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THE UNIVERSITY OF MINNESOTA

THE

CALENDAR

FOR THE YEAR

1886-87.

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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.*

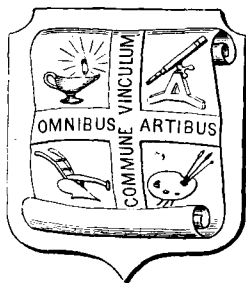
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THE  
UNIVERSITY OF MINNESOTA.

THE  
CATALOGUE

FOR THE YEAR

1886-87.



AND

ANNOUNCEMENT

FOR THE YEAR

1888.

BY THE UNIVERSITY.

MINNEAPOLIS.

1887.



## CALENDAR.

1887.		Year of 1887-88 begins. Entrance examinations, 9:00 A. M. Entrance examinations concluded. Examinat'ns for advanced rank and condit'ns. " " " " Registration. Recitations and lectures begin. Examinations for conditions. Term examinations begin. " " closed. Thanksgiving day. First term ends 13th week. Second term begins. Recess begins.
Aug. 30	Tuesday	
Aug. 31	Wednesday	
Sept. 1	Thursday	
Sept. 2	Friday	
Sept. 5	Monday	
Sept. 6	Tuesday	
Nov. 10	Thursday	
Nov. 21	Monday	
Nov. 23	Wednesday	
Nov. 24	Thursday	
Nov. 29	Tuesday	
Dec. 24	Saturday	
WINTER VACATION.		
1888.		Work of second term resumed. Examinations for conditions. Term examinations. " " " " Second term ends - - 25th week. Third term begins. Recess begins.
Jan. 10	Tuesday	
Jan. 16	Thursday	
Feb. 27	Monday	
Feb. 28	Tuesday	
Feb. 29	Wednesday	
Mch. 3	Saturday	
Mar. 6	Tuesday	
Mar. 31	Saturday	
EASTER VACATION.		
Apr. 10	Tuesday	Work of third term resumed. Examinations for conditions. Senior examinations. " " Term examinations. " " " " Field day. Senior class day. Alumni day. Commencement. - - 38th week.
May 17	Thursday	
May 22	Tuesday	
May 23	Wednesday	
May 31	Thursday	
June 1	Friday	
June 2	Saturday	
June 4	Monday	
June 5	Tuesday	
June 6	Wednesday	
June 7	Thursday	
SUMMER VACATION.		
June 12	Tuesday	Entrance examinations. " " Entrance examinations. " " Examinations advanced rank. " " " Registration. Recitations and lectures begin year 1888-89.
June 13	Wednesday	
Sept. 4	Tuesday	
Sept. 5	Wednesday	
Sept. 6	Thursday	
Sept. 7	Friday	
Sept. 10	Monday	
Sept. 11	Tuesday	

**THE BOARD OF REGENTS.**


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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,	- - -	1888
The HON. THOMAS S. BUCKHAM, M. A., FARIBAULT,	- - -	1888
The HON. JOHN B. GILFILLAN, MINNEAPOLIS,	- - -	1888
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.		

**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, Minneapolis],		<i>Treasurer</i>

**THE EXECUTIVE COMMITTEE.**


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The HON. JOHN S. PILLSBURY, <i>Chairman.</i>
The HON. JOHN B. GILFILLAN.
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., Prof. Geol. and Min., *State Street S. E.*  
State Geologist and Curator of the General Museum.
- CHARLES N. HEWITT, M. D., *Red Wing.*  
Professor of Preventive Medicine.
- JOHN G. MOORE, B. A., *2850 University Avenue S. E.*  
Professor of the German Language and Literature.
- CHRISTOPHER W. HALL, M. A., *801 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 Latin.
- MATILDA J. WILKIN, B. L., *501 Fourth Street S. E.*  
Instructor in English and German.
- MARIA L. SANFORD, *1401 Sixth Street S. E.*  
Professor of Rhetoric and Elocution.
- WILLIAM A. PIKE, C. E., *2525 University Avenue S. E.*  
Professor of Engineering and in charge of Physics.

- 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 Eighth Avenue S. E.*  
Professor of the French Language and Literature.
- EDWARD D. PORTER, M. A., *Experimental Farm.*  
Professor of the Theory and Practice of Agriculture.
- FRANKLIN STAPLES, M. D., *Winona.*  
Professor of the Practice of Medicine.
- DANIEL W. HAND, M. D., *Saint Paul.*  
Professor of Surgery.
- WILLIAM H. LEONARD, M. D., *Minneapolis.*  
Professor of Obstetrics and Diseases of Women and Children.
- PERRY H. MILLARD, M. D., *Stillwater.*  
Professor of Anatomy and Physiology.
- THOMAS PEEBLES, B. A., *315 University Avenue.*  
Instructor in Mental and Moral Philosophy and Logic.
- O. J. BREDÁ, *1320 Fifth Street S. E.*  
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 E. SMITH, M. D., *Saint Paul.*  
Professor of Materia Medica and Therapeutics.
- GEORGE W. WOOD, M. D., *Faribault.*  
Professor of Diseases of the Nervous System, and of  
Medical Jurisprudence.
- CHARLES SIMPSON, M. D., *Minneapolis.*  
Professor of Pathology.
- CHARLES F. SIDENER, B. S., *917 University Avenue S. E.*  
Instructor in Chemistry.



HENRY F. NACHTRIEB, B. S., *1120 Fourth Street 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, *Florence Court.*  
Instructor in Physics.

WILLIAM R. HOAG, B. C. E., *1219 Fourth Street S. E.*  
Instructor in Civil Engineering.

JOHN H. BARR, B. M. E., *428 University Avenue S. E.*  
Instructor in Mechanical Engineering.

\*E. D. MAYO,  
Instructor in Drawing.

†Conway McMILLAN, M. A., *324 Thirteenth Avenue S. E.*  
Instructor in Botany.

**OTHER OFFICERS.**

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

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

WILLIAM H. YATTAW, *Main Building.*  
Janitor.

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

\* 2d Term only.  
† 3d Term only.

**STUDENTS.**

Alphabetical Roll by Classes, 1852-'87.

**I. GRADUATE STUDENTS, 22.**

George Briggs Aiton, B. A., '81,	University of Minnesota.
John Henry Barr, B. M. E., '83,	University of Minnesota.
Mary Lathrop Benton, B. A., '85,	University of Minnesota.
Mrs. Hannah A. Davidson, M. A.,	Iowa College.
Charles Burke Elliott, LL. B., '81,	Yale University.
Harlow C. Gale, B. A., '85,	Yale College.
Wm. Aaron Hadley, B. A., '81,	Earlham College.
Wm. Ricketson Hoag, B. C. E., '84,	University of Minnesota.
Joseph Henry Capper Hutchinson, B. A., '84,	University of Minnesota.
Frederick S. Jones, B. A.,	Yale College.
Laura Alberta Linton, B. S., '79,	University of Minnesota.
Oscar William Oestlund, B. A.,	Augustana College.
Eli Milton Skiff Pickett, B. A., '82,	University of Minnesota.
James C. Plant, B. A.,	
Rev. J. W. Prosser, B. D., '79,	Nashotah.
Rev. LeGrand Powers, B. A., '72,	Iowa University.
Morris John Riggs, B. C. E., '83,	Iowa University.
Marion Hooker Roe, B. L., '79,	University of Minnesota.
Charles Frederick Sidener, B. S., '83,	University of Minnesota.
George Washington Soubllette, B. A., '78,	Kirksville, Mo.
Emma Frances Trussell, B. L., '83,	University of Minnesota.
Matilda Jane Campbell [Wilkin], B. L., '77,	University of Minnesota.

