, Odlum, Ohnstad, Orff, Patten, Perkins, Perry, Piper, Place, Pyle, Rogers, Seigfried, Shepard, Sherburne, Sparrell, Stone, Tinsley, Van Anda, Waite, Walls, Washburn.

**SUMMARY, 1887-'88.**

Civil Engineering, Regular Students.	-	-	-	17
Civil Engineering, Special Students,	-	-	-	4
Mechanical Engineering, Regular Students,	-	-	-	5
Mechanical Engineering, Special Students,	-	-	-	2
School of Practical Mechanics, &c., A Division,	-	-	-	16
School of Practical Mechanics, &c., B Division,	-	-	-	4
School of Practical Mechanics, &c., C Division,	-	-	-	35
School of Practical Mechanics, &c., D Division.	-	-	-	58
				<hr/>
				141
Deduct name counted twice,	-	-	-	1
				<hr/>
Total,	-	-	-	140

In this college there are four regular courses of study, viz: Civil Engineering, Mechanical Engineering, Electrical Engineering, and Architecture, leading to the corresponding baccalaureate degrees. Applicants are also admitted to pursue, under direction of the faculty, one or two distinct lines of study selected from the regular courses. In the School of Practical Mechanics and Design, a department of this college, special courses are arranged in shop-work, drawing, and mathematics, in the care and management of engines and boilers, and in design and wood-carving.

The aim of the instruction given in the regular undergraduate courses of this college is to lay a broad and solid foundation in mathematics, mechanics, electricity, and drawing, so that, with the practice in field, shop, office, and laboratory work given to the students in the respective courses, they shall be fitted for immediate usefulness upon



graduation, and after a moderate amount of subsequent practice and experience, be capable of taking charge of important works.

### ADMISSION.

Requisites for admission to the Sub-Freshman and Freshman classes are the same as for corresponding classes in the scientific course of the college of Science, Literature, and the Arts. See page 36.

### CURRICULUM.

The following schedule shows the studies for the various terms in the different courses. The figures in brackets indicate the number of exercises a week.

#### CIVIL ENGINEERING COURSE.

##### SUB-FRESHMAN YEAR.

I. TERM.	II. TERM.	III. TERM.
Botany, [2]. Chemistry, [3]. Higher algebra, [2]. Drawing, Mechanical, [3], 6 hrs English, or German or Latin.	Drawing (Freehand, 6 hours; Mechanical, 4 hours. Plane Geometry, [5]. English, or German, or Latin.	Chemistry, [2] Botany, [3]. Solid Geometry, [5]. English, or German, or Latin

##### FRESHMAN YEAR.

I. TERM.	II. TERM.	III. TERM.
Drawing (10 hours), [5]. Higher Algebra, English, or German, or Latin, [5].	Chemistry, [5]. Logarithms and Trigonometry, English, or German, or Latin [5].	Drawing, Perspective, [5] (10 hours) Botany, [3]. English, [5]. Surveying, [2].

##### SOPHOMORE YEAR.

I. TERM.	II. TERM.	III. TERM.
Analytical Geometry, [4]. Physics, [4]. English or French or Latin, [4] Topography, [5].	Differential Calculus, [4]. Physics, [4]. English or French, [4]. Hydrography and Drawing, [5]	Integral Calculus, [4]. Higher Surveying, [5]. English or French or Latin, [4]. Field Work and Mapping, [5]

##### JUNIOR YEAR.

I. TERM.	II. TERM.	III. TERM.
Curves and Earthwork, [5]. Descriptive Geometry, [5]. Any Junior first term elective, [4] * Field Work, [5].	Mechanics, [5]. Hydraulics, [5]. Mineralogy, [4]. Carpentry, Bridge Details, [5].	Mechanics, [5]. Testing Materials, [5]. Any Junior third term elective, [4], * Railroad Work, [5].

SENIOR YEAR.

I. TERM.	II. TERM.	III. TERM.
Practical Astronomy, [4]. Geology, [4]. Arches, Retaining Walls, etc., [5]. Iron Bridge Details, [5].	Roofs, Trusses, etc., [5]. Stereotomy, [5]. Any Senior second term elective, [4]. * Drawing, [5].	Designs, Specifications, etc., [5]. Bridges and Thesis, [5]. Any Senior third term elective, [4]. * Drawing on Designs, [5].

MECHANICAL ENGINEERING COURSE.

In the Sub-Freshman and Freshman years the studies are the same as for the Civil Engineering Course.

SOPHOMORE YEAR.

I. TERM.	II. TERM.	III. TERM.
Analytical Geometry, [4]. Physics, [4]. English or French or Latin, [4] Carpentry, [5].	Differential Calculus, [4]. Physics, [4]. English or French, [4]. Pattern Work, [5].	Integral Calculus, [4]. Elements of Mechanism, [4]. English or French or Latin, [4]. Foundry Work and Drawing, [5].

JUNIOR YEAR.

I. TERM.	II. TERM.	III. TERM.
Kinematics, [5]. Descriptive Geometry, [5]. Any Junior first term elective, [4]. * Forge Work, [5].	Mechanics, [5]. Hydraulics, etc., [5]. Mineralogy, [4]. Vise and Machine Work, [5].	Mechanics, [5]. Testing Materials, [5]. Any Junior third term elective, [4]. * Machine Work, [5].

SENIOR YEAR.

I. TERM.	II. TERM.	III. TERM.
Applied Descriptive Geometry, [5]. Geology or Astronomy, [4]. Machinery, [5]. Machine Details, [5].	Steam Engines and Motors, [5]. Experimental Mechanics, [5]. Any Senior second term elective, [4]. * Steam Engine Details, [5].	Designs, Specifications, etc., [5]. Machine Tools & Thesis, [5]. Any Senior third term elective, [4]. * Drawing on Designs, [5].

**ELECTRICAL ENGINEERING COURSE.**

In the Sub-Freshman and Freshman years the studies are the same as for the Civil Engineering Course.

**SOPHOMORE YEAR.**

I. TERM.	II. TERM.	III. TERM.
Analytical Geometry, [4]. Physics, [4]. English or French or Latin, [4] Carpentry, [5].	Differential Calculus, [4]. Physics, [4]. English or French, [4]. Pattern Work, [5].	Integral Calculus, [4]. Elements of Mechanism, [5]. English or French or Latin, [4]. Foundry Work and Drawing, [5].

**JUNIOR YEAR.**

I. TERM.	II. TERM.	III. TERM.
Physics (Electricity and Acoustics), [5]. Descriptive Geometry, [5]. Chemistry, [4]. Physical Laboratory Work, [5].	Mechanics, [5]. Physics (Electricity and Acoustics), [5]. Mineralogy, [4]. Vise and Machine Work, [5].	Mechanics, [5]. Testing Materials, [5]. Any Junior third term elective, [4]. * [5] Physical Laboratory Work, [5].

**SENIOR YEAR.**

I. TERM.	II. TERM.	III. TERM.
Dynamas and Electric Motors, [5]. Geology or Astronomy, [4]. Machinery, [5]. Machine Details, [5].	Steam Engines and Motors, [5]. Experimental Mechanics, [5]. Any Senior second term elective [4]. * Electrical Tests, [5].	Designs, Specifications, etc., [5]. Photometry and Thesis, [5]. Any Senior third term elective, [4]. * Drawing on Designs, [5].

**ARCHITECTURE.**

This course coincides with that in civil engineering, except as follows:

1. The drawing throughout this course is especially arranged for architectural work.
2. In the second term of the Sophomore year shop work and drawing are substituted for field work and drawing.
3. In the first term of the Junior year history and orders of architecture are substituted for curves.
4. In the second and third terms of the Senior year building construction, and lectures on decoration are substituted for bridge work.
5. In the third term, Senior year, the designs and specifications are those of buildings, instead of bridges, etc.

The rhetorical exercises of this college consist of papers or reports each term, on professional subjects, approved by the professor in charge of the course in which the student is enrolled. The labor of preparing these papers or reports is not designed to exceed that required by the rhetoricals in the college of science, literature and the arts. As a condition of graduation, each student is required to present a satisfactory thesis, with the necessary drawings, which is accepted in lieu of other rhetoricals in the last term of the Senior year. These theses are to be deposited in the University library.

#### **GRADUATION.**

Students completing the foregoing regular courses, to the satisfaction of the faculty, are entitled respectively to receive appropriate baccalaureate degrees to wit: Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, Bachelor of Electrical Engineering, Bachelor of Architecture.

Students completing either of the courses of the School of Practical Mechanics and Design may receive certificates of proficiency from the faculty.

Special students receive certificates for successful completion of the branches pursued. Any person is entitled to undergo examination in any subject, at convenient times; and if such person pass in all the studies and exercises of any course, he is entitled to the appropriate degree.

#### **METHODS OF INSTRUCTION.**

In all the regular courses in this college, instruction is given by means of text books, lectures, reading in the library, practical problems, and a large amount of work in the drawing rooms, laboratories, shops and in the field. It is the aim to lay a solid foundation of principles, which, with the large amount of practical work we are able to give, will fit the graduate for immediate usefulness among engineers. In all the work the strictest accuracy is insisted upon.

#### **CIVIL ENGINEERING.**

In Civil Engineering thorough instruction is given in the class room and the field, in the various branches of surveying, from the ordinary land surveying of the Freshman class through the topographical, hydrographical, railroad, solar compass, plane-table, and geodetic work of the upper classes. In topography the students make a complete survey and plat of a piece of land; in hydrography they make a survey of a part of the Mississippi River, determining the flow, &c., while in railroad work a reconnaissance, preliminary survey and final location are made, and all necessary estimates, profiles, &c., drawn up; in fact everything done in practice, up to actual construction, is done by

them. The department is accumulating a good collection of standard instruments and employs the best methods in use among the best surveyors.

The civil engineering student receives a thorough drill in mechanics and the strength of materials, at the same time making in the testing laboratory many tests of building materials, such as iron, steel, timber, brick, stone, cement, &c., thus actually seeing the phenomena treated of in the class room. After completing the course in mechanics, the facts and principles thus obtained are applied to hydraulics, bridges, roofs, arches, dams, retaining walls, &c. All the class room work is supplemented by practical problems which illustrate the application of the principles to actual engineering work and in which close attention is paid to the details as well as to the general principles of the work.

In the drawing-room, the student, having in the earlier years of his course become proficient in the art of drawing, applies his knowledge to engineering work, making working and finished drawings of structures and maps and plans of surveys.

Students are required to visit engineering works in the neighborhood and to make reports upon them, care being taken to have them inspect those of faulty as well as perfect construction and to point out the imperfections of the same.

The last term of the course is devoted to making designs and specifications of bridges, roofs, &c., and to writing a graduating thesis which is intended to show, to a certain extent, the result of the technical training of the course.

#### **MECHANICAL ENGINEERING.**

In this course shop-practice and work in experimental mechanics takes the place of the field work in the civil engineering course. The shop-work covers two years' time, and it is the intention to give the student such a drill as shall enable him to design machinery with a view to simplicity of construction, and to superintend its construction.

In the testing laboratory the same drill in testing materials is given as to the civil engineering students, while in addition, accurate and complete tests of belting, cutting power of tools, lubricants, engines, boilers, pumps, &c., are made, thus preparing the student for expert work as well as impressing by actual experiment the principles of the text-books. Carefully kept records are required in every case and the results of each experiment are worked up in the most approved manner.

In the class room after the drill in mechanics and the strength of materials referred to, courses are given in hydraulics, machine design, the steam engine, and other motors, beside courses previously given in mechanism and kinematics.

In the drawing-rooms working and finished drawings are made of various machines as well as tracings and blue prints of the same, care being taken to follow as far as possible the methods of the best machine shops.

During the last term of the course original designs and specifications of machinery, engines, boilers, etc., are made and a thesis prepared, which, with the necessary drawings, is a condition of graduation.

### **ELECTRICAL ENGINEERING.**

This course is a modification of the course in Mechanical Engineering, in which work in the physical laboratory and recitations and lectures on electricity and acoustics, and on the various practical applications of the same, take the place of part of the shop work and some class-room work on subjects not important to the specialist in electricity.

Special attention is given to the distribution of light and power by electricity, to the various applications of electricity to telegraphy and the telephone, and to actual practice in every kind of electrical testing and measurement. The University is supplied with a good and increasing collection of electrical test instruments, and has lately added a hundred-light dynamo, which, with its regulating apparatus and indicators is available for much practical work. The remarks as to methods in the course in Mechanical Engineering apply equally well to this course.