## II. UNDERGRADUATE STUDENTS.

### SENIOR CLASS, 26.

Andrews, George Cutler,	Minneapolis,	Mech. Engr'g.
Bassett, Franklin Harley,	Glyndon,	Scientific.
Brewster, Henry Webb,	Minneapolis,	Classical.
Burnell, George Edwin,	Minneapolis.	Literary.
Crane, Fremont, B. S., '86,	Mapleton,	Civil Engr'g.
Cross, Norton Murdock,	Minneapolis,	Scientific.
Croswell, Thomas Henry,	St. Paul,	Scientific.
Dinsmoor, Adelbert Orsman,	Austin,	Scientific.
Emery, Elwood Allen,	Minneapolis.	Literary.
Gilman, Joshua Ethan,	Wasioja,	Classical.
Gould, Alfred Burt,	Wasioja,	Classical.
Graham, Christopher,	Rochester,	Scientific.
Hammond, George Harry,	Lake City,	Classical.
Hawley, John Blackstock,	Red Wing,	Scientific.
Hinshaw, Jesse Doddridge,	Minneapolis,	Scientific.
Hinshaw, Millard Everett,	Minneapolis,	Classical.
Lamoreaux, Lowell Andrew,	Minneapolis,	Scientific.
Lamoreaux, Milton Sprague,	Minneapolis,	Scientific.
McKenzie, Ralph Murdoch,	Anoka,	Classical.
McKinney, Edwin Arthur,	Crow River,	Scientific.
McKinney, Everson Ryder,	Crow River,	Literary.
Milliken, William Patton,	Lake City,	Scientific.
Olsen, Ingerval M.,	St. Peter,	Scientific.
Rosselot, Joseph Henry,	Faribault,	Classical.
—Smith, Mary Isadore,	Minneapolis.	Literary.
Winterer, Edward,	Le Sueur,	Literary.

### JUNIOR CLASS, 37.

—Adams, Alice Anna,	Minneapolis,	Literary.
Anderson, Josiah Moore,	Washburn,	Scientific.
—Baker, Lucy Lloyd,	Minneapolis,	Literary.
Benson, Percival Ramsey,	Anoka,	Classical.
Bierbauer, Bruno,	Mankato,	Scientific.
—Blanchard, Mary Lizzie,	Zumbrota,	Literary.
Chapman, Charles,	Viroqua, Wis.,	Scientific.
Coe, Clarence Stanley,	Iowa City, Ia.,	Civil Engr'g.
—Cook, Edna,	Minneapolis,	Scientific.

—Countryman, Gratia Alta,	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.
Johnson, Elwin Bird,	Marshall,	Scientific.
Johnson, Rollin Erastus.	Medford,	Classical.
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.
Rowell, Warren Coggsell,	Winona,	Scientific.
—Shillock, Anna,	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.
Webster, Charles Henry,	Clearwater,	Civil Engr'g.
Willard, William Dodsworth,	Mankato,	Classical.
—Winchell, Ima Caroline,	Minneapolis,	Literary.
Wolff, Louis Peter,	Red Wing,	Civil Engr'g.

**SOPHOMORE CLASS, 33.**

Abernethy, Frank Sherman,	Minneapolis,	Scientific.
Alden, Charles Henry, Jr.,	Ft. Snelling,	Scientific.
Babcock, Earle Jay,	Minneapolis,	Scientific.
—Baker, Rebecca Virginia.	Minneapolis,	Literary.
—Baker, Sibyl Belle,	Minneapolis,	Literary.
Brown, Walter Reynolds.	Minneapolis,	Classical.
Cheney, William Whittelsey,	Minneapolis,	Classical.
Church, Arthur Bliss,	Minneapolis,	Literary.
Cotton, Henry,	Prescott, Wis.,	Scientific.
—Elwell, Mattie Laura.	Minneapolis,	Literary.
Folsom, John Albert,	Minneapolis,	Scientific.
Giddings, Arthur,	Anoka,	Classical.
Goode, John Paul,	Marion,	Scientific.
Jackson, Charles William,	Brooklyn Centre,	Civil Engr'g.

Jones, Frank Du Mars,	Minneapolis,	Scientific.
Ladue, William Baker,	Salem, Oregon,	Classical.
McGregor, Lane,	Oxford, O.,	Classical.
McMillan, Jessie,	Minneapolis,	Literary.
Meeds, Alonzo Draper,	Stillwater,	Scientific.
Miller, Thomas Alfred,	Lake City,	Scientific.
Moffett, Robert Leslie,	Minneapolis,	Literary.
Sacre, Bertie Leverett,	Minneapolis,	Civil Engr'g.
—Sewall, Margaret Louise,	St. Paul,	Classical.
Sheppard, Prosper Ernest,	Lakeside,	Scientific.
—Smith, Ada Emily,	Algona, Ia.,	Scientific.
Stockwell, Walter Lincoln,	Anoka,	Scientific.
—Strohmeier, Lydia Kathrina,	Minneapolis,	Classical.
—Thompson, Maud,	Minneapolis,	Literary.
Todd, Fred Downs,	Minneapolis,	Scientific.
Triggs, Oscar Lovell,	Taopi,	Classical.
Voge, Christopher Elisha,	Minneapolis,	Scientific.
—Waters, Helen Edith,	Minneapolis,	Literary.
—Weber, Mary Louise,	Rice Lake,	Literary.

## FRESHMAN CLASS, 98.

—Abbott, Birdie,	Minneapolis,	Literary.
Abbott, Howard,	Minneapolis,	Scientific.
—Abernethy, Antoinette Judson,	Minneapolis,	Literary.
—Aiton, Hannah,	St. Peter,	Literary.
Allen, Edmund Pratt,	Minneapolis,	Scientific.
—Andrews, Hattie Louise,	Minneapolis,	Classical.
Babcock, Kendric Charles,	So. Brookfield, N.Y.,	Literary.
Baily, Henry Patterson,	Minneapolis,	Scientific.
Beach, William Artemus,	Minneapolis,	Scientific.
Beatty, Henry Wilson,	Arlington,	Scientific.
Bentley, Ernest Eugene,	Spring Valley.	Classical.
—Berry, Blanche Parker,	Minneapolis,	Literary.
Brabec, Frank,	Hutchinson,	Scientific.
Burt, John Lucius,	Minneapolis,	Scientific.
Butterfield, George Arthur,	Wasioja,	Classical.
Christianson, Peter,	Bath,	Scientific.
Clark, George Archibald,	Eden Prairie,	Literary.
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,	Forrest City,	Scientific.
Dahl, John Albin,	Minneapolis,	Literary.
Dann, Wilber Wainwright,	Minneapolis,	Scientific.
Dodge, Warren Maynard,	Farmington,	Scientific.
Doud, Frank Newland,	Winona,	Scientific.
Douglas, Fred Luke,	Jericho Center, Vt.,	Scientific.
Downs, Frank William,	Minneapolis,	Scientific.
Erf, James Edward,	Monroeville, O.,	Literary.
Faries, John Culbert,	Minneapolis,	Classical.
Fiske, Douglas Andrews,	Minneapolis,	Literary.
Flint, Harry Carlton,	Jamestown, D. T.,	Scientific.
Fryberger, Harrison Lucien Earle,	Red Wing,	Classical.
Gardiner, Edward Brown,	Minneapolis,	Scientific.
—Gilbert, Priscilla Grace,	Minneapolis,	Literary.
Gould, Charlie Devereaux,	Spring Valley,	Classical.
Grant, James Colfax,	Minneapolis,	Scientific.
Greenwood, Williston Wirt,	Mankato,	Scientific.
Grinager, William Fred,	Worthington,	Literary.
Gross, Otis Carsley,	Pickwick,	Scientific.
Harmon, William Webb,	Sauk Centre,	Literary.
Hatch, Henry Edwin,	Lake City,	Scientific.
Hayden, John Foot.	Fargo, D. T.,	Scientific.
Hayes, Frank,	Superior, Wis.,	Scientific.
Higgins, John Turner,	Hutchinson,	Scientific.
Hoyt, William Hausmer,	Minneapolis,	Scientific.
Johnson, Henry,	Sauk Centre,	Literary.
—Jones, Jennie Louise,	Minneapolis,	Scientific.
Kennedy, Henry Martin,	Litchfield,	Scientific.
Kennedy, Louis Henry,	Litchfield,	Classical.
—Koenig, Herminia Rosalia,	St. Peter,	Literary.
Lange, Dietrich,	Springfield,	Scientific.
Leeds, Warner Mifflin,	Lisbon, D. T.,	Scientific.
Lum, Burt Frank,	Minneapolis,	Scientific.
Lyon, Walter Henry,	Jamestown, D. T.,	Classical.
—McClary, Clara Heck,	Minneapolis,	Scientific.
—McOuat, Mary,	St. Peter,	Scientific.
Magny, Fred.,	Minneapolis,	Classical.
Mann, Fred Maynard,	Minneapolis,	Scientific.
March, Harry John,	Minneapolis,	Scientific.
Mayall, Herschel James,	St. Paul,	Classical.
—Mills, Mary,	Elk River,	Literary.
—Morin, Maggie Belle,	Albert Lea,	Scientific.
—Nelson, Ida Georgiana,	Alexandria,	Literary.
Nickerson, Fred William,	Elk River,	Scientific.