### **APPARATUS.**

This college possesses the following apparatus:

For mechanical engineering—The tools and instruments referred to in connection with the work shops, engine room and testing laboratory; a number of models of machinery, including a set of belting models, and one of screw threads; a collection of drawings or plates of machine construction; a pair of very accurate and highly finished test gauges, registering pressure up to 300 pounds, presented by the Ashcroft Manufacturing Co.; a test pump for pressure gauges; a pump for testing boilers, and a mercury column for testing steam gauges.

For civil engineering—five transits (one with Saegmuller and another with Smith's solar attachment), three engineer's levels with levelling rods, a plane-table, a magnetic compass, a prismatic compass, a hand level, a clinometer, an aneroid and a mercury barometer, a telemeter rod, five steel tapes, (one standardized by the U. S. Coast Survey and kept as a permanent standard), seven chains, besides pins, transit rods, plumb bobs, &c.

For general use—a 50,000 pounds testing machine, mentioned under the head of testing laboratory; the plates and models used in the drawing rooms; apparatus for taking blue prints, with adjustments

for turning the paper so as to be always perpendicular to the direction of the sun's rays, made from designs by the department, and which is used by the engineering students in copying drawings; a photographic outfit, by means of which photographs from four by five to eight by ten inches can be taken.

The United States Coast Survey has furnished the University with a set of standard weights and measures which have been put under the charge of this college. The complete set embraces: 1. A yard scale divided to inches and tenths; with a matrix for comparison of end yards. 2. Weights from one grain to twenty-five pounds. 3. Liquid capacity measures, a pint, a quart and a gallon. 4. Dry capacity measures, a quart, a half peck, a peck, and a half bushel.

#### THE BUILDING.

The new building contains commodious and well lighted rooms, in the basement and one-story wing, for the work shops and testing laboratories, on the first floor for apparatus rooms study and dark room, for the department of physics; also, civil and mechanical engineering recitation rooms, with a study connected. The second floor is devoted to the general drawing room, engineering drawing and apparatus rooms, dark room, and blue-print room. The building is well ventilated, heated by steam, supplied by water from the city water works, and is lighted by electricity.

#### TESTING LABORATORY.

A room, 24x46 feet, is fitted up for the testing laboratory. It is supplied with power, and contains a 50,000 pounds testing machine, manufactured by Tinius Olson, of Philadelphia, which can be adapted for compressive, tensile, transverse, torsion, and shearing tests. Other pieces of apparatus have been designed by the department to be used in connection with the testing machine in making tests of full-sized beams, up to 25 feet in length. An instrument recently purchased for use in connection with the testing machine, is capable of actually measuring extension to one ten-thousandth of an inch. There is also a cement tester, a dynamometer for measuring transmitted power, an oil testing machine, standard scales, and other apparatus for making mechanical tests. There is now under construction in the machine shops, a dynamometer for determining the power of lathe tools, and a ten horse power steam engine which will be used for experimental purposes.

#### DRAWING ROOMS.

The general drawing room, 25x49 feet, is furnished with drawing tables for the use of classes in geometrical and free-hand drawing. There are also cases and cabinets for holding drawings and drawing boards. A considerable collection of prints, drawings and models,

including a full set of Schröder's models for descriptive geometry for lessons and illustrations, has been made. A good collection of plaster casts, selected with special reference to the instruction in design and wood carving, has been recently obtained.

The engineering drawing room, 24x44 feet, contains tables, cases, etc., for students in civil and mechanical engineering, architecture, and other advanced work. At engineering apparatus room joins the drawing room, and connected with these are blue print and dark rooms, fitted up for use in duplicating drawings by the "blue print" process or photography.

### WORK SHOPS.

The basement of the new building is occupied by the testing laboratory, machine and vise shop and wood-working shop; the wing by the engine and boiler room, forge shop and foundry.

These shops are completely equipped with tools from leading manufacturers, which represent the best American practice. Each shop will accommodate ten students at a time, which is as large a number as can be advantageously instructed together. The capacity of the shops can be increased to meet any probable requirements by forming additional classes.

The instruction given is based on the "Russian System," in which the leading idea is to teach principles rather than to produce objects of commercial value. It is believed that the greatest progress can be made in a given time with this method, as the student proceeds, by a carefully-planned series of exercises, from the simplest to the most difficult operations, learning the processes but avoiding the repetition of the ordinary shop. So far as is consistent with this system, the work is adapted to parts of some machine or structure, in common use, and after finishing the exercises referred to above, the class will build some complete machine or structure, as a review and application of the preceding work.

Shop work is required of students in mechanical and electrical engineering, in divisions A, B, and C, of the School of Practical Mechanics and Design and carpentry is required of students in architecture and civil engineering.

**THE ENGINE ROOM.**—The engine and boiler room, 20x24 feet, is provided with an automatic cut-off engine, of modern type, capable of developing thirty-five horse power. A steel boiler of amplesize furnished with a feed pump and heater supplies steam. A dynamometer, friction brake, calorimeter, pyrometer, revolution counter, tanks, steam-engine indicators, gauges, thermometers, and other instruments required for complete steam-engine and boiler tests, are provided for the use of students in experimental work.



In this room is also a hundred-light Edison dynamo, with ampere-meter, regulator, and pressure indicator.

**THE MACHINE SHOP.**—The machine and vise shop, 25x50 feet, contains onespeed lathe, ten enginelathes of various sizes, a planer, shaper universal milling machine, vertical drill press, emery tool grinder, grinding attachment to lathe, benches with ten vises, surface plates, a set of Betts' standard gauges, taps, dies, reamers, drills, chucks, and other hand tools and accessories for practice in machine, tool, and vise work.

**THE WOOD-WORKING SHOP.**—The shop for pattern making and general wood work, 24x48 ft., contains benches with ten vises, ten lathes, ten sets of hand and lathe tools, two circular saws, a jig saw, band saw, planer, boring machine, grindstone, and other tools for use in the courses of carpentry and pattern making.

**THE FORGE SHOP.**—The forge shop, 31 feet square, is provided with a portable hand forge, ten stationary forges with anvils and sets of tools, a blower, exhaust fan, hand drill press, drills, taps, dies, sledges, swages, a grindstone, and the other tools generally used in blacksmithing.

**THE FOUNDRY.**—The foundry, 20x30 ft., contains an 18-inch cupola, brass furnace, core oven, cinder mill, moulding tools and benches, core plates, arbors, sweeps, ladles, crucibles, and all of the tools and materials ordinarily needed in moulding and casting iron, brass or white metal.

The College of Mechanic Arts gratefully acknowledges the following gifts: A six-inch "American Turbine" from Mr. Wm. de la Barre, a collection of blue prints of standard bridges, &c., from the Northern Pacific R. R., through Mr. S. D. Mason, a number of framed photographs of locomotives from the Baldwin Locomotive Works, a number of blue prints of bridges from various bridge works, a number of plates of topographical signs from Heller & Brightley and Justus Roe, twenty-five copies of "The Solar Transit" from Young & Sons, some specimens of building materials from different persons, a blue print of a marine engine from Cramp & Sons, Philadelphia, and some very fine engineering drawings from F. W. Capellen, city bridge engineer.

## THE SCHOOL OF PRACTICAL MECHANICS AND DESIGN.

This school has been established as a department of the College of Mechanic Arts to meet the wants of Mechanics and others.

Work of this school is classified as follows:

A. A two years' course in shop work, drawing and mathematics for young men who wish to fit themselves for positions of trust in shops and factories.

B. A one year's course in the care and management of engines and boilers, intended as a preparation for the examinations of the State Inspectors.

C. A course in shopwork and drawing or drawing alone for those time or lack of fitness prevents them from entering division A.

D. A course in design and wood carving.

### A. DIVISION—FIRST YEAR.

I. TERM.	II. TERM.	III. TERM.
Carpentry [20h].	Pattern Making [20h].	Foundry Work [20h].
Drawing [10h].	Drawing [10h]	Drawing [10h].
Elementary Algebra [3] and Free Hand	Algebra and Geometry.	Geometry.
Drawing [2].		

### SECOND YEAR.

I TERM.	II TERM.	III TERM.
Forge Work [15h].	Vise and Machine Work [15h].	Machine Work [15h].
Trigonometry.	Mechanics.	Mechanism.
Drawing (Machine details) [10h].	Drawing (Machine Details) [10h].	Drawing (Designing) (10h).

### B. DIVISION.

I TERM.	II TERM.	III TERM.
Recitations and Lectures on care of Engines and Boilers.	Principles of Engines and Boilers.	Indicators and Engine Tests.
Drawing [10h].	Vise and Machine Work [15h].	Drawing (Engines and Boilers) [10h].
Engine Running [10h].	Engine Running [10h].	Engine Running [10h].

## D. DIVISION.

## Design and Wood Carving.

The work of this course has not been, as yet, assigned to particular terms, but will cover the ground indicated below:

Principles of decorative design.

Selection and adaptation of natural forms.

Conventionalizing, sketching from nature.

Original composition, mediaeval lettering, monograms, &c.

Study of historical ornament.

Surface carving, incised and intaglio carving, incised model carving, low relief carving, high relief carving, wood finishing, &c.

## ADMISSION AND CERTIFICATES.

Applicants for admission to any of the divisions must be at least fifteen years of age, and must pass examination as follows: A and B divisions, in Arithmetic and Writing; C and D divisions, no examination required.

Members of division A who can pass in any of the mathematics or other work of the course, and who pass examination in Geography and United States History, may be allowed to substitute, for the subjects passed, studies from the other courses, under direction of the faculty. Members of divisions A and B who satisfactorily complete the courses as laid down, may receive certificates of having done so, signed by the President of the University and the Director of this College.

## METHODS OF INSTRUCTION.

In the courses of the School of Practical Mechanics the instruction in shop work is given by means of carefully prepared exercises. These exercises are planned wholly with the object of instructing the student in the use of tools, leaving out the idea of *construction*, except in so far as it may not interfere with *instruction*. The function of this school being to teach the use of tools in general, rather than any particular trade, much time can be saved by devoting the entire attention of both student and instructor to the manipulation of the tools, and avoiding the repetition of the same operation, which necessarily occurs when *construction* is an object rather than an incidental. The preparation of exercises, in any particular branch of work, consists in first carefully analyzing the various operations and reducing them to their simplest forms, and then classifying them in such a way as to have them succeed each other in the order of their difficulty. Thus, if we examine into the work usually done at the vise, we see that the greater part of the work done there is made up of various combinations of the following operations: Filing to straight or curved lines, either between two lines or to one line alone, filing to template, fitting,

free hand filing, with and without the hand vise, sawing and chipping plain and curved surfaces. Starting, then, with these operations to be taught, a course is designed which shall take them up, one at a time, and apply them to wrought iron, cast iron, and steel. Where, however, it is possible to perform these operations on a form used in construction it is done. and before completing any course students are required to combine the operations previously acquired in the construction of the whole or part of a machine or other structure. The other courses are on the same general plan as that outlined for vise work.

The drawing in this school is conducted on the same plan as in the engineering courses, the students first using the text-book prepared for the department, and afterwards varying their work to meet their individual requirements.

In mathematics the instruction covers algebra, plain and solid geometry, and trigonometry, taught with special reference to the needs of this class of students, and give many applications to practical matters, while the instruction in mechanics and mechanism is made as clear of higher mathematics as the subjects will allow.

The instruction in the course in the care and management of engines and boilers is given by means of practice in the engine room, under the immediate direction of the engineer. Students in this course are required to keep records on suitable blanks, of the work done by the engine, and of the fuel, water and oil consumed, and to figure out the cost and relative economy of various fuels and methods of running. By means of lectures and recitations the reasons for the regulations, as laid down for running, are explained, and the principles of the steam engine and of the construction of boilers is given in a manner not difficult for one of ordinary intelligence to understand; and finally, instruction and practice in the use of indicators, and in the various tests of engines and boilers is given. It is believed that this course will fill a need which has long existed, and will help to supply engineers who are competent and trustworthy.

In the course in Design and Wood Carving instruction is first given in the elementary principles of original composition based upon natural plant forms in their relation to decorative art, with the intention of fostering originality of thought and individuality of expression.

Students will learn from the beginning to produce their own designs, in both natural and conventional form, before carving them in wood and no copying them from "the flat" is allowed.

Those who have had no previous training in free-hand drawing will be instructed in drawing from objects and casts in connection with their other work, while advanced students will sketch from nature and adapt and apply their sketches to the practical work they execute.

The instruction in wood carving advances in parallel lines with original design—from its first rudiments to the most elaborate work—with a view to developing the eye, the hand and the imagination at one and the same time.

After the student becomes thoroughly conversant with the principal characteristics of natural growth and can render the more simple forms with grace and feeling, more difficult studies are introduced from the animal and vegetable kingdoms, together with the study of historical ornament.