—Nicol, Jessie May,	Minneapolis,	Literary.
Nilson, Thorwald Eid,	Atwater,	Scientific.
—Parker, Della Laura,	Minneapolis,	Classical.
—Phillips, Edith Viola,	Minneapolis,	Literary.
Pike, Joseph Brown,	St. Paul,	Classical.
Pillsbury, Alfred Fisk,	Minneapolis,	Scientific.
Rex, Milton,	Minneapolis,	Classical.
Richardson, Herbert Gilman,	Minneapolis,	Scientific.
Richardson, Oscar Kelsey,	Minneapolis,	Scientific.
—Roby, Mabel Augusta,	Minneapolis,	Literary.
Rutherford, Wm. Henry Andrew,	Rockford,	Literary.
Savage, Charles Albert,	St. Paul,	Classical.
Schlegel, Bruno H. W. F. von,	Minneapolis,	Scientific.
—Schleuder, Julia Emily,	St. Peter,	Literary.
Serumgard, Siever,	Cooperstown, D. T.,	Literary.
Shaw, Albert Woodward,	Minneapolis,	Scientific.
Sommers, Charles Lyesring,	St. Paul,	Literary.
Spaulding, Edward Martin,	Minneapolis,	Scientific.
Spottswood, Edward Whipple,	Minneapolis,	Scientific.
Stacy, Albert Wallace,	Washburn,	Scientific.
Stahler, Frederick Wiley,	Minneapolis,	Scientific.
Stout, Thompson Welliver,	Minneapolis,	Classical.
Taylor, Bertha Vale,	Minneapolis,	Literary.
Thomas, Nathaniel Seymour,	St. Paul,	Classical.
—Thompson, Clarissa Ann,	Minneapolis,	Literary.
Trask, Birney Elias,	Minneapolis,	Scientific.
Wait, Fred Cogswell,	Winona,	Classical.
West, Max,	Minneapolis,	Scientific.
Wilson, Ole Knute,	Gilchrist,	Scientific.
Winslow, Walter Edwin,	Minneapolis,	Scientific.
Woodward, Herbert Milton,	Richfield,	Scientific.

## SUB-FRESHMAN CLASS 98.

—Albrecht, Nellie Mary,	Glencoe,	Literary.
—Alden, Bertha,	Minneapolis,	Literary.
Anderson, Andrew Curtin,	Minneapolis,	Literary.
—Anderson, Agnes Emaline,	Eden Prairie,	Literary.
Anderson, Christopher August,	Nicollet,	Literary.
Aslakson, Baxter Martin,	Willmar,	Scientific.
Baker, Ralph Joseph,	Rochester,	Scientific.
—Bebb, Rose Ann,	Minneapolis,	Literary.
—Bell, Gertrude Grosvenor,	Minneapolis,	Literary.
Blethen, Alden Joseph, Jr.,	Minneapolis,	Classical.
Boyum, Sjur Johnson,	De Lamere, D. T.,	Scientific.

Bray, Charles, W.,	Norwood,	Classical.
Brown, Justin Edgar.	Dodge Centre,	Scientific.
Brown, William Soudon,	Minneapolis,	Agriculture.
Browne, Squire Fred,	Kalamazoo, Mich.,	Classical.
—Butts, Minnie Augusta,	Stillwater,	Literary.
Carroll, James Edward,	Minneapolis,	Scientific.
Chandler, William Kinne,	Strawberry Pt., Ia.,	Scientific.
—Chapman, Grace,	Minneapolis,	Literary.
—Cheney, Mary Moulton,	St. Anthony Park,	Literary.
Chilgren, Gustaf A.,	Norseland,	Literary.
Chowen, Walter Abraham,	Chowen, P. O.,	Scientific.
Coffin, Benjamin Franklin,	Minneapolis,	Classical.
—Connor, Myrtle,	Minneapolis,	Literary.
Cressy, Edwin Lincoln,	Richfield,	Scientific.
Cross, John Grosvenor,	Rochester,	Scientific.
Cross, Nellie Malura,	Minneapolis,	Literary.
Dahl, John Frithiof	St. Peter,	Classical.
Dakin, William Wesley,	Royalton,	Scientific.
—Dennison, Grace Etta,	Minneapolis,	Literary.
Dodge, Albert Arthur,	Farmington,	Scientific.
—Elwell, Jessie Helen Campbell.	Minneapolis,	Literary.
Evans, Thos. Bladdyn Carriadawe,	Muskoda,	Agriculture.
Flaten, Nils,	Dennison,	Classical.
—Frye, Nora,	Elk River,	Classical.
Gerry, Martin Hugh, Jr.,	Minneapolis,	Scientific.
Gibbs, Milton Traverse,	Rochester,	Scientific.
Gilman, Fred Howard,	Rosemount,	Scientific.
—Grimes, Mary Agatha,	Minneapolis,	Literary.
—Guthrie, Anna Loraine,	Minneapolis.	Classical.
Guthrie, Charles Elise,	Minneapolis,	Classical.
—Guthrie, Dora May,	Minneapolis,	Scientific.
Guthrie, Wm. John DeMott,	Minneapolis,	Classical.
—Hamblin, Susie E.,	Minneapolis,	Literary.
Hammar, John Theodore.	St. James,	Literary.
—Hannum, Jennie Sophia,	Hadley, Mass.,	Literary.
Hardenberg, Collis Rodgers,	Minneapolis,	Classical.
Harris, Alfred James,	McCauleyville,	Scientific.
Hjermstad, Arnott,	Norseland,	Agriculture.
Huhn, George Philip,	Minneapolis,	Scientific.
—Jennison, Lulu Georgia,	Brownston,	Literary.
Jerome, Charles Waldron,	Minneapolis,	Literary.
Jorgens, Joseph Oscar,	Grand Meadow.	Literary.
Kalmbach, Wesley Albert,	Ft. Howard, Wis.,	Scientific.
Larimore, John Andrew,	Toledo, Ohio,	Classical.



Larson, August,	Fairmont,	Agriculture.
—Martin, Etta,	Minneapolis,	Literary.
—Martin, Lilly May,	Minneapolis,	Literary.
Morris, William Beaumont,	Montclair, N. J.,	Classical.
—Morse, Minnie Frances,	Minneapolis,	Literary.
Munson, Stewart Carlton,	Minneapolis,	Literary.
Nickerson, Ernest A.,	Elk River,	Scientific.
Northey, Frank,	Stillwater,	Scientific.
Nutting, Henry Hodges,	Hancock,	Scientific.
Page, Andrew Forest,	Minneapolis,	Scientific.
—Pearson, Adelaide L.,	Howard Lake,	Literary.
Pearson, Homer Francis,	Grand Meadow,	Literary.
Pierce, Stephen,	Broadhead, Wis.,	Scientific.
Plowman, George Taylor,	Le Sueur,	Scientific.
Puckett, Philo Soreno,	Ann Arbor, Mich.,	Literary.
Purdy, Milton Dwight,	White Hall, Ill.,	Classical.
Reynolds, William Alexander,	Austin,	Agriculture.
—Robinson, Louise Florence,	Minneapolis,	Literary.
Rustgard, John,	Minneapolis,	Scientific.
—Rutherford, Fanny,	Minneapolis,	Literary.
Sardeson, Fred William,	Minneapolis,	Literary.
—Sawyer, Harriet Eliza,	Stillwater,	Literary.
Schimmel, Rudolph William,	St. Peter,	Scientific.
Schoonmaker, Fred Palen,	St. Paul,	Classical.
Sherman, Sidney,	Eau Claire, Wis.,	Agriculture.
Skilling, George Wilbert,	Minneapolis,	Scientific.
—Smith, Bertha Stewart,	Minneapolis,	Literary.
Smith, Fred Pearson,	Le Sueur,	Scientific.
Smith, George Arthur,	Brown's Valley,	Scientific.
Soares, Theodore Geraldo,	Minneapolis,	Scientific.
Steele, Edwin Andrew,	Minneapolis,	Scientific.
—Sumbardo, Ava,	Hamline,	Literary.
Sweigle, Curtiss,	Milbank, D. T.,	Classical.
Sylvester, Charles Albert,	Madelia,	Scientific.
Taylor, Henry Hurlbut,	Minneapolis,	Scientific.
—Thompson, Mary Ellen,	Minneapolis,	Literary.
Timberlake, Byron Haney,	Milo, Iowa,	Literary.
Todd, Frank Chisholm,	Minneapolis,	Scientific.
Upton, Wendall Phillips,	Big Lake,	Scientific.
Veblen, John Edward,	Nerstrand,	Scientific.
Wallace, Charles Sherman,	Menomonie, Wis.,	Scientific.
—Watson, Mary Christiana,	Lakeland,	Literary.
Webster, Albert Martin,	Hastings,	Classical.

## SPECIALS 43.

Anderson, Christian,	Spring Valley.
Armstrong, James Douglas,	St. Paul.
Baker, Edwin Rice,	St. Paul.
—Berry, Alice Maria,	Minneapolis.
—Blake, Clara Julia,	Minneapolis.
—Brooks, Lucy May,	Minneapolis.
—Burton, Georgia Heeney,	Minneapolis.
Christianson, Christian H.,	Bath.
Dickinson, Horace Danforth,	Minneapolis.
Eastman, Alfred Farrington,	Minneapolis.
Ellsworth, David Franklin,	Hamline.
—Gale, Isabel,	Minneapolis.
Glasby, De Cloise	Dodge Centre.
Gould, Charles Hall,	Minneapolis.
Granrud, John Evenson,	Pelican Rapids.
—Grimes, Ella Alma,	Minneapolis.
—Hagan, Fanny Rogers,	Minneapolis.
—Hall, Nellie Jewett,	St. Anthony Park.
—Hartley, Minnie,	Minneapolis.
Holt, Charles Andrew,	Carver.
Loe, Eric Haldorson,	Minneapolis.
Ludlum, John Thomas,	Minneapolis.
Marini, Edward de,	Minneapolis.
—Miner, Mrs. Viola Fuller,	Minneapolis.
—Montgomery, Louise,	St. Cloud.
—Nelson, Ellen Marie,	Owatonna.
Pøehler, Albert August,	Henderson.
—Putnam, Mrs. Belle Josephine,	Minneapolis.
—Rankin, Jessie May,	St. Peter.
Robinson, Horace Randal,	Minneapolis.
Russell, Ralph,	St. Paul.
Scherer, Louis Charles,	New Ulm.
Schumacher, Albert John,	Henderson.
—Sinnett, Clara Amanda,	Granville, O.
Skordalsvold, Johannes Jensen,	Minneapolis.
Smith, Frank Rhodes,	Minneapolis.
—Smith, Martha Persie,	Minneapolis.
—Stanley, Madelle Aylesworth,	Delano.
—Stevens, Mary Florence,	Minneapolis.
Thorson, Hans Thorwald,	Willmar.
Trusseil, Willis Francis,	Champlin.
White, Samuel Morris,	Lake City.
—Wold, Pauline,	Minneapolis.

## ARTISANS' TRAINING SCHOOL.

## A DIVISION—6.

Bois, Nathaniel.	Minneapolis.
Linden, Oga,	Minneapolis.
Marks, Wm. George,	Minneapolis.
Nash, Charles Jacob,	Anoka.
Strandberg, Oliver,	Minneapolis.
Wetsue, John,	Minneapolis.

## B DIVISION—15.

Brandt, Henry Charles,	New Uhn.
Brzezinsky, Emil,	Minneapolis.
Evans, Miller,	Minneapolis.
Goodwin, Frank,	Frankfort, D. T.
Hilferty, Chas. Dutton,	Hastings.
Landes, George,	Valley Creek.
Michelet, Ove,	Minneapolis.
Lindman, Olof Christian,	Grantsburg, Wis.
Moyer, Chas. R.,	Minneapolis.
Neiler, Samuel Graham,	Minneapolis.
Repath, Chas. Henry,	Hancock, Mich.
Stanton, Edward Stebbins,	Sauk Rapids.
Strand, Martin A.,	Minneapolis.
Thornton, Winfield Grant,	Excelsior.
Turner, Geo. E.,	Minneapolis.

## C DIVISION—13.

Anglund, Per Karl,	Minneapolis.
Evans, C. E.,	Minneapolis.
Hall, Frank Xavier,	Minneapolis.
Hayes, Wm. Crowe,	Minneapolis.
Jennison, Paul,	Red Wing.
McCarthy, John,	Minneapolis.
Mason, Chas. William,	Minneapolis.
Meyer, Geo. William,	Minneapolis.
Moore, William D.,	Minneapolis.
Nelson, James,	Minneapolis.
Nichols, Charles Ellis,	Flandreau, D. T.
Thompson, John Henry,	Minneapolis.
Tucker, Zachariah Rhodes,	Minneapolis.

## D DIVISION—7.

Smith, G. F.,	Minneapolis.
Reed, H. S.,	Montana.
Peterson, J. L.,	Minneapolis.

Plachta, William,	Minneapolis.
Omeare, W.,	Minneapolis.
Williamson, W.,	Minneapolis.
Swohn, H.,	Minneapolis.