#### REGULATIONS.

Members of all divisions are required to deposit \$5.00 with the director of this college, which will be returned when connection with the school ceases, less such charges as may be made for breakage or damage to any university property. Students taking shop courses or the course in wood-carving are required to pay \$3.00 each term for each course taken, to cover cost of material and wear of tools, &c.\* These payments must be made in advance.

Members of this school come under the general regulations of the university as to attendance, etc.

Students of A and B divisions should, if possible, enter at the beginning of the year; of C and D divisions at the beginning of terms, though for good reasons students will be admitted at any time.

For further information as to the college apply in person or by letter to the director, Prof. Wm. A. Pike.

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\* This fee is also to be paid by students in the regular engineering courses who take shop-work.

## THE COLLEGE OF AGRICULTURE.

### THE FACULTY.

CYRUS NORTHROP, LL. D.  
*President.*

WILLIAM W. FOLWELL, LL. D.  
*Professor of Political Science.*

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

MARIA L. SANFORD.  
*Professor of Rhetoric and Elocution.*

WILLIAM A. PIKE, C. E.  
*Professor of Engineering and Physics.*

JOHN F. DOWNEY, M. A., C. E.  
*Professor of Mathematics and Astronomy.*

JAMES A. DODGE, PH. D.  
*Professor of Chemistry.*

EDWARD D. PORTER, M. A. PH. D.,  
*Professor of the Theory and Practice of Agriculture.*

GEORGE EDWIN MACLEAN, PH. D.  
*Professor of the English Language and Literature.*

HENRY F. NACHTRIEB, B. S.  
*Assistant Professor of Biology.*

HARRY PRATT JUDSON, M. A.  
*Professor of History.*

### HISTORICAL.

The College of Agriculture is both National and State in its origin; its objects and aims are defined by the following extracts from the laws of Congress and the Legislature of Minnesota:

"Its leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislature of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."—*Act of Congress, 1862, Section 4.*

"The location of the University of Minnesota, as established by existing laws, is hereby confirmed, and said institution is hereby declared to be *The University of the State of Minnesota.* All the rights, im-

munities, and endowments heretofore granted or conferred, are hereby perpetuated unto the said University; and all lands which may be granted hereafter by Congress, or other donations for said University purposes, shall vest in the institution referred to in this section."—*Art. 8 of the State Constitution.*

"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. 1, Chap. 10, Gen. Laws of 1872.*

"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 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."—*Sec. 2, Chap. 10, Gen. Laws of 1872.*

"In addition to all the rights, immunities, franchises and endowments, heretofore granted to, 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 the land granted, and to be granted, to the State of Minnesota, by virtue of an act of Congress, entitled, 'An act donating land to the several states and territories, which may provide Colleges for the benefit of Agriculture and the Mechanic Arts,' approved July 2, 1862, and also all such gifts, grants and contributions, to the endowment thereof, as may be derived from any and all such sources."—*Sec. 7, Chap. 10, Gen. Laws of 1872.*

The above section, placing the income derived by the State from the so-called "Agricultural College" land grant, at the disposal of the Board of Regents, imposes upon them the duty of carrying out the provisions of the act of Congress, making the grant referred to in that section, and in the discharge of this duty they have made most ample provision for the "Liberal and practical education of the industrial classes in the several pursuits and professions of life," not only by the establishment of the general courses of study embraced in the College of Science, Literature and the Arts, but by the organization of the special Colleges of Agriculture, and the Mechanic Arts, where the principles of science receive their practical application.

The course of studies and exercises in the College of Mechanic Arts are fully detailed in the circular of that Department.

#### THE COLLEGE OF AGRICULTURE.

is designed to give to young men, who may desire it, the advantages of a thorough, liberal, and practical education, not only to prepare them for the successful prosecution of Agriculture in all its branches, but to secure to the student the mental discipline and training necessary to qualify him for any other calling or profession, and to fit him to discharge intelligently the duties of an American citizen.

The period of study requisite for graduation will extend through five years, but the course of study is so arranged as to be complete and progressive, and a pupil who can remain only one, two, or three years will find the course of study prescribed such as can be pursued to the best advantage, but full liberty of choice is permitted in any branch of instruction taught in the university, which can be followed with advantage, such instruction being *optional*, and not a substitute for any regular study.

#### FACILITIES FOR INSTRUCTION.

Students in the College of Agriculture receive the benefit of the library and apparatus of the university, as well as of those belonging to the college. The whole may be enumerated as follows:

(1.) The general library of the university, containing more than 20,000 volumes, and receiving frequent additions. Many volumes are especially devoted, in a practical manner, to the subjects of agriculture, horticulture, tree culture, stock raising, and veterinary science. Besides these, there are several hundred volumes on botany, zoology, anatomy, physiology, and other sciences related to agriculture.

(2.) The general museum of the university, containing a large collection of minerals, casts of extinct animals, stuffed animals, and birds.

(3.) The museum of technology, containing materials and products used in illustrating manufacturing processes.

(4.) The museum of agriculture, containing at present a collection of models of machines and implements; a collection of the seeds of garden vegetables, grain and grass seeds in glass jars; a collection of grains and grasses in the straw; a collection of fruits in alcohol; cabinets of insects of Minnesota; a large collection of woods from the United States Department of Agriculture; a collection of plats and lithographs; miscellaneous objects and materials used in agriculture. Donations always welcome.

(5.) Chemical and physical laboratories, supplying opportunities for the student to practice with his own hands.

(6.) Drawing rooms.

(7.) Engineers' and surveyors' instruments, and a testing machine.



(8). The plant house, 24x46 feet, with a recent addition of half these dimensions supplying plants and flowers for the study of botany, and apparatus for instruction in propagation and the care of plants.

(9). The College of Mechanic Arts, with its departments of vise work, forge work, wood work, and foundry, where a thorough knowledge of the use of tools, and the processes employed in these branches may be acquired.

(10). The Agricultural Experiment Station, furnishes young men an opportunity of observing, and taking part in, lines of experimental work, there carried on, pertaining to general farming, the management of stock, and the dairy, and the various branches of practical horticulture.

#### THE UNIVERSITY FARM.

Consisting of 250 acres of most valuable land, is located between St. Paul and Minneapolis, adjoining the State Fair Grounds, and within fifteen minutes ride of either city, by the Manitoba Railroad to St. Anthony Park Station, or ten minutes from the university. It contains every variety of soil and exposure required for illustrative and experimental work, and is furnished with a full equipment of buildings, stock, implements, and machinery.

The buildings are completed, and are models of taste and convenience. The farm house is located on an elevation, commanding a full view of St. Paul, the State Fair Grounds, Hamline University, and Macalester College. It is abundantly supplied with hot and cold water, is heated throughout by steam, and ample accommodations for the family of the professor in charge, the working force of the farm, and a large class of students in practical agriculture.

The barn is one of the largest and best arranged buildings of its kind in the country. It is what is known as a "side-hill barn," and consists of a main building and two wings. The first is 56 feet by 100 feet, with 24 feet posts, on a 10 feet foundation or basement. The south wing is 30 feet by 100 feet, with 16 feet posts, both on same height of wall as the main buildings, the whole enclosing the barn yard opening to the south and east, and furnished with an ample supply of pure water at all seasons of the year. The basement affords stable room for all the stock of the farm, together with boiler room, silos, and root cellar, while the upper floors contain the work shop, tool room, seed room, feed bins, granaries, and storage for all the hay, grain, straw, implements, and machinery.

The farm is well stocked with fine specimens of the best breeds of domestic animals, designed to illustrate their characteristics and value for various purposes, and for experiments in feeding, breeding, and management and their adaptation to the agriculture of our state.

### OBJECTS OF THE FARM.

The farm is designed to accomplish the following purposes :

(1.) To furnish to students practical illustration in the field, stable, orchard, garden, and vineyard, of the instruction given in the classroom and laboratory.

(2.) To train young men in all the details of practical agriculture.

(3.) To aid students in defraying by their labor, a portion of their expenses while acquiring their education.

(4.) To carry on the work of an Agricultural Experiment Station, and to assist, by scientific investigation and experiment, in determining the adaptation of new varieties of grain, grasses, fruits, and vegetables to the soil, climate, and wants of Minnesota, and to distribute the results of such investigation among the farmers of the State.

### SCOPE OF INSTRUCTION.

The object of this college is to teach practical and scientific agriculture, combined with such other branches of learning as are necessary for mental discipline and training, and such as constitute a liberal education, and embrace the following studies and exercises :

IN PRACTICAL AGRICULTURE.—History of Agriculture; brief review of the chemical composition and physical properties of air and water as related to the soil and vegetation; the chemical constituents and practical classifications of soil; properties, peculiarities, treatment, and adaptations of each kind; reclamation and improvement of soils, including drainage, subsoiling, trenching, altering, fallowing, paring and burning, preparatory tillage, road making, and fencing; manufacture, preservation, and application of manures and stimulants; green manuring and irrigation; farm implements and machinery; production, management, and sale of the different crops; the different breeds of farm animals, their characteristics and adaptations; breeding, rearing, feeding, and management for different purposes to which each is suited; selection and purchase of farms; the situation, relative position, size, and internal arrangement of farm buildings, and their adaptation to purposes for which they are intended.

IN HORTICULTURE.—Relations of heat, light, moisture, and food to plant growth, and the means of controlling their supply and intensity, plant houses, hot beds, etc.; soils and manures, and their manipulations; propagation of plants; grafting, budding, pruning, training, etc.; planting and transplanting; hybridizing, crossing, and selecting; cultivation of the apple, pear, plum, and other large fruits; cultivation of the currant, strawberry, raspberry, cranberry, and other small fruits; kitchen gardening, market gardening, landscape gardening, and floriculture.

IN ARBORICULTURE.—Reasons for planting forest trees; what trees to plant; methods of propagating; care of the nursery; special culture of each species.

IN AGRICULTURAL CHEMISTRY.—A study of the elements of the volatile parts of plants, as carbon and oxygen; a study of the organic compounds of plants, as water, starch and sugar; a study of the elements of the ash of plants and their compounds, as potassium, calcium, iron, sulphates and phosphates.

IN VETERINARY MEDICINE AND SURGERY.—Prevention and treatment of diseases and injuries of the domestic animals.

IN ECONOMIC ENTOMOLOGY.—General character of insects; characters and peculiarities of those families containing useful or injurious members, together with a special study of the more important individuals of these families.

IN COMPARATIVE ANATOMY AND PHYSIOLOGY.—Anatomy, physiology, and hygiene of the domestic animals.

ECONOMICS.—Farm accounts, grain raising, stock raising, dairying, general farming, fruit culture, market gardening, and other specialties; relations and sequence of farm operations; legislation relating to agriculture; relations of agriculture to commerce, manufactures, labor, government taxation, etc.

Besides the foregoing subjects, the course of study will embrace Mathematics, Botany, History, English, Physics, Biology, English Literature, Drawing and shop work, as will be seen by examination of the tables showing course of study for each year.

#### REQUIREMENTS OF ADMISSION.

Candidates for admission to the sub-Freshman class are required to sustain an examination in the following studies:

**I. Geography.**—*Descriptive Geography*, as contained in Harper's Swinton's Common School Geography, or any equivalent works.

**II. History.**—*United States History*, as contained in the text-books of Quackenbos, Eclectic, Ridpath or their equivalent.

**III. Arithmetic.**—*Complete*; from such treatises as Robinson, Wentworth, Olney, etc.

**IV. English Grammar.**—*Complete*, including sentential analysis, as contained in the best school grammars.

**V. English Composition.**

COURSE OF INSTRUCTION.

SUB-FRESHMAN YEAR.

I.	II.	III.
Agriculture. (Farm Pract.) { Chemistry. (3) { Botany. (2) Algebra. (2) Drawing. (3)	Agriculture. (Lectures) Chemistry. Practical Mathematics. Drawing. Farm Accounts. Shop Work.	Agriculture (Practice) { Botany. (3) { Chemistry. (2) Geometry. Shop Work.

FRESHMAN YEAR.

I.	II.	III.
Agriculture, (Farm) Drawing. Entomology. Natural Philosophy. Trigonometry.	Agriculture. (Lectures) Anat. Phys. and Hygiene. Drawing. Shop Work. Chemistry.	Horticulture, (Farm) Botany. Surveying. Shop Work.

SOPHOMORE YEAR.

I.	II.	III.
Agriculture, (Farm) Chemistry, (Organic) English. Shop Work.	Agriculture, (Lectures) History. Zoology. Shop Work.	Agriculture, (Farm) History. Zoology. Shop Work.

JUNIOR YEAR.

I.	II.	III.
Animal Physiology. Vegetable Physiology. Chemistry, (Analytical) English.	Farm Crops, (Lectures) Mineralogy. Chemistry, (Lab. Pract.) English.	Agr. Expt. Station Work. Astronomy. Chemistry, (Lab. Pract.) Physiology.