**SCHOOL OF PRACTICAL AGRICULTURE.**

Allen, Charles G.,	Washington County.
Billsby, Eugene,	Browns Valley.
Brown, William L.,	Granite Falls.
Bryson, A. P.,	Montreal, Canada.
Dougall, George M.,	Montreal, Canada.
Donohue, J. I.,	Lanesboro.
Gruenson, Christ,	Anoka.
Heffron, Frank,	Ramsey County.
Moldstadt, John,	Minneapolis.
Munz, Emil,	Elizabeth, Minn.
Oscar, Hans,	Minneapolis.
Rogers, Clarence,	Minneapolis.
Sheldon, E. P.,	Minneapolis.
Tunnell, Geo.,	Albert Lea.

**SUMMARY—1886-87.**

DEPARTMENT.	Class.	Gentle- men.	Ladies.	Totals.
Graduate Students.....		16	6	22
College of Science, Literature and Arts.....	{ Senior	23	1	57
	{ Junior	21	12	
College of Mechanic Arts.....	{ Senior	2		6
	{ Junior	4		
	Sophomore	24	9	
	Freshman	77	21	
	Sub-Freshm	69	29	
	Special	24	19	272
	Artisans' A	6		
	Artisans' B	15		
	Artisans' C	13		
	Artisans' D	7		41
School of Practical Agriculture.....		14		14
<b>Totals.....</b>		<b>315</b>	<b>97</b>	<b>412</b>



## THE UNIVERSITY.

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 a confederation of four distinct colleges: A College of Science, Literature, and Arts, a College of Mechanic Arts, a College of Agriculture, a College of Medicine; and provisions are made in the Charter for a College of Law, which will be opened when there is a demand for it, and at such a time as the revenues of the institution will warrant.

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, besides a year of preparatory work for those who are not able to

enter 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*. There is one year of preparatory work, and four years of college work. The "Artisans' Training School," 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 *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.

IV. The COLLEGE OF MEDICINE. No instruction is offered, but the Regents have voted to establish a teaching school as soon as the necessary legislation can be secured.

V. THE GRADUATE DEPARTMENT. In each of the colleges 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 advanced age and limited time are permitted to pursue, under direction of the faculty, one or two distinct lines of study and investigation.

#### ADMISSION.

The University is open, free of all charges for instruction, upon equal terms, to all persons over fourteen years of age, whether residents of the state or not, who may pass the required examinations. Applicants will not be admitted to the preparatory class provided they can get instruction in the subjects taught in this class in the school district in which they live. It is believed that the necessity of continuing this class will not exist at the end of two years, and it is expected that the class will then be discontinued.

#### TERMS.

The University year embraces thirty-eight weeks, beginning on the the thirteenth Tuesday before the last Thursday in November, 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.

#### DAILY ROUTINE.

As a general rule each student, in whatever department, 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.

#### CALISTHENICS.

Gymnastics were provided during the first term of last year for all students of the University who desired to receive instruction. There were four exercises per week during the term. The instruction in this department was given in the large drill hall by Mr. A. E. Kindervarter, an experienced instructor in gymnastics.

#### EXPENSES.

These depend largely upon the taste 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 per 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 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.

#### 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. Permission to erect a building on the campus has been given, and more

than twelve thousand dollars has been secured for the building. This amount has been given by generous friends in St. Paul, Minneapolis, and the East. The foundation of the building will be laid the present year, and the building will be ready for occupation in the summer of 1888.

**THE STUDENTS' LIBERAL ASSOCIATION.** During the past year a "Students' Liberal Association" has been organized—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.** Also during the past year a Young Men's Christian Association has been formed and has been admitted to 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 Executive Committee for the year 1886-'87 is as follows: Fred B. Snyder, '81, President; Etta M. Elliott, '79, Vice President; Lizzie A. House, '80, Secretary; John Waldo Perkins, '77, Treasurer; J. Corrin Hutchinson, '76, Historian; E. M. S. Pickett, '82, Poet; James Gray, '85, Orator.

#### POLITICAL SCIENCE CLUB.

This society has been organized for the purpose of pursuing economic studies. Topics are assigned to different members and papers are prepared by them and read before the society. A general discussion is participated in by the members present. Prof. Thomas Peebles is secretary of the club.



## GENERAL EQUIPMENT.

### BUILDINGS.

The main or academic building is 186 feet in length and 90 feet in breadth, exclusive of porches, having three stories above the basement. The walls are of blue limestone and the roof of tin. The rooms, 53 in number, as well as all the corridors, are heated by an efficient steam apparatus, and are thoroughly ventilated. 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 blue stone, 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.

For perspective of this building, see College of Mechanic Arts.

SCIENCE HALL. It is proposed to begin the erection of a Museum and Science Hall the present summer.

### 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 archaeological 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 for 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 woolen 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, geography, 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 20,000.

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 all 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.

#### APPARATUS.

No attempt has been made at display, but great pains have been

taken to procure for the various departments the essential instruments and materials for illustration.

#### GYMNASIUM.

Two rooms in the military building have been fitted up by the students and supplied with all apparatus necessary for a complete course in physical training.

#### FRUIT FARM ON MINNETONKA.

A fruit farm on Lake Minnetonka is owned by the University, and is managed by Mr. Peter M. Gideon, the well known discoverer of the Wealthy apple, his appointment having been made by the governor.

#### 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, a final report thereof 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 NORTHROP, 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. CLARKE, B. A., . . . . . *Professor of Latin.*  
MARIA L. SANFORD, . . . . . *Professor of Rhetoric and Elocution.*  
WILLIAM A. PIKE, C. E.,  
    *Professor of Engineering and in charge of Physics.*  
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. BREDÁ, . . . . . *Professor of Scandinavian.*  
GEORGE EDWIN MACLEAN, Ph. D., . . . . . *Professor of English.*  
HARRY PRATT JUDSON, M. A., . . . . . *Professor of History.*

This college 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 the three courses.

## ADMISSION.

Examinations for admission will occur, beginning as follows: On Tuesday, May 31, and Tuesday, August 30, 1887.

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, and Mankato.

## REQUISITES FOR ADMISSION.

Applicants for admission to the Sub-Freshman class are examined in the followidg studies:

1. **English Grammar and Theme.\***
2. **English Composition.**
- ✓ 3. **Arithmetic—Complete;** Robinson, Wentworth, Olney, etc.
4. **Elementary Algebra—**Robinson, Wentworth, Olney.
5. **Plane Geometry—**Olney, Wentworth, or equivalent.
6. **History of Greece and Rome with Geographical Questions.**
7. **United States History with Geographical Questions—**Scudder's, Swinton's, or Anderson's.
8. **Physiology—**Martin's or equivalent.
9. **Latin Grammar—**Harkness or Allen and Greenough.
- (10.) **Cæsar—**Three Books of the Commentaries.
- (11.) **Cicero †—**First two orations against Catiline.

Those who do not propose to take Latin may substitute for the Latin studies as given above, the following:

- (9.) **Physical Geography—**Geikie or equivalent.
- (10.) **‡Natural Philosophy—**Gage's, Avery or equivalent.
- (11.) **History of England—**Green's English People.

Greek Grammar and Anabasis will be accepted as an equivalent for studies, other than Latin and Mathematics, which represent an equal amount of time and labor.

\* The subject will be chosen by the examiner from the following list. The text-book mentioned is for the convenience of applicants:

Shakspeare's Julius Cæsar, by Rolfe; Harper & Bro.; 56 cents; paper, 40 cents. Tales from Shakspeare, by Charles and Mary Lamb; edited for schools by Edwin Giun & Co., Boston; 50 cents; paper, 40 cents.