SENIOR YEAR.

I.	II.	III.
Soils and Fertilizers. Geology. English. Veterinary Science.	Agricultural Chemistry. Farm Economy. Political Science. Veterinary Science.	Economic Geology. Farm Animals. English. Veterinary.

Rhetorical work, and Oratory, shall be pursued during the entire course.

Students completing any year of the above course, shall be entitled to receive a certificate to that effect; those completing the entire five years course shall receive the degree of "Bachelor of Agriculture."

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## THE SCHOOL OF AGRICULTURE.

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Observation and experience have shown that all the facilities afforded by the regular colleges of the country, for agricultural education, have failed to attract any large number of farmers' sons.

The requirements for admission are such as to compel the average farmer's boy to leave home for one or two years to secure such preparation, and this, together with the four or five years necessary to complete a full course, entails an expenditure of time and money which comparatively few can afford, and the education thus received, while valuable in itself, fails in many respects to furnish the training and knowledge needed by young men for the practical duties of the farm and work-shop. The five or six years of time devoted to study, with manual labor, has a tendency to direct attention to other pursuits, and but few students return to the occupation of agriculture.

In order to meet the wants of this class the Board of Regents of the university has authorized the establishment of a "School of Agriculture," with its full equipment of buildings and instructors, to be located on the Experimental Farm, where students will live, work, and study, during the two years devoted to this department.

The organization of this school is now complete for the thorough and practical instruction of youth in all the elements and principles of this industry.

### LOCATION.

The school, with all its equipment, will be located on the Experimental Farm, about one-half mile from St. Anthony Park Station, midway between the cities of St. Paul and Minneapolis.

### EQUIPMENT.

Facilities will be afforded at this school for all that the course requires in a work shop, laboratory of Chemistry and Philosophy, and Biology plant houses for Botany and Horticulture, dissecting rooms for Physiology, and all the apparatus and facilities of the Experiment Station.

**THE COURSE.**

The course will extend through two years. Each year will consist of two terms of twelve weeks each, with subjects as follows:

**FIRST YEAR.**

English; Arithmetic; Algebra; Accounts; Physical Geography; Botany; Physics; Wood Work and Mechanical Drawing; Lectures in Farm Management, Farm Architecture and Horticulture.

**SECOND YEAR.**

Algebra; Geometry; Civil Government; Political Economy; Agricultural Chemistry; Animal Physiology.

Lectures on Grains; Soils and Fertilizers; Stock and Dairying; Horticulture and Veterinary.

**ENTRANCE.**

Admission will be given to students who have completed a common school course in English, Arithmetic, U. S. History and Geography, as prescribed by the State department of public instruction.

Students will be received without examination in subjects for which they can furnish the certificates of high schools or of county superintendents.

**THE TERMS.**

The year will open October 18, 1888, and close April 17, 1889. Holiday vacation, December 22, to January 3, 1889.

**A SUMMER COURSE OF PRACTICE.**

is provided, by which all students who desire, may continue on the farm in practice under the instruction and direction of the Professor of Agriculture, in the several lines which are there pursued.

Reasonable remuneration, not exceeding twelve cents per hour, will be allowed students for services having industrial value.

All students receiving the certificate of graduation are required to give the summer to practice in some department of agriculture, and those who do not remain at the farm will pursue the work of their choice under some other management.

**THE FARM HOME.**

A beautiful and commodious building has been erected for the comfort of students. Its culinary department will be under the direction of an experienced matron, and the entire house will be under the supervision of the principal. The house will be warmed by steam, and the sleeping rooms will each be furnished with a bedstead, mattress, dressing bureau and table. Students will furnish their own pillows, bedding and towels.

**EXPENSE.**

The cost to students will be no more than the actual cost of maintaining the table and caring for the house. This will not exceed three dollars per week. A month's board will be assessed in advance for the purchase of provisions at cash prices. At the end of the month exact cost will be calculated and the proper deduction made from the next assessment.

Text books will be furnished at a small rental sufficient to cover necessary wear. Students wishing to do so, may own their books by paying cost prices.

**LABOR.**

This school will be conducted upon the principle that character makes all labor honorable. As much, therefore, of the labor at the home and on the farm as can be distributed among the students will be given to them at fair rates of compensation.

**GRADUATION.**

Students will be entitled to the certificate of the university upon the following conditions :

First.--The completion of the prescribed course with an honorable standing in order, thoroughness and intelligence in subjects studied.

Second.--A practical experience in field work either at the State Farm or elsewhere as shall appear in reports received from responsible sources.

This certificate will admit students into any one of the special lines of study provided in the College of Agriculture.

For further information, and in making applications for admission, address, W. W. Pendergast, Principal, St. Anthony Park, Ramsey County, Minnesota.

## THE AGRICULTURAL EXPERIMENT STATION.

### THE FACULTY.

EDWARD D. PORTER, M. A., PH. D.  
*Director and Agriculturist.*

SAMUEL B. GREEN, B. S.  
*Horticulturist.*

OTTO LUGGER, PH. D.  
*Entomologist and Botanist.*

WILLET M. HAYS, B. S. A.  
*Assistant in Agriculture.*

CHARLES POUEROLIE.  
*Assistant in Horticulture.*

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*Chemist.*

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*Veterinarian.*

DANIEL W. SPRAGUE.  
*Accountant and Recorder.*

M. ESTELLE PORTER, B. L.  
*Secretary and Stenographer.*

PETER M. GIDEON.  
*Superintendent of Minnetonka Fruit Farm.*

E. H. S. DARTT.  
*Superintendent of Owatonna Station.*

E. A. DELHORBE.  
*Farm Foreman.*

### HISTORICAL.

The Legislature of Minnesota, at its session in 1885, passed the following act:

“Section 1. It shall be the duty of the Board of Regents, of the University of Minnesota, as soon as practicable after the passage of this act, to establish at said University an Agricultural Experiment Station for the purpose of promoting agriculture in its various branches, by scientific investigations, and experiments; which station shall be under the control and supervision of the said Board of Regents, and of which the Professor of Agriculture shall be general superintendent.”

The Agricultural Experiment Station, above authorized, is virtually

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\* These positions will be filled at an early day.



the Experimental Farm of the College of Agriculture of the University of Minnesota. Unfortunately there were no funds appropriated by the Legislature to carry out the objects of the act, and there were none at the disposal of the Board of Regents, for that purpose, as all the income derived from the sales of the lands granted to the several states by the Act of Congress of 1862, was specifically devoted to the purposes of *instruction*; and with this object in view, the Experimental Farm was purchased, and equipped for the purpose of giving practical instruction in all the departments of agriculture, and this work has been successfully carried on for two years past.

For several years, the friends of advanced agriculture, have engaged in a concerted movement to secure the establishment in the several states of "Agricultural Experiment Stations," where the chief object should be to promote scientific and practical investigations upon all subjects affecting the agricultural interests of the country. As the result of these efforts, the Congress of the United States passed an act, approved March 2, 1887, popularly known as the "Hatch Bill," of which the following are the essential sections.

*An act to establish agricultural experiment stations in connection with the colleges established in the several States under the provisions of an act approved July second, eighteen hundred and sixty-two, and of the acts supplementary thereto.*

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and application of agricultural science, there shall be established, under direction of the college or colleges or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an act approved July second, eighteen hundred and sixty-two, entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said act, a department to be known and designated as an "agricultural experiment station." *Provided,* That in any State or Territory in which two such colleges have been or may be so established the appropriation hereinafter made to such State or Territory shall be equally divided between such colleges, unless the legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters: the chemical composition of manures, natural or artificial, with experiments designed to test

their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic question involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States and Territories.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments and printing and distributing the results as hereinbefore described, the sum of fifteen thousand dollars per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this act, out of any money in the Treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July, and October in each year, to the treasurer or other officer duly appointed by the governing boards of such colleges to receive the same, the first payment to be made on the first day of October, eighteen hundred and eighty-seven. *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

It will be noted that the Act of Congress of 1862 was designed to promote Agricultural *Education*, while that of 1887 provides for Agricultural *Investigation*.

In compliance with the above acts of State and National legislation, the Board of Regents has reorganized and equipped the Experiment Station on the University Farm, using so much of the land, buildings, stock and machinery of said farm as may be needed for this purpose, and devoting the balance to instruction and illustration. An additional building for the Experiment Station, is in process of erection, which is to contain the offices of the station, laboratories for the departments of chemistry, biology, and veterenary, a library, and a museum.

The work to be undertaken at this station is fully set for in the act of Congress above given, and in many lines is now under way.

## GRADUATE DEPARTMENT.

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This department is designed to meet the wants of graduates of colleges who desire to pursue special lines of study further than is possible in undergraduate courses. It is not intended to be a mere extension of the college course in the interest of general culture, but rather a school for the education of *specialists* in the various branches of knowledge offered. The work required will be much less general than the subjects as stated below would indicate, the object being to secure higher attainments in something, rather than a superficial knowledge of everything. The department is open to all graduates of colleges, whether desiring to become candidates for the master's degree or not.

The regulations governing this department are contained in the following resolutions, adopted by the general faculty in April, 1885, and amended May, 1888.

### MASTERS' DEGREES.

I. Masters' degrees in science, literature, and the arts will be conferred on bachelors of this or any other reputable college or university, who, not sooner than two years after graduation, pass an examination on certain prescribed lines of classical, scientific, or literary studies, and present a satisfactory thesis.

II. Candidates are required to present their applications on the proper blank, stating the particular degree desired, the several subjects selected by them in which to be examined, and the titles of their theses. Graduates of other colleges or universities will exhibit their diplomas on filing their applications. After the approval of the application by the faculty of the college, no changes or departures will be permitted.

III. The following studies are offered to candidates.

DIVISIONS.	GROUPS	LINES.
I.	Modern Philology.	{ 1. English. { 2. French. { 3. German. { 4. Scandinavian Languages.
	Classical Philology.	{ 1. Greek. { 2. Latin.
	Comparative Philology.	

DIVISIONS.	GROUPS.	LINES.
II.	Biological Sciences.	{ 1. Botany. 2. Zoology. 3. Physiology. 4. Palaeontology.
	Physical Sciences.	{ 1. Lithological Geology. 2. Chemistry. 3. Physics 4. Mineralogy.
	Mathematics.	{ 1. Algebra. 2. Geometry. 3. Calculus. 4. Quaternions. 5. Astronomy.
III.	History.	{ 1. Mediæval Institutions. 2. Institutions of England. 3. Institutions of the United States. 4. Education.
	Political Science.	{ 1. Political Economy. 2. National Economy. 3. International Law.
	Philosophy.	{ 1. Logic. 2. Psychology. 3. Natural Theology. 4. History of Philosophy.

IV. The amount of work done by the candidates shall be equivalent to that done by the Senior class, viz: Three terms' work on three distinct subjects each term, with a thesis in addition.

V. The following is the schedule of work requisite for the Masters' degrees:

FOR MASTER OF ARTS.

1. Greek and Latin.
2. Any two other distinct lines of study selected from the table in III above.
3. A thesis on a classical subject.

FOR MASTER OF SCIENCE.

1. Two distinct lines from the groups in Division II.
2. Any two other distinct lines of study selected from the table in III above.
3. A thesis on a scientific study.

FOR MASTER OF LITERATURE.

1. German and Romance Languages.
2. Any two other distinct lines of study selected from the table in III. above.
3. A thesis on a literary subject.

VI. The time allowed for each line of study shall be from one to three terms.

VII. The proficiency of candidates shall be determined by examinations only.

VIII. A residence at the university is not required of candidates for the masters' degrees, but instruction will be given to such candidates as are resident and desire it, by the professors in charge of the studies pursued.

IX. All examinations shall be held at the university.

X. All the regulations governing candidates for the masters' degrees shall apply to the candidates for the second degree in the College of Mechanic Arts. The following is a schedule of work requisite for the degree:

FOR CIVIL ENGINEERING.

1. Some subject in civil engineering.
2. Any two distinct lines of study selected from the table in III. above.
3. A design in civil engineering.
4. A thesis on a subject of civil engineering.

FOR MECHANICAL ENGINEERING.

1. Some subject in mechanical engineering.
2. Any two distinct lines of study selected from the table in III. above.
3. A design in mechanical engineering.
4. A thesis on a subject in mechanical engineering.

FOR ARCHITECT.

1. Some subject in architecture.
2. Any two distinct lines of study selected from the Table in III. above.
3. A design in architecture.
4. A thesis on a subject in architecture.

DEGREE OF DOCTOR OF PHILOSOPHY.