† After the year 1889 four orations will be required instead of two.

‡ After the year 1887-'88 Natural Philosophy will be required of all students for admission to the Scientific course.

**SPECIAL STUDENTS.**

Persons of mature years and judgment may be admitted to pursue one or two distinct lines of study, to be selected from the regular courses of study as tabulated in the schedule below. The following lines of study are offered to special students:

1. Mathematics.
2. Science—biological and physical,
3. Ancient Languages—Latin and Greek.
4. Modern Languages—German, French, Norwegian, Swedish, Danish.
5. History.
6. English—including English Language, Rhetoric, Logic, Philosophy, etc.
7. Pedagogy.

Special students are examined in as many of the studies given on page 30 as are introductory to the line or lines of study they expect to pursue, e. g.: If they expect to study mathematics they are examined in entrance mathematics; if history, then entrance history, etc.

**CURRICULUM.**

The following schedule shows the studies for the different courses, classes, and terms, except rhetorical exercises, for scheme of which see statement under department of rhetoric, *infra*.

**PREPARATORY CLASS.—(Sub-Freshman.)**

TERM.	CLASSICAL COURSE.	SCIENTIFIC COURSE.	LITERARY COURSE.
I.	1. Greek. 2. { Nat. Philosophy† (3). { Higher Algebra (2). 3. Latin.	1. { Chemistry (3). { Botany. (2). 2. { Nat. Philosophy* } (3). { or Drawing } (2). Algebra { English or { Latin or { German.	1. German. 2. { Nat. Philosophy† (3). { Higher Algebra (2). 3. { English or { Latin.
II.	1. Greek. 2. Higher Algebra. 3. Latin.	1. Drawing (10 hours). 2. Higher Algebra. 3. { English or { German or { Latin.	1. German. 2. Higher Algebra. 3. { English or { Latin.
III.	1. Greek. 2. Solid Geometry. 3. Latin.	1. { Chemistry (2). { Botany (3). 2. Solid Geometry. { English or { German or { Latin.	1. German. 2. Solid Geometry. 2. { English or { Latin.

\*Natural Philosophy must be taken by those students who have not passed it. Drawing may be taken as an extra study if desired.

†Students who have passed Natural Philosophy may take Drawing with the Scientific section.

## FRESHMAN CLASS.

TERM.	CLASSICAL COURSE.	SCIENTIFIC COURSE.	LITERARY COURSE.
I	1. Greek. 2. Trigonometry. 3. Latin (3). 4. Drawing— <i>Free Hand</i> , ( <i>Optional</i> .)	1. { Botany (10 hours); or Drawing (10 hours). 2. Trigonometry. 3. { English, or German, or Latin.	1. German. 2. Trigonometry. 3. { English, or Latin. [(3). 4. Drawing— <i>Free Hand</i> , ( <i>Optional</i> .)
II	1. Greek. 2. { Theory of Equations Ana'l Geometry. 3. Latin.	1. Chemistry. <del>or</del> 2. { Theory of Equations Ana'l Geometry. English, or German, or Latin.	1. German. 2. { Theory of Equations Ana'l Geometry English, or Latin.
III	1. Greek. 2. Botany. 3. English. 4. Surveying—( <i>Optional</i> ) (twice a week.)	{ Drawing, or { Physics, or { German. 2. Botany. <del>or</del> 3. English. <del>or</del> 4. Surveying (twice a week.)	1. German. 2. Botany. 3. English. 4. Surveying—( <i>Optional</i> ) (twice a week.)

## SOPHOMORE CLASS.

TERM.	CLASSICAL COURSE.	SCIENTIFIC COURSE.	LITERARY COURSE.
I	1. Latin. 2. Physics. 3. Rhetoric. 4. { English, or French.	1. Chemistry. <del>or</del> 2. Physics. <del>or</del> 3. Rhetoric. 4. { English, or French, or Latin.	1. French. 2. Physics. 3. Rhetoric. 4. { English, or Latin.
II	1. Greek. 2. History A. 3. Physics. 4. { English, or French.	1. Zoology. <del>or</del> 2. History A. 3. Physics. <del>or</del> 4. { English, or French.	1. French. 2. History A. 3. Physics. <del>or</del> 4. English.
III	1. Greek. 2. History B. 3. Chemistry. 4. Latin.	1. Zoology. <del>or</del> 2. History B. 3. Physics. <del>or</del> 4. { English, or French, or Latin.	1. French. 2. History B. 3. Chemistry. 4. { English, or Latin.



JUNIOR CLASS.

Term	CLASSICAL COURSE	SCIENTIFIC COURSE	LITERARY COURSE
I	1 English Literature, 2 Greek,	1 English Literature, 2 { Physics, or Physiology & Histology,	1 English Literature, 2 German.
	3 { Elective for all courses 4 {	{ History C, Analytical Geometry, German Grammar,	Analytical Chemistry, Scandinavian Languages.
II	1 Logic, 2 Latin,	1 Logic, 2 Mineralogy,	1 Logic, 2 French,
	3 { Elective for all courses 4 {	{ Differential Calculus, Analytical Chemistry, Physics, Physiol. and Histology.	Scandinavian Languages, German, History D, English.
III	1 Psychology. 2 Astronomy.	1 Psychology, 2 Astronomy,	1 Psychology, 2 Astronomy.
	3 { Elective for all courses 4 {	{ Integral Calculus, Latin, German, Physics, Animal Morphology,	Scandinavian Languages, Minerology, French, English, Organic Chemistry.

SENIOR CLASS.

I	1 { 2 { 3 { 4 {	{ Geology, History of Philosophy, Practical Astronomy, French, Greek,	Political Science, History E, Scandinavian Languages, Analytical Chemistry,
	1 { 2 { 3 { 4 {	{ Political Economy, Ethics, Theoretical Chemistry, Geology, French.	Latin, Quaternions, American Literature, Scandinavian Languages,
III	1 { 2 { 3 { 4 {	{ Political Science, French, Greek, Economic Geology, German, Scandinavian Languages,	Analytical Chemistry, English Literature, 2, Natural Theology, 2, Comparative Philology, 2, Lectures on Shakespere, 1, Pedagogies, 1, Sanitary Science, 1.

**GENERAL REGULATIONS.**

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.

Scientific students can take but one language at a time, as follows: All are free to take French at the beginning of the Sophomore year. Those who have pursued German during the Sub-Freshman year are free to elect between German and English during the Freshman year. Those who begin English or Latin in the Sub-Freshman year must continue those subjects two years.

Literary students who elect Latin must continue the subject to the Junior year.

In the Sub-Freshman and Freshman classes the recitations in a given subject occur five times a week, and in the Sophomore, Junior, and Senior classes the recitations or lectures occur four times a week unless otherwise stated.

Surveying in the third term Freshman year is not required of ladies in the scientific course.

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. These lectures occur in alternate weeks.

In the Junior year the required study of any course is elective with reference to the other two courses.

Students of the Scientific and Classical courses who take German in the Junior year can continue it in the Senior year.

Those who have not previously had French can begin it in the Senior year.

Seniors are allowed to elect the mathematics of the Junior year.

**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.

**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 a person pass in all the studies and exercises of a course, he is entitled to the appropriate degree.

### INSTRUCTION.

A statement of the character and amount of work done in the various subjects taught in the several classes will be found on the following pages. These statements by the heads of departments should be carefully examined in connection with the tabulated courses of study.

#### I. LECTURES.

##### PRESIDENT NORTHROP.

The President will give, during the year, three courses of lectures. The first term he will lecture to the new students on the relation of students to the University, and will discuss various topics of general interest to students, especially health, manners, morals, habits of study, and character. The second term he will lecture to the Seniors upon eloquence and oratory. The third term he will lecture to the Seniors upon literature, and especially upon Shakspeare.

#### II. MATHEMATICS.

##### PROFESSOR DOWNEY.

Mathematics, on account of its wide application in practical affairs, as well as its great value in cultivating accuracy of statement, logical reasoning, and habits of close mental application, occupies a prominent place in all the courses of study.

Admission to the Sub-Freshman class requires a good knowledge of arithmetic, elementary algebra, and plane geometry. Admission to the Freshman class requires, in addition to these, solid geometry and the higher algebra of the Sub-Freshman year, as indicated below.

The branches are the same for all courses until the end of the Freshman year, and, beginning with the Sub-Freshman year, consist of higher algebra, solid geometry, plane and spherical trigonometry, and the elements of analytical geometry.

The aim is to so direct the work of this elementary course as to prepare the student to enter successfully upon the study of the higher mathematics and upon the application of mathematics in mechanics, astronomy, surveying, and engineering.

In geometry the student is required to furnish demonstrations for many theorems not demonstrated in the text book, and to solve practical problems dependent upon geometrical principles.

The Sub-Freshman work in higher algebra embraces factoring, highest common divisor, lowest common multiple, fractions, involution, evolution, radicals, simple equations, proportion, progression, variation, quadratic equations, inequalities, differentiation of algebraic and logarithmic functions, development of functions (by the binomial formula, by indeterminate co-efficients, and by Taylor's formula), and logarithms.

One term is given to plane and spherical trigonometry. The student's attention is directed to its numerous elegant and useful applications, and he is made familiar with its methods and use of its tables by being required to solve a large number of practical problems.

The work in the theory of equations embraces the most important properties of equations, and the solution of the higher equations (including Sturm's Theorem and Horner's Method of Approximation).

Analytical geometry is studied the first term with special reference to the conic sections, and the effort is to dwell upon such features as will make the work valuable to all, whether they pursue the study farther or not, and prepare them to understand the treatment of these curves in the subsequent course in astronomy.

Of the remaining mathematics, analytical geometry continued, differential calculus, and integral calculus are required in the courses of civil engineering, mechanical engineering, and architecture, and elective in other courses, and quaternions is elective in all courses.

Analytical geometry is studied during a second term with reference, not only to the conic sections, but to loci generated according to any law. Much attention is given to producing equations of loci whose law of development is known, and to constructing and discussing such equations. The conic sections are still further treated, both by rectangular and polar co-ordinates. After acquiring facility in the transformation of co-ordinates, the student investigates the properties of plane loci by means of their equations, and has a brief course in coordinate geometry of three dimensions.

In calculus the text book is based on the infinitesimal method, but the fluxionary method is given orally, and the system fully developed. One term is given to the differential calculus and its application in the development of functions, testing of functions for maxima and minima, and treating of tangents, sub-tangents, normals, sub-normals, direction and rate of curvature, evolutes and envelopes.

One term is given to integral calculus and its applications in rectification of curves, quadrature of plane surfaces, quadrature of surfaces of revolution, cubature of volumes of revolution, and to deducing equations of curves.

One term is given to quaternions, the text books being Hardy's and Kelland and Tait's.

### III. ASTRONOMY.

PROFESSOR DOWNEY.

The course in astronomy extends through two terms.

Descriptive astronomy is required in all courses in the last term of the Junior year. It does not draw so largely from mathematics as does practical astronomy, but aims to give such information concerning the heavenly bodies and the laws by which they are governed as must be secured by everyone who aspires to the possession of a liberal education. The student learns the method of determining the figure, size, destiny, and weight of the earth; the dimensions, distances, motions, physical character and telescopic appearance of the bodies constituting the solar system; the nature of comets and meteors; the causes of many of the phenomena of the heavens, and the methods by which our knowledge of the fixed stars and nebulae has been recently so much augmented. He thus obtains an enlarged conception of the universe and its Great Author. The text book work is supplemented by lectures, especially upon the history of the sciences and upon recent astronomical discoveries and theories.

Practical astronomy, first term, Senior year, is required in the courses of civil engineering, mechanical engineering, and architecture,

and elective in all other courses. The work embraces the theory and use of instruments, the use of the Ephemeris 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.

#### IV. CHEMISTRY.

PROFESSOR DODGE AND INSTRUCTOR SIDENER.

During the first term of the Sub-Freshman year the students in the scientific course are required to take elementary general chemistry. This work covers the non-metallic elements and their compounds, including a few compounds of carbon, and corresponds nearly with the first fourteen chapters of Eliot and Storer's *Elementary Manual of Chemistry*. The study is pursued in a practical manner and comprises laboratory exercises, lectures, and recitations.

In the Freshman year the scientific students continue general chemistry, attending mainly to the chemistry of the metals. The metals and their salts are exhibited and their preparations and properties demonstrated and described in the lecture and recitation room, while the students spend a part of the allotted number of hours of their term's work in the laboratory testing the action of the various reagents as applied to the metals and their compounds.

In the first term of Sophomore year, scientific students pursue a course in qualitative chemical analysis.

The classical and literary students take, in the third term of the Sophomore year, a course covering most of the ground of elementary chemistry as presented in the shorter text books.

Students in all courses can elect analytical chemistry during the whole or a part of the Junior and Senior years.

In the third term of the Junior year, students electing chemistry can either pursue analytical chemistry or take up the study of organic chemistry, the latter including some laboratory exercises.

In the second term of the Senior year, a course of lectures is given on the history of chemical theory, occupying a part of the time, while the rest of the time is given to laboratory work. For reference in the historical lectures, books of the alchemical period, as well as those of more modern publications are accessible.

The chemical laboratory is well fitted up with apparatus and fixtures of the most approved construction. It is designed to furnish practical instruction in chemistry to all students in the scientific course of the collegiate department, and to all students of other departments, who may desire and be entitled to such opportunities.

No charges are made for instruction, and only such charges for apparatus and chemicals as will cover actual cost to the institution. The charges for ordinary chemicals and apparatus will not exceed ten dollars per term. All glassware and other apparatus are charged to the student at cost. The glassware that is uninjured is received back at cost: other articles are received back under special regulations, generally at a discount of twenty per cent. The cost of apparatus will vary from two to five dollars per term, according to the care exercised by the student. To cover these expenses, students in analytical chemistry are required to deposit during the first week in each term, with

the professor of chemistry, the sum of ten dollars, the balance of which, after deducting the charges mentioned, is delivered to the student at the end of the term.

Scientific students desiring to prepare for the study of medicine, are advised to take the scientific course with Latin, electing French in the Sophomore year, German in the Junior, and analytical chemistry in a part of the Junior and Senior years.

Students desiring an extended course in chemistry are advised to take the scientific course with German. French in the Sophomore year, and analytical chemistry in the Junior and Senior years.

A room in the laboratory is fitted up for the practice of assaying, and this branch may be taken with elective analytical chemistry.

## V. PHYSICS.

MR. JONES.

**REQUIRED COURSES.**—*Scientific.*—A thorough knowledge of the elements of Natural Philosophy is required on entrance. Physics is pursued throughout Sophomore year as a required study. The work consists of recitations, lectures, and experiments. The text-books used are Ganot's Physics and Dana's Elementary mechanics. 1st term, Sound and Heat; 2d term, Light, Magnetism, and Electricity; 3d term, Mechanics of Solids, Liquids, and Gasses. The subject may be continued in Junior year as an elective. (See elective course below.)