XI. The Degree of Doctor of Philosophy will be conferred on bachelors of this or any other reputable college or university within not less than three years after graduation therefrom, under the following conditions:

1. The candidate shall select some one of the *Groups* of study from the table in III. (p. 83), and within that group some special field, such as shall be approved by the faculty.
2. He shall pass a minute examination on the special field selected, and shall show such acquaintance with other studies of the group as the faculty may require.
3. He shall present a thesis on some subject connected with his special field of work; which thesis shall be the result of original investigation by the candidate, and shall be a contributive to knowledge.

4. Each candidate for this degree shall devote the time of at least two years to preparation for his examination, such study being his principal occupation for that period; provided, however, that if such study shall not be his principal occupation, then the time of preparation shall be extended as the faculty may think proper.
5. The candidate shall be in actual residence at the university and shall pursue his studies therein at least one year, and that the year next preceding his final examination.
6. At the beginning of said year next preceding his final examination, the candidate shall pass a preliminary examination on the work for his degree that he has done up to that time.
7. A fair copy of the thesis shall be placed in the hands of a committee of the faculty on or before the first day of April next preceding the final examination. No candidate shall be admitted to said final examination unless his thesis shall be approved by the committee. If the degree thereafter be conferred, at least 100 printed copies of the thesis shall be deposited with the president of the university.
8. The final examination for this degree shall be held on or about the third Thursday in May, as the president of the university may decide.
9. Each examination for the degree of doctor of philosophy shall be held in the presence of the general faculty and shall be conducted as said faculty may direct. A quorum for such examination shall be 5.
10. Besides the final examination, the candidate shall be required to make a public defense of his thesis, at such time and place as the general faculty may determine.

XII. Bachelors of this or any other reputable college or university, not desiring to take a degree, are allowed, subject to all the regulations governing the candidates for degrees, to pursue the studies of the graduate courses, and to be examined in them, and a certificate of attainment will be given if desired.

For the year 1888-89, the following subjects will be offered:

I. MATHEMATICS.

1. An advanced course in Co-ordinate Geometry.
2. An advanced course in Differential Calculus.
3. An advanced course in Integral Calculus.

The following subjects are offered to those who do not elect them in their under-graduate course:

1. Analytical Geometry.
2. Differential Calculus.
3. Integral Calculus.
4. Quaternions.

II. ASTRONOMY.—A course in Practical Astronomy.

III. CHEMISTRY.—Graduate students desiring to add to their knowledge of chemistry, will find here good facilities for laboratory practice; and they will be enabled to take up such practice at almost any point, either by themselves or with classes organized in the same work. The aim of the department will be to meet the wishes on the one hand of individual graduate or special students pursuing the more practical branches, as assaying, toxicology, etc., and on the other hand of those who seek a better familiarity with the general and theoretical portions of the science. Graduate students will be invited to attend the lectures on theoretical chemistry, with the Senior class, in which these lectures are regularly given.

IV. GREEK.—Greek Poetry, embracing the Epic, Lyric, and Dramatic, with critical reading of authors, or Greek Philosophy, with critical reading of authors.

V. GERMAN.—Alternative courses.

1. a. Niebelungenlied.
- b. History of German Literature during the 12th and 13th Centuries.
2. a. Lessing's *Laocoon* and Dramaturgy.
- b. History of German Literature from 1749 to 1832.

VI. ROMANCE LANGUAGES.

1. Old French. Historic Grammar and Philology.
2. Modern French. A systematic study of some special topic, as: the Philosophy of the 19th Century; the rise of Democracy; the contributions of France to Science; or the literature of some century.
3. The elements of the Italian or Spanish Languages.

VII. HISTORY.

1. Representative Government in England and the United States.
2. The History and Philosophy of Education.
3. School Law.

VIII. GEOLOGY AND MINERALOGY.—The granite rocks of Central Minnesota, with such preliminary mineralogical work as may be found necessary.

IX. ENGLISH.—Old English (Anglo-Saxon) Poetry.

X. LATIN.

1. Roman Law. Institutes of Justinian.
2. Roman Philosophy,—Cicero.

XI. ECONOMICS AND POLITICAL SCIENCE.—The work of graduate students in this department is conducted on the "seminary" plan of foreign universities. The particular subjects of investigation are selected by individuals or groups, upon consultation with the professor.

## THE DEPARTMENT OF LAW.

### THE FACULTY.

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

HON. WILLIAM S. PATTEE, M. A.,  
*Dean and Professor of the Law of Contracts.*

HON. S. J. R. McMILLAN,  
*Lecturer on Constitutional Law.*

HON. GORDON E. COLE,  
*Lecturer on Corporations.*

HON. CHARLES D. KERR,  
*Lecturer on the Law of Partnership.*

G. C. RIPLEY, B. A.,  
*Lecturer on Equity Jurisprudence and Procedure.*

CHARLES A. WILLARD,  
*Lecturer on the Law of Bailments.*

JUDGE JAMES O. PIERCE,  
*Lecturer on the Law of Domestic Relations.*

HON. CHARLES E. FLANDREAU,  
*Lecturer on the Law of Torts.*

HON. GEORGE B. YOUNG,  
*Lecturer on the Conflict of Laws.*

JOHN B. ATWATER, B. A.,  
*Lecturer on the Law of Real Property.*

HON. C. D. O'BRIEN,  
*Lecturer on Criminal Law and Procedure.*

GEORGE N. BAXTER,  
*Lecturer on Common Law and Code Pleading.*

HON. W. D. CORNISH,  
*Lecturer on Life and Fire Insurance.*

JUDGE JOHN M. SHAW,  
*Lecturer on Evidence.*

JUDGE P. M. BARBER,  
*Lecturer on Wills and Administration.*

CHARLES H. BOARDMAN, M. D.,  
*Professor of Medical Jurisprudence.*

CHARLES W. BUNN,  
*Lecturer on Suretyship and Mortgages, Practice in United States Courts.*

SUMNER LADD,  
*Lecturer on the Law of Taxation.*

"There is little, if any, dispute now as to the relative merit of education by means of law schools, and that to be got by mere practical training or apprenticeship as an attorney's clerk. Without disparagement of mere practical advantages, the verdict of the best informed is in favor of the schools.

"The benefits which they offer are easily suggested, and are of the most superior kind. They afford the student an acquaintance with general principles, difficult, if not impossi-



ble to be otherwise obtained: they serve to remove difficulties which are inherent in scientific and technical phraseology, and they as a necessary consequence furnish the student with the means for clear conception and accurate and precise expression. They familiarize him with leading cases, and the application of them to discussion. They give him the valuable habit of attention, teach him familiar maxims, and offer him the priceless opportunities which result from contact and generous emulation. They lead him readily to survey the law as a science, and imbue him with the principles of ethics as its true foundation. Disputing, reasoning, reading, and discoursing, become his constant exercises; he improves remarkably as he becomes acquainted with them, and obtains progress otherwise beyond his reach."—*Report of the Committee on Legal Education to the American Bar Association, August 21st, 1879, at Saratoga, N. Y.*

Provision is made in the charter of the university for the establishing, at a proper time, of a College of Law. This department has just been organized and will be opened for instruction in September, 1888. It is the design of this department to furnish such instruction in the fundamental principles of law, as will prepare the student for the practice of his profession in any part of the United States.

#### LOCATION.

The lectures and instruction will be given in the main university building, and it is expected that the exercises will take place in the afternoon.

#### ADMISSION.

Any person of good moral character will be allowed to matriculate in this department. If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must not be less than eighteen years of age.

There is no list of studies prescribed which the candidate must pass in order to be admitted. Each candidate must satisfy the faculty that he has such general education as will enable him to pursue the study of law with advantage and justify his entering upon the practice of law when his legal studies are completed. Persons who are deficient in English grammar, composition, U. S. history, and other branches usually taught in the common schools, will not be admitted. Special attention should be given to the English language, grammar, composition, and literature, history of the United States, of England and of Rome. In addition, candidates will find a knowledge of Latin very useful, and students who are fitting themselves to pursue the study of law are earnestly recommended to study Latin.

Examinations for admission to the College of Science Literature and Arts will be held, beginning Tuesday, September 4. See program in appendix. Candidates for admission to the Law Department should present themselves in the general office (room 21) in the main university building, at 8:30 o'clock on that day and register their names.

They should take as many of the subjects for admission to the Freshman class in the College of Science, Literature and Arts as they feel themselves prepared in.

The results of these examinations will be reported to the faculty of the College of Law and the names of the successful candidates will be announced.

Candidates who are graduates of high schools, academies or colleges, or similar institutions will exhibit their diploma and file with the registrar, on making their application, a list of studies they have pursued, and the grade, standing, or degree of attainment they have obtained in each, duly signed by the principal or other officer. These certificates of standing, if accepted by the faculty, will exempt the candidate from examinations, in whole or in part, as may be decided by the faculty in each particular case.

#### REGISTRATION.

After having satisfied the faculty of his educational attainments, the candidate will, on paying his tuition fee to the registrar of the University, receive a registration card or ticket which will admit him to the lecture room.

#### TUITION.

A tuition fee of \$25 per term will be required of all students in this department, to be paid in advance.

#### GENERAL INFORMATION.

For any general statements concerning the university, the cost of board, etc., see page 28 and following:

#### COURSE OF STUDY.

The course of study will extend over a period of two years, and will comprise the following subjects:

##### FIRST YEAR, (JUNIOR).

CONTRACTS.

TORTS.

CRIMINAL LAW AND PROCEDURE.

REAL PROPERTY.

EQUITY JURISPRUDENCE AND PROCEDURE.

CORPORATIONS.

FIRE AND LIFE INSURANCE.

PARTNERSHIP.

CONSTITUTIONAL LAW.

COMMON LAW AND CODE PLEADING.

## SECOND YEAR, (SENIOR).

CONTRACTS.

EVIDENCE.

SURETYSHIP AND MORTGAGES.

WILLS AND ADMINISTRATION.

LAW OF TAXATION.

LAW OF DOMESTIC RELATIONS.

CONFLICT OF LAWS.

ADMIRALTY LAW.

MEDICAL JURISPRUDENCE.

JURISDICTION AND PRACTICE OF UNITED STATES COURTS.

The course on contracts extends through both the junior and senior years, and embraces, among other topics, bills, notes and commercial law generally; contract liabilities of infants, incapables, and married women; agency; bailments; bankruptcy and insolvency. These specific topics will be considered during the two years, at such times and in connection with the treatment of such general subjects, as shall be most advantageous, and convenient for students and instructors.

It may be found necessary to vary the course of instruction somewhat the first year, to meet the demands of students, who have already pursued the subjects comprised in the junior year. This will be done, however, only where the change can be made without seriously interrupting the course of those who enter with a view of completing the full course as above prescribed.

**METHOD OF INSTRUCTION.**

The method of instruction will not be confined to either lectures or recitations, but such a combination of both will be adopted as shall be best calculated to interest the student and secure for him a thorough, accurate, and comprehensive knowledge of the principles and rules of law. And in addition thereto such a use of the reports will be made as shall familiarize the student with the leading cases upon the various subjects in which he receives instruction.

**LIBRARY.**

The Bar Association of Minneapolis has an excellent Law Library, located within easy reach of the University, the free use of which has been secured for all members of the Law Department. The State Library also, at St. Paul, is easily accessible and will be open to their free use each day in the week except Sunday.

**BOOKS.**

Students will be expected to furnish themselves with such text books as the faculty shall adopt for use in the recitation room. In all cases

they will be such books as will be found necessary in the student's practice.

In addition to these should any of the students desire to have at hand other standard works upon the subjects taught, a judicious selection could be made from the following list and the faculty will be glad to aid them in making such a selection:

*Contracts.*—Parsons, Anson, Metcalf, Pollock, Bishop.

*Bailments.*—Schouler, Edwards, Story.

*Sales.*—Benjamin, Blackburn.

*Domestic Relations.*—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonnell on Master and Servant; Simpson on Infants.

*Corporations.*—Angell and Ames, Field, Morawetz, Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

*Bills and Notes.*—Byles, Chalmers, Parsons; Daniels on Negotiable Instruments; Edwards on Bills and Notes; Bigelow's Leading Cases; Ames' Leading Cases.

*Torts.*—Cooley, Bigelow, Addison; Wharton on Negligence.

*Evidence.*—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton or Starkie on Evidence; Rogers on Expert Testimony; Roscoe's Criminal Evidence.

*Real Property.*—Williams, Washburne, Tiedeman, Boone, Willard.

*Partnership.*—Lindley, Parsons, Bates, Pollock.

*Wills and Administration of Estates.*—Redfield on Wills; Jarman on Wills (Randolph & Talcott's or Bigelow's edition); Hawkins on Construction of Wills; Schouler on Wills; Williams on Executors.

*Common Carriers.*—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

*Equity.*—Pomeroy's or Storey's Equity Jurisprudence; Snell's, Bispham's or Adams' Equity.

*Criminal Law.*—Harris, Bishop, Wharton, May, Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

*Pleading.*—Gould, Stephen, Chitty, Heard; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

*Agency.*—Evans, Story, Wharton.

*Damages.*—Sutherland, Sedgwick.

*Mortgages.*—Jones, Thomas.

*Insurance.*—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

*Shipping and Admiralty.*—Abbott, Conkling, Desty.

*Easements.*—Goddard, Washburn.

*Taxation.*—Cooley, Burroughs, Desty.

*Medical Jurisprudence.*—Ewell, Wharton and Stille, Beck.

*Constitutional History.*—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1890); Stubbs's Constitutional History of England; Bagehot's English Constitution; Gneist's English Constitutional History; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

*Constitutional and Statute Law.*—Pomeroy's Introduction to the Constitutional Law of the U. S.; Von Holst's Constitutional Law of the U. S.; Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Conventions; Bishop's Written Law; Maxwell on the Interpretation of Statutes; Farrar's Manual of the Constitution of the U. S.; Stearn's Concordance to the Constitution of the U. S.

*Jurisprudence.*—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

*International Law.*—Wheaton's Elements of International Law, Woolsey's Introduction to International Law; Hall's International Law; Davis' International Law; Story's Conflict of Laws.

*Roman Law.*—Morey's Outlines on Roman Law; Hadley's Introduction to Roman Laws; Mackenzie's Roman Law; Moyle's Justinian; Roby's Introduction to the Digest; Muirhead's Roman Law.

#### MOOT COURTS.

Moot courts will be organized where all members of the Law Department will be expected to take part in the discussion and application of legal rules and principles. Some member of the faculty will preside, as judge, and thus an opportunity will be afforded for the student to acquire, in addition to his theoretical knowledge of the law, such practical information as shall aid him subsequently, in his professional duties.

#### COURTS.

The department is located within easy reach of both the Federal and State Courts. At St. Paul, the United States Courts are in session several months in the year, which, with the Supreme Court of the State, together with the District and Municipal Courts of both cities, will furnish all the opportunities for witnessing the actual practice of law, that the student will have either time or desire to improve.

#### UNIVERSITY DEPARTMENTS.

Students of this department will be admitted, under proper regulations, to exercises in the other departments or colleges of the university, without extra charge, and so far as 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. The following subjects are suggested as being particularly suitable: Rhetorical work, including elocution, compositions, orations; International Law, Constitutional History and Political Science.

#### DEGREES.

The degree of Bachelor of Laws will be conferred upon all students who pursue the full course of two years in this department, and pass an approved examination. The degree will also be conferred upon those, who, having attended another law school for a period of one year, shall also attend for one year in this department, and pass a like examination.

#### CALENDAR.

There are three terms in each year. The first has thirteen, the second twelve, and the third thirteen weeks. See almanac on pages 4 and 5 for days and dates.

## DEPARTMENT OF MEDICINE.

CYRUS NORTHROP, LL. D., - - - - - President.

\* PERRY H. MILLARD, M. D., - - - - - Dean.

This department is composed of the following colleges, viz.: The College of Medicine and Surgery, the College of Homeopathic Medicine and Surgery, and the College of Dentistry.

### HISTORICAL.

The University of Minnesota, with all its departments, is located at St. Anthony Falls by a constitutional act. The original act, as adopted by the vote of the people of the territory in 1853, provided, among other departments, for a department of Medicine and Surgery. The Board of Regents established a College of Medicine and Surgery in 1882. The duties of the faculty were limited to the examination of applicants for the degrees of M. B. and M. D., and to the performance of work assigned to it by the legislature as "a State Board of Medical Examiners." This faculty, acting in its capacity as a board of examiners, secured the enactment of a new medical law in 1887, creating a new and independent board, to be appointed by the Governor; thus dispensing, to a great extent, with the necessity of its own further continuance.

On the 7th of April, 1887, a committee of the faculty waited upon the Board of Regents, in session at the capitol, and urged the propriety of establishing a teaching school of medicine with a high curriculum. This committee consisted of Doctors D. W. Hand, C. N. Hewitt and P. H. Millard, who made a written report exemplifying the necessity of, and the advantages to accrue from a high grade school. The question of establishing a department of medicine was referred to a special committee of the Board of Regents.

At a meeting of the Board of Regents, held February 28, 1888, a committee of the Boards of Trustees of the Minnesota Hospital College and of the St. Paul Medical School appeared and tendered the use of the properties of these schools to the State for medical college purposes. The leases of the property were offered the State for a period of five years, and the property was accepted by the board.

\* All correspondence relating to this department should be addressed to the Dean at the State University, Minneapolis, Minnesota. ●

In March, the Board of Trustees of the Minnesota Homeopathic Medical College also made a formal proposal to the Board of Regents to waive its charter as a college and cease to teach, provided Homeopathy should have a fair representation in the new medical department of the University. It offered also to provide such a place for the work of a Homeopathic faculty as the regents might require.

A committee, consisting of Dr. D. W. Hand, President of the State Board of Health, Dr. Geo. F. French, President of the State Board of Medical Examiners, Dr. Chas. F. McComb, President of the State Medical Society, Prof. Cyrus Northrop, President of the State University, and Dr. Perry H. Millard, Dean of the Medical Department of the University of Minnesota, was thereupon appointed by the Board with instructions to nominate a faculty for the College of Medicine and Surgery, and the College of Dentistry.

A special committee, consisting of President Cyrus Northrop and Prof. D. L. Kiehle, was appointed to nominate a faculty for the College of Homeopathy. The persons nominated by the above committees were unanimously elected members of the present faculties by the Board of Regents.

#### LOCATION.

The University proper is located in East Minneapolis, corner of University and Fourteenth avenues S. E., but the lectures will be delivered and the laboratory work will be conducted at the buildings formerly occupied by the Minnesota Hospital College, corner of Sixth street and Ninth avenue south, near which point students should secure lodgings. The clinical instruction will be given at the various dispensaries and hospitals in both Minneapolis and St. Paul. Special arrangements will be made with the railroads for the transportation of students to the weekly clinic to be held at St. Paul, thus affording students the advantages of material for instruction from two large cities. The faculty is well represented upon the staff of all the large hospitals in these two cities, and special arrangements will be completed for giving clinical instruction.

#### EQUIPMENT.

The University is well equipped for laboratory work. The general museum, comprising the collections of the Geological and Natural History Surveys of the State and containing upwards of twelve thousand specimens, will be at the disposal of the student for purposes of examination and study. Laboratory work will be a special feature of this department.

The library of the University contains upwards of twenty-one thousand volumes, and is open daily for the use of students of all departments.

### ENROLLMENT.

Students are required to enroll with the registrar in the office, room No. 21, of the main University building. After enrollment and payment of the matriculation fee and annual dues, the student is assigned a seat and can then take the entrance and professional examinations.

### ENTRANCE EXAMINATIONS.

The entrance examination will commence at 9 a. m. Tuesday, October 2, 1888. This examination will be conducted by a committee, appointed by the President, from the department of Science, Literature and Arts, assisted by the Dean.

### QUALIFICATIONS.

Applicants for admission to the College of Medicine and Surgery, the College of Homeopathic Medicine and Surgery, or the College of Dentistry will be required to prove their fitness to enter these Colleges:

1. By writing legibly and correctly an English composition of not less than two hundred words.

2. By translation of easy Latin prose, or, in lieu thereof, by passing an examination upon one of the following subjects: French, German or one of the Scandinavian languages.

3. By passing an examination upon either the elements of Algebra, Plané Geometry, or Botany.

4. By showing such a knowledge of Physics as may be obtained from the study of Gage's, Avery's, or Balfour Stewart's Elements of Physics.

It is provided, however, that no examination for admission shall be required of matriculants or graduates of any reputable college of Science, Literature and Arts; of graduates of State High Schools or Normal Schools; of persons holding a first-class teacher's certificate, or the certificate of the High School Board of the State of Minnesota.

### COURSE.

The curriculum in the department of Medicine covers a period of three years, each year of which represents a course of lectures of six months duration. Students from other colleges may be admitted, however, to the second year of lectures in the college which corresponds to their previous course of study, by furnishing evidence, (1) of their possession of the specified preliminary education or its alternatives, (2) of the prosecution of their medical or dental studies for one year, and (3) of attendance upon one full course of lectures in some recognized college of medicine or dentistry. Admission may, similarly, be gained to the senior year by furnishing evidence (1) of the necessary preliminary qualifications, (2) of the continuance of their professional studies



for two years, and (3) of attendance upon two full courses of instruction in some recognized medical or dental college, and, finally, by sustaining satisfactory examinations, or giving evidence of having already successfully passed examinations in the studies of the first and second years.

The students of all the colleges grouped under this department of the university will attend lectures in common upon anatomy, physiology, and chemistry, and must pass satisfactory examinations in all of these studies before they complete the course or enter for the general examinations in either college. They will attend lectures in common upon such other branches as the faculty under which their studies are pursued may determine.

#### **WINTER TERM.**

The course of lectures in this department will commence October 1st, and will continue until the end of March. This is the essential part of the college year and consists of didactic lectures, practical demonstrations, laboratory work and clinical teaching in the lecture rooms and in the dispensaries and hospitals of both cities. Frequent class examinations, or "quizzes," will be conducted by each professor and are considered an important feature of the course. Attendance upon at least four-fifths of the lectures under each chair is requisite in order to entitle the student to enter for final examination or to a certificate of attendance.

#### **SPRING SESSION.**

A spring course will be conducted in each of the colleges, beginning April 1st, at the close of the winter term, and extending over a period of nine weeks. Attendance upon this course is desirable, but is not obligatory. It is supplemental to the longer winter session, but cannot be regarded as a substitute or equivalent therefor. Series of lectures will be delivered in this course, upon "surgical landmarks," surgical pathology, gynecological and abdominal surgery, mental diseases, medical botany, rectal diseases, urinalysis and electro-therapeutics. Opportunity will be afforded, also, for clinical instruction and laboratory work.

Students are strongly urged to avail themselves of the advantages presented during this spring session.

#### **PROFESSIONAL EXAMINATIONS.**

These will take place in the first and last weeks of the session, and will be conducted by the Professors of the respective chairs.

Final examinations for degrees will be held only in the last week of the winter session.

### GRADUATION.

Candidates for graduation and for the degrees conferred by the university upon graduates of the colleges in this department must possess the following qualifications: (1) they must be upwards of twenty-one years of age; (2) they must be of good moral character; (3) they must have spent three full years in the study of medicine or dentistry; (4) they must have attended three full courses of lectures, the last of which, at least, must have been in this university, and the two former in this or some other recognized university or college of medicine or dentistry, and (5) they must have sustained satisfactory examinations in the various branches of study, in accordance with the rules of the general faculty.

### DEGREES.

In the department of medicine, the following degrees will be granted by the university:

To graduates of the College of Medicine and Surgery, the degree of Doctor of Medicine, (M. D.).

To graduates of the College of Homeopathic Medicine and Surgery, the degree of Doctor of Medicine, (M. D.).

To graduates of the College of Dentistry, the degree of Doctor of Dental Surgery, (D. D. S.).

Graduates of the College of Dentistry can obtain the degree of Doctor of Medicine by attending one full course of lectures in either of the allied colleges and by passing the final examinations required therein. Similarly, graduates of the College of Medicine and Surgery, or of the College of Homeopathy, can obtain the degree of Doctor of Dental Surgery by attending one full course of lectures in the College of Dentistry and by passing the final examinations in that college.

### FEES.

Students of the College of Medicine and Surgery, the College of Homeopathic Medicine and Surgery, and the College of Dentistry, will be uniformly charged as follows:

Matriculation fee, payable annually, for students who are residents of Minnesota, \$10.00; for all others, \$25.00.

Lecture courses, each year, for students of Minnesota, \$25.00; for all others, \$35.00.

Graduation fee for all students, \$10.00.

Material for dissection will be furnished to the pupil at actual cost. There will be no charges for dispensary or hospital tickets.

Laboratory expenses will be limited to the actual cost of material used.

Graduates of the College of Science, Literature and Arts of this University will be required to pay the matriculation fee only. It is

the policy of the Board of Regents to encourage the students of this department to graduate before taking up the work of any of the special departments.

For information regarding the expenses of living, see general statements under the heading "The University," page 32.

#### CALENDAR.

1888.

Oct. 1st. Monday; Term opens; enrollment.

" 2nd. Tuesday; Entrance examination.

Opening exercises of the Medical Department. Address by the President.