*Classical and Literary.*—During the first term of the Sub-Freshman year three hours a week are devoted to Avery's Elements of Natural Philosophy. During the first and second terms of Sophomore year, a general course in physics, consisting of recitations, lectures and experiments, is pursued. The text-book used is Olmsted's College Philosophy. 1st term, Mechanics, Sound, and Heat; 2d term, Magnetism, Electricity and Light.

**ELECTIVE COURSE.**—In Junior year physics is offered as an elective to regular students of all courses. The course extends through three terms, but the study may be elected at the beginning of any term. It involves practical work in the physical laboratory. No text-book is used, but the work is based on Pickering's Physical Manipulation, Kohlrausch's Physical Measurements, and Weinholdt's Experimental Physics. Students are also referred to special treatises and manuals contained in the University Library. The completion of the new Laboratory and its thorough appointment assure ample facilities for acquiring a practical knowledge of the methods of determinative measurements and general physical investigation.

**PHYSICAL LABORATORY.**—Five rooms on the first floor of the new College of Mechanic Arts constitute the Physical Laboratory. (1) The student's laboratory. This contains permanent tables and stone supports for instruments. (2) The dark room, for photometric and photographic work. (3) The recitation and lecture room. (4) The apparatus room, containing cases, drawers, and shelving for storing apparatus. (5) The professor's private study.

These rooms are conveniently arranged and connected, properly heated, ventilated and lighted, and supplied with gas and water.

The department has been supplied with an entirely new and complete equipment of physical apparatus and instruments from the most reliable manufacturers. A work shop, provided with wood and metal-working tools, lathe, etc., is included, enabling the student to construct

or adapt apparatus for specific purposes. Excellent opportunities are thus afforded for accurate work in physical experimentation.

## VI. BOTANY.

PROFESSOR HALL.

The students of the classical and literary courses use Gray's Lessons and Manual as a text-book. They pursue a thorough course in the systematic botany of the flowering plants to which is added in a series of lectures and practical studies an account of the leading characters of the lower forms.

The students of the scientific course pursue botany two full terms with a third term elective. The work is that of observation; plants are studied, not books. Bessey's Essentials of Botany is used as a guide. By an arrangement with the department of chemistry a part of the work of Sub-Freshman year is done in the fall term; the botanical work of the course is thus distributed:

Fall term, Sub-Freshman year—4 hours per week.

Spring term, Sub-Freshman year—6 hours per week.

Fall term, Freshman year—5 hours per week.

Spring term, Freshman year—10 hours per week.

By this adjustment an opportunity is afforded to study systematically both the lower and the higher forms of plant life.

The following forms come under observation during Sub-Freshman year: Slime moulds, bacteria, yeast, green slimes, desmids, diatoms, pond scums, volvox, the moulds, the blights, the rusts, mushrooms, lichens, mosses, etc.

During the Freshman year a study of the ferns and flowering plants is entered upon. Its object is to give a more thorough knowledge of structural and physiological botany and more skill in plant analysis. The instruction is made as practical as possible.

## VII. ZOOLOGY.

ASSISTANT PROFESSOR NACHTRIEB.

1. GENERAL BIOLOGY.—The work extends through two terms in the Sophomore year of the scientific course. The course consists of lectures and laboratory work. The student makes a careful study of the chief divisions of the invertebrates (viz.: the protozoans, ccelenterates, echinoderms, worms, crustaceans, and insects, and mollusks), and dissects several vertebrates. Structural affinities, the ways and means by which the various functions of life are carried on, and the life history (embryology) of typical forms are dwelt upon. The last three or four weeks are devoted to the development of the chick.

The studies pursued and the methods used are, irrespective of their great educational value, such that the student who desires the elements of biology as the basis for a professional life, or who desires to pursue his study in this fascinating field of natural history for his own recreation and edification, will get a good starting point from which to advance.

A constantly increasing collection of specimens and models is used to illustrate the different subjects as they are taken up in the lectures.

2. ANIMAL PHYSIOLOGY AND HISTOLOGY.—In the Junior year animal physiology and histology are offered as an elective, extending through two terms. The course consists of lectures, demonstrations, and laboratory work. The student studies the minute anatomy and micro-

scopical structure of the various organs in connection with the lectures on the functions of the organs, and is required to make some fundamental experiments. Those electing this work, it is hoped, will take both terms of the course. The second term's work can be taken up only by those who have done the work of the first term.

**ANIMAL MORPHOLOGY.**—This course, as is also the one in physiology, is advanced work, and consists of lectures and laboratory work.

### VIII. GEOLOGY AND MINERALOGY.

PROFESSOR HALL.

In these studies the following courses are offered :

- |   |   |   |   |                                 |
|---|---|---|---|---------------------------------|
| 1. <i>Mineralogy,</i>                               | - | - | - | <i>Second term Junior year.</i> |
| 2. <i>Descriptive and Determinative Mineralogy,</i> |   |   |   | <i>Third term Junior year.</i>  |
| 3. <i>General Geology,</i>                          | - | - | - | <i>First term Senior year.</i>  |
| 4. <i>Lithology and Historical Geology,</i>         |   |   |   | <i>Second term Senior year.</i> |
| 5. <i>Economic Geology,</i>                         | - | - | - | <i>Third term Senior year.</i>  |

1. **MINERALOGY.**—This course will give the general principles of the science in lectures. It will be introduced by an outline of crystallography, and accompanied by blowpipe analysis enough to enable the student to determine readily the more commonly occurring minerals. The time required will be eight hours per week.

2. **DESCRIPTIVE AND DETERMINATIVE MINERALOGY.**—As a continuation of course 1, is pursued in the lecture room and the laboratory. A collection of several hundred mineral species, and a good working set of crystal models in wood and glass, are constantly accessible to the student. In the determinative work, special attention will be given to ores and other economic minerals and mineral aggregates. Quantitative determination will occupy a part of the time. Time, eight hours per week.

3. **GENERAL GEOLOGY.**—This course, while aiming to give an outline of the science, will be devoted chiefly to dynamical and structural geology. The cosmic aspects of geology, erosion, sedimentation, oscillations of level and geological dynamics, with discussions of facts and theories, will be treated from the standpoint of recent researches.

4. **LITHOLOGY AND HISTORICAL GEOLOGY** covers the following ground: (a) The different forms under which rock masses occur. (b) The classification and composition of rocks. (c) Microscopic examination of typical thin sections. (d) The nature and significance of fossils. (e) A study of the Cambrian and Silurian faunas. (f) A survey of the whole field of paleontology. The equipment for this work is ample; the rich stores of the general museum, the increasing collections of the High School Exchange, and many hundreds of specimens from other sources, together with a large series of thin sections of foreign and local rocks and minerals, are available. The course will afford a comprehensive knowledge of the archæan and palæozoic formations of Minnesota.

5. **ECONOMIC GEOLOGY** consists of discussions of the relations of geology to mining, including the 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 all receive their due share of consideration.



The student of mineralogy and geology is furnished with a good supply of maps, crystal models, thin sections, and specimens of minerals and rocks: *He who learns must study them.* The method throughout is essentially that of investigation; laboratory work and excursions give a practical character to the subject. While the several courses are arranged progressively and all are essential to a good understanding of geologic science, course 1, mineralogy, and course 3, general geology, can be taken by those students who have not inclination for the entire work. But course 2 must be preceded by course 1, or an equivalent; course 4 must be preceded by course 3, and course 5 by courses 1 and 3.

## IX. ENGLISH LANGUAGE AND LITERATURE