" 3rd. Wednesday; Medical Lectures begin.

1889.

Dec. 22d to Jan. 2nd. Holiday vacation.

March 25th-30th. Examinations for degrees and promotions.

April 1st. Spring term opens.

June 2d to 6th. Commencement.

## THE COLLEGE OF MEDICINE AND SURGERY.

### THE FACULTY.

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

A. F. RITCHIE, M. D.,  
*Professor of Anatomy.*

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

J. C. BELL,  
*Professor of Chemistry.*

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

ALBERT E. SENKLER, M. D.,  
*Professor of Theory and Practice of Medicine.*

CHARLES H. HUNTER, A. M., M. D.,  
*Professor of Clinical Medicine and Pathology.*

EVERTON J. ABBOTT, A. B., M. D.,  
*Professor of Clinical Medicine.*

CHARLES A. WHEATON, M. D.,  
*Professor of Principles and Practice of Surgery.*

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

PERRY H. MILLARD, M. D.,  
*Dean and Professor of Clinical Surgery.*

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

ALEX. J. STONE, LL. D., M. D.,  
*Professor of Diseases of Women.*

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

JOHN F. FULTON, PH. D., M. D.,  
*Professor of Ophthalmology and Otology.*

FRANK ALLPORT, M. D.,  
*Clinical Professor of Ophthalmology and Otology.*

C. EUGENE RIGGS, A. M., M. D.,  
*Professor of Diseases of the Nervous System.*

CHARLES H. BOARDMAN, M. D.,  
*Professor of Medical Jurisprudence.*

ARTHUR B. ANCKER, M. D.,  
*Professor of Hygiene.*

*The University of Minnesota.*

JAMES H. DUNN, M. D.,  
*Professor of Diseases of the Genito-Urinary Organs.*

CHAS. L. WELLS, A. M., M. D.,  
*Professor of Diseases of Children.*

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

M. P. VANDERHORCK, M. D.,  
*Professor of Diseases of the Skin.*

W. S. LATON, M. D.,  
*Professor of Diseases of the Throat and Nose.*

J. CLARK STEWART, B. S., M. D.,  
*Professor of Histology and Bacteriology.*

J. W. BELL, M. D.,  
*Professor of Physical Diagnosis and Diseases of the Chest.*

E. C. SPENCER, A. B., M. D.,  
*Professor of Surgical Anatomy.*

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

W. A. JONES, M. D.,  
*Adjunct Professor of Diseases of the Nervous System*

BURNSIDE FOSTER, M. D.,  
*Demonstrator of Anatomy.*

**ANNOUNCEMENT.**

Under the title of THE COLLEGE OF MEDICINE AND SURGERY is represented the "old school" branch of this department of the University.

Its creation has been the signal for the discontinuance of the leading medical institutions of Minneapolis and St. Paul, whose faculties have thus sought to enlarge the opportunity for the establishment of a strictly high grade school. The event marks an era in the history of medical education in Minnesota.

The faculty of the new college, in presenting its first annual announcement to the profession and the public, desires to emphasize the high standard of its curriculum. It will conduct a three year's course of instruction which will largely follow the graded method. Matriculants must demonstrate their fitness for preliminary study by evidencing their possession of a fair degree of preliminary education. Students must pass the fundamental or primary branches before entering for advanced or final examinations. Each winter term will be of the prescribed legal period of six months.

While maintaining these superior educational conditions, the college will afford its students correspondingly superior advantages. It will place at their command the clinical opportunities of the dispensaries and hospitals of two cities. In Minneapolis and St. Paul it will have the entree of the wards of the city hospitals and of the principal private institutions. In each place the clinicians of its faculty will support and control free dispensaries, to the clinics of which the students

of the second and third years will be admitted. These clinics attract a large number of patients and afford opportunity for illustration, diagnosis and treatment in every department of practical instruction—in general surgery and medicine, diseases of women and children, diseases of the eye and ear, of the throat and nose, of the nervous system, of the genito-urinary organs and of the skin.

Laboratory work will be a leading feature of the course in this College. It will include practical demonstrations in physiology, histology, bacteriology, pathology, chemistry and urinalysis. In these exercises students will personally participate and will thus be provided with an opportunity to perfect themselves in microscopy.

In addition to the regular didactic course, special lectures will be given upon topics of peculiar interest.

An ample supply of material will be provided for dissections and the demonstration of anatomy will be thoroughly conducted.

Several post-graduate hospital appointments in Minneapolis and St. Paul will be open to students of this College through competitive examination.

In a word, the Faculty will spare no endeavor to put the College upon a plane with the foremost medical institutions of the country and, in the realization of this purpose, it bespeaks the support of the medical profession of Minnesota.

### COURSE OF INSTRUCTION.

#### FIRST YEAR.

Anatomy,	Physiology,
Chemistry,	Materia Medica,
Histology,	Laboratory Work.

#### SECOND YEAR.

Continuation of first year studies.

Pathology,	Physical Diagnosis,
Medical Jurisprudence,	Hygiene,
Theory and Practice,	Surgery,
Clinical Medicine,	Clinical Surgery,
Obstetrics,	Gynecology,
Diseases of Children,	Clinical Instruction.

#### THIRD YEAR.

Continuation of second year studies (without those of the first year).

Neurology,	Electro-therapy,
Ophthalmology,	Otology,
Dermatology,	Genito-Urinary Diseases,
Laryngology,	Orthopædia.
Clinical Instruction in all branches.	

## ANATOMY.

Anatomy will be taught by lectures, dissections, under the demonstrator, and recitations.

*Text Books.*—Gray's Anatomy and Holden's Landmarks.

*Collateral Reading.*—Quain's Anatomy and Holden's Osteology.

## PHYSIOLOGY.

Lectures, practical demonstrations in the laboratory and recitations.

*Text Books.*—Foster and Yeo.

*Collateral Reading.*—Landois and Stirling and Chapman.

## CHEMISTRY.

Lectures in General and Organic Chemistry; laboratory course, including qualitative analysis, Toxicology and Urinalysis.

*Text Books.*—Atfield, Green's Medical Chemistry.

*Collateral Reading.*—Bowman, and Taylor on Poisons.

## HISTOLOGY AND BACTERIOLOGY.

Lectures and laboratory work. The student will be taught to mount normal tissues and specimens containing bacteria. The course in Normal Histology and Bacteriology will cover a period of not less than six weeks. If possible the student will provide himself with a microscope.

*Text Books.*—Prudden's Practical Histology, Shafer's Essential Histology.

*Collateral Reading.*—Cornil and Ranvier.

## PATHOLOGY.

Pathology and Morbid Anatomy will be taught by lectures, recitations, and work in the dead house. The technique of the autopsy will be carefully dwelt upon so that each student can learn to make a correct post-mortem examination. Diseased processes will be illustrated by fresh and alcoholic specimens, that theories of disease may be as much matters of demonstration as the nature of the subjects will admit.

*Text Books.*—DeLafield and Prudden, Cornil and Ranvier, Orth.

## MATERIA MEDICA AND THERAPEUTICS.

Lectures, practical demonstrations in the laboratory and recitations.

*Text Books.*—Wood and Bartholow.

*Collateral Reading.*—Mann.

## OBSTETRICS.

Lectures, illustrated by operations on the manakin, and recitations. During the senior year opportunities will be given members to attend cases of Obstetrics.

*Text Books.*—Lusk.

*Collateral Reading.*—Playfair, Galabin, Charpentier.

## SURGERY.

Lectures and recitations; also clinical instruction, and special courses in minor surgery, bandaging, and operative surgery.

*Text Books.*—Wyeth and Bryant.

*Collateral Reading.*—Agnew, Ashhurst's International Encyclopædia, and Erichsen.

## PRACTICE OF MEDICINE.

Lectures, recitations and clinical instruction. Bedside instruction will be a special feature in the teaching of this branch.

*Text Books.*—Hilton Fagge.

*Collateral Reading.*—Flint, Reynold's System, Loomis, Niemeyer, and Roberts.

## DISEASES OF WOMEN.

Lectures, clinical instruction and attendance upon operations. The opportunities of practical instruction in this branch will be very ample.

*Text Books.*—Thomas, Schroeder, Byford.

*Collateral Reading.*—Emmett and Hart and Barbour.

## EYE AND EAR.

Lectures, clinical instruction, and recitations.

*Text Books.*—Nettleship (eye), Roosa (ear), and Williams.

*Collateral Reading.*—Juler, Stellwag, Soelberg Wells and Politzer (ear).

## DISEASES OF THE NERVOUS SYSTEM.

Lectures and clinical instruction. Special opportunities will be afforded students in differential diagnosis.

*Text Books.*—Gower's Nervous System, Bramwell (Cord), and Folsom (insanity).

*Collateral Reading.*—Ranney's Applied Anatomy of the Nervous System, Hammond's Diseases of the Nervous System, Bastian's Paralysis, and Clauston's Mental Diseases.

## GENITO-URINARY DISEASES.

Lectures and clinical instruction.

*Text Books.*—Thompson's Diseases of the Urinary Organs.

*Collateral Reading.*—Vanburen and Keyes, and Bumstead and Taylor.



## DISEASES OF CHILDREN.

Lectures, didactic and clinical in their character, will be given under this chair.

*Text Books.*—J. Lewis Smith, Eustace Smith, Meigs and Pepper, and Goodhart.

## DISEASES OF THE SKIN.

Lectures and clinical instruction.

*Text Book.*—Duhring.

*Collateral Reading.*—Hyde and Van Haslingen.

## LARYNGOLOGY.

Lectures and the use of the Laryngoscope. Clinical instruction.

*Text Book.*—McKenzie.

*Collateral Reading.*—Bosworth.

## PHYSICAL DIAGNOSIS.

Lectures, class exercises, bedside instruction.

*Text Book.*—Loomis.

*Collateral Reading.*—Bramwell (heart).

## ORTHOPAEDIC SURGERY.

Lectures and clinics.

*Text Book.*—Rums (*Practical Orthopædia*).

*Collateral Reading.*—McNamara and Gibney.

## HYGIENE.

Lectures.

*Text Book.*—Parks.

*Collateral Reading.*—Richardson's *Preventive Medicine*, Buck's *Hygiene*.

## MEDICAL JURISPRUDENCE.

Lectures.

*Text Book.*—Taylor's *Manual*, by Ruse, last edition.

*Collateral Reading.*—Taylor's *Principles and Practice of Medical Jurisprudence*.

COLLEGE OF HOMEOPATHIC MEDICINE AND  
SURGERY.

FACULTY.

- CYRUS NORTHROP, LL. D.,  
*President.*
- WILLIAM E. LEONARD, A. B., M. D.,  
*Professor of Materia Medica and Therapeutics.*
- HENRY HUTCHINSON, M. D.,  
*Professor of Theory and Practice of Medicine.*
- GEORGE E. RICKER, A. B., M. D.,  
*Professor of Clinical Medicine.*
- ROBERT D. MATCHAN, M. D.,  
*Professor of the Principles and Practice of Surgery.*
- WARREN S. BRIGGS, B. S., M. D.,  
*Professor of Clinical Surgery*
- HENRY C. LEONARD, B. S., M. D.,  
*Professor of Obstetrics.*
- ALBERT E. HIGBEE, M. D.,  
*Professor of Gynecology.*
- JOHN F. BEAUMONT, M. D.,  
*Professor of Ophthalmology.*
- HENRY W. BRAZIE, M. D.,  
*Professor of Paedology.*
- SALATHIEL M. SPAULDING, M. D.,  
*Professor of Mental and Nervous Diseases.*
- EUGENE L. MANN, A. B., M. D.,  
*Professor of Physical Diagnosis and Laryngology.*
- B. HARVEY OGDEN, A. M., M. D.,  
*Professor of Genito-Urinary Diseases.*
- HENRY C. ALDRICH, M. D., D. D. S.,  
*Professor of Dermatology.*
- D. A. STRICKLER, M. D.,  
*Professor of Otology.*

ANNOUNCEMENT.

In the organization of this Department the Board of Regents of the University of Minnesota has aimed to secure the united efforts of the homeopathic practitioners of the State in the establishment of a College broader in its scope and more complete in its teaching corps than that of any similar institution in this or any other country.

The College of Homeopathic Medicine and Surgery confidently appeals,

therefore, to the profession of the Northwest to second its efforts to educate thoroughly those students who wish to practice homeopathy.

Minneapolis and St. Paul are well known centers of enterprise and capital in every commercial and material interest and are rapidly becoming a medical center. The vast domain North and West of us is our legitimate field. The Twin Cities have been for twenty-five years—thanks to men who have grown gray in the profession—a center of homeopathic patronage and interest. It has taken but a few years to build up in Minneapolis a hospital devoted to this system of practice which equals any in the Northwest, while a similar institution in St. Paul, situated in the natural center for accidents, within two blocks of most of the railroads that enter the city, and surrounded by car shops and manufacturing industries, secures a large share of surgical cases.

Arrangements have been made, and are being made, whereby students will be admitted to both of these hospitals and will visit patients at the bedside.

These advantages, with those furnished by the dispensaries of two large cities, will give unsurpassed opportunities for the special study of auscultation and percussion, minor surgery, speculum examinations, the use of the laryngoscope, the ophthalmoscope, the thermometer, the urinometer, etc., and will make practical clinical work a special feature of the college.

Hospital appointments will be open to graduates through competitive examination.

#### FIRST YEAR.

Anatomy,  
Physiology,  
Chemistry,  
Materia Medica.

#### SECOND YEAR.

Anatomy,  
Physiology,  
Chemistry and Toxicology,  
Materia Medica,  
Theory and Practice,  
Clinical Medicine,  
Obstetrics,  
Surgery and Clinical Surgery,  
Gynecology,  
Physical Diagnosis,  
Paedology.

THIRD YEAR.

As the second year, without the three first studies and in addition

Ophthalmology and Otology,  
Dermatology and Venereal Diseases,  
Mental and Nervous Diseases,  
Medical Jurisprudence.

Senior students will have opportunity to attend out-door patients, to assist in special and general surgical operations, and to attend at least one obstetrical case during their last course of lectures.

MATERIA MEDICA AND THERAPEUTICS.

Lectures will include the study of the drugs of the Homeopathic *Materia Medica*, classified according to their scientific relations in the natural kingdoms, and their practical relations in applied medicine. One lecture a month will be devoted to the principles of Homeopathic Therapeutics as laid down in Hahnemann's writings, and in those of such teachers as Hering, Dunham, Farrington, etc.

*Text Books*,—Farrington's Clinical *Materia Medica*, Cowperthwaite's *Materia Medica*, Guernsey's Key-Notes, Hawke's Characteristics, Hahnemann's Organon.

*Reference Books*,—Hering's Condensed *Materia Medica* and Guiding Symptoms, Dunham's *Materia Medica* and Allen's Encyclopædia.

THEORY AND PRACTICE OF MEDICINE.

Lectures on the Theory and Practice of Medicine will be delivered to students of the second and third year. The chief purpose of this chair will be to educate the student in systematic habits of investigating and treating disease.

*Text Books*,—Raue's Pathology and Diagnosis, Ruddock's Text Book of Medicine and Surgery, Arndt's System of Medicine, Pepper's System of Medicine, Loomis' Practical Medicine, Bartholow's Practice, Da-Costa's Diagnosis.

CLINICAL MEDICINE.

Material for clinical instruction will be drawn from the dispensary and hospital clinics. This department will aim to teach the student the practical application of homeopathic principles in therapeutics.

*Text Books*,—Lippe's Repertory, Lilienthal's Therapeutics, Hughes' Therapeutics.

OBSTETRICS.

The teaching of this chair will embrace a practical presentation of the development of the embryo, the anatomy of the pelvis and the mechanism of labor and its complications; with instructions as to the

proper care of mother and child and the management of the puerperal state.

*Text Books*,—Guernsey, Leavitt, Playfair, Leishman, Cazeaux, and Savage on the Pelvic Organs.

#### GYNECOLOGY.

In this department the student will be familiarized with the principles which underlie success in this important branch of practice. Instruction will be illustrated by clinical cases.

*Text Books*,—Ludlam, Emmet, Thomas, Barnes, Munde.

#### PRINCIPLES AND PRACTICE OF SURGERY.

A comprehensive course of lectures on General Surgery will be given. Surgical Pathology will be treated in a concise and comprehensive manner. Surgical operations and methods will be thoroughly demonstrated on the living and on the cadaver.

*Text Books*.—Helmuth, Bryant, Erichsen, Packard and Holmes.

#### CLINICAL SURGERY.

The diagnosis, prognosis, and homeopathic treatment of surgical diseases will be practically taught. Surgical operations will be performed before the class. There will be two clinics and one lecture each week on surgical emergencies, minor surgery and orthopaedia.

*Text Books*.—Gilchrist's Surgical Therapeutics, Ranney's Surgical Diagnosis, Smith's Operative Surgery.

*Reference Books*.—Helmuth, Franklin, Gross and Sayre.

#### MENTAL AND NERVOUS DISEASES.

This course will comprise the topics most useful to the general practitioner, illustrated by cases from dispensary and private practice.

*Text-Books*.—Worcester, Hart, Hamilton.

#### OPHTHALMOLOGY.

The instruction in this branch will combine didactic and clinical teaching. Lectures on the anatomy, physiology and pathology of the regions involved will be thoroughly practical.

*Text Books*.—Buffum and Norton.

*Reference Books*.—Wells.

#### PHYSICAL DIAGNOSIS AND LARYNGOLOGY.

The practical teaching of Physical Diagnosis and the study of the diseases of the nose and throat and their treatment, with the uses of special diagnostic and therapeutic instruments, will be the aim of this department.

*Text Books*—

On Physical Diagnosis: Flint's Auscultation and Percussion, Hudson, Gutmann and Loomis.

On Laryngology: Lennox Brown, Sajous, McKenzie, Bosworth.

PAEDOLOGY.

A thorough course will be given upon the general diseases of children and their homeopathic treatment, including their etiology, pathology and hygiene.

*Text Books*.—Hull's Jahr, Duncan, Ruddock, Teste, Guernsey, Smith, Edmonds.

*Reference Book*.—Ziemssen.

GENITO URINARY DISEASES.

Didactic and practical instruction upon the physiology and pathology of the Genito-Urinary Organs, with the etiology, symptomatology and treatment of their diseases, will be the aim of this department.

*Text Books*.—Franklin, Berjeau, Otis and Keyes.

DERMATOLOGY.

This subject will be taught by didactic lectures with practical illustrations from the dispensaries, particular stress being laid upon the teaching of pure homeopathy.

*Text Books*.—Kippax, Lilienthal, Jahr, Russel, Millsbaugh's Repertory of Eczema, Duhring, Fox.

OTOLOGY.

A series of practical lectures will be given on the anatomy, physiology and pathology of the ear and the treatment of its diseases.

*Text Books*.—Winslow and Houghton.

*Reference Book*.—Roosa.

The students in this college will take lectures and examinations in the College of Medicine and Surgery upon the following branches: Anatomy, Physiology, Chemistry, Medical Jurisprudence, Pathology, Histology and Hygiene.

## COLLEGE OF DENTISTRY.

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### FACULTY.

CYRUS NORTROP, LL. D.

*President.*

CHARLES M. BAILEY, D. M. D.

*Professor of Prosthetic Dentistry and Materia Medica.*

THOMAS E. WEEKS, D. D. S.

*Professor of Operative and Clinical Dentistry.*

EDWARD H. ANGLE, D. D. S.

*Professor of Histology and Orthodontia.*

L. D. LEONARD,

*Professor of Pathology and Therapeutics.*

A. F. RITCHIE, M. D.

*Professor of Anatomy.*

RICHARD O. BEARD, M. D.

*Professor of Physiology.*

C. J. BELL.

*Professor of Chemistry.*

Lectures will be attended and examinations taken upon Anatomy, Physiology and Chemistry, in common with the students of the College of Medicine and Surgery.

An able corps of special lecturers, clinical instructors and demonstrators will be appointed.

This College, which is practically the successor of the Dental Departments of both the St. Paul Medical College and the Minnesota Hospital College, is established upon the basis of the highest scientific dental education, as to its requirements both for admission and graduation.

### COURSE OF INSTRUCTION.

The course of instruction is graded and is of three years' duration, comprising three terms of six months each. The studies for each year are as follows:

#### FIRST YEAR.

Descriptive and Practical Anatomy, Physiology, General Chemistry, Histology and Clinical Surgery.

#### SECOND YEAR.

Continuance of first year's studies, Clinical Dentistry, Pathology and Therapeutics, Materia Medica, Analytical Chemistry, Prosthetic Dentistry and Metallurgy.

THIRD YEAR.

Operative and Clinical Dentistry, Oral Surgery, Pathology and Therapeutics, Medical Jurisprudence, Obstetrics and Nervous Diseases.

EXAMINATIONS.

Examinations on Anatomy, Physiology, General Chemistry, Prosthetic Dentistry, Histology, Materia Medica and Analytical Chemistry, will be held at the end of the second year.

Final examinations in all branches will be held at the end of the third year.

CLINICAL INSTRUCTION.

Clinical instruction will embrace all practical subjects relating to dentistry. Aside from the assistance of able demonstrators, work in the Infirmary will be under the direction of the Faculty, and students will be required to exhibit results of every variety of operation. Ample facilities and conveniences are provided in the Infirmary and an abundance of clinical material is at hand. In a word, clinical practice will be the feature of this college and attendance upon clinics will be obligatory upon second and third year students.

HISTOLOGY AND PATHOLOGY.

In Histological and Pathological work students will be taught to prepare microscopical specimens, and will be required to mount a series of slides, which they will be allowed to retain as the nucleus of a collection.

TEXT BOOKS.

Those mentioned first are preferred for study, the others are recommended for reference.

Pathology: Salter—Delatfield & Prudden, Paget's Surgical Pathology.

Histology: Frey—Carpenter, Beale, Owen's Odontography and Tomes' Dental Anatomy.

Materia Medica: Gorgas—Biddle.

Therapeutics: Ringer.

Oral Surgery: Garretson—Heath.

Operative Dentistry: Fillebrown—Harris, Taft & Coleman.

Orthodontia: Guilford—Talbot, Kingsley.

Prosthetic Dentistry: Richardson—Haskell.

Metallurgy: Essig.

The American System of Dentistry is also strongly recommended.

All Operating Instruments, except forceps, and all Laboratory tools, except lathe and vulcanizer, must be provided by the student. A list will be furnished upon application and no student will be permitted to work unless properly equipped.



## APPENDIX.

## PROGRAM FOR EXAMINATIONS, SEPTEMBER, 1888.

[The numbers placed after the subjects, where given, indicate the room in which the examination will be held. Where no number is given the examination will be held in the chapel, on the third floor of the main building].

Day.	Hour.	Subjects for admission to Sub-Freshman Class.	Subjects for admission to Freshman Class.	For students conditioned in the work of 1st term Fresh. and Soph. years.*
TUESDAY, SEPT. 4.	8:00-10:30 10:45- 1:15 2:30- 5:00	Latin Grammar..... English Grammar... Elementary Algebra.		
WEDNESDAY, SEPT. 5.	8:00-10:30 10:45- 1:15 2:30- 5:00	{ Cæsar ..... 48 } Physical Geog'phy } Cicero ..... 48 } Hist. of England... U. S. History.....	Cicero. .... 48	
THURSDAY, SEPT. 6.	8:00-10:30 10:45- 1:15 2:30- 5:00	Arithmetic ..... Physiology ..... English Composition.		{ D. Trigonometry 38 } C. Physics ..... 48 D. Livy ..... 48 C. Rhetoric ..... 25
FRIDAY, SEPT. 7.	8:00-10:30 10:45- 1:15 2:30- 5:00	His. of Greece & Rome ..... Natural Philosophy .....	..... ..... Plane Geometry... 38	C. French ..... 50 } D. Greek ..... 36 } D. English ..... 37 C. English ..... 37
SATURDAY, SEPT. 8.	8:00-10:30 10:45- 1:15 2:30- 5:00	..... ..... .....	Solid Geometry... 38 } Virgil ..... 48 } English ..... 37 } Greek ..... 36 } German ..... 35	C. Mathematics... 38 C. Horace ..... 48 } C. Greek ..... 36 } D. German ..... 35
MONDAY, SEPT. 10.	8:00-10:30 10:45- 1:15 2:30- 5:00	..... ..... .....	Botany ..... 47 Chemistry ..... † High Algebra ..... 38	D. Botany ..... 47 C. Chemistry ..... †

Candidates for admission to the sub-Freshman Class will get a statement of the result of their examinations Saturday morning, Sept. 8th. Candidates for admission to the Freshman Class will get a statement of the result of their examinations Tuesday morning, Sept. 11th. These results will be made known through the university post office.

Students conditioned in the work of the *first term* not mentioned in the above schedule, will arrange with the professors to take their examinations some time during the week.

\*Examinations for the removal of conditions of the 2nd term will be held at the end of the first term, and for the removal of conditions of the third term at the end of the 2nd term. No other examinations for the removal of conditions will be offered during the year.

† In the Chemistry Recitation Room, in the College of Agriculture.

§ In the Physics Recitation Room, in the College of Mechanic Arts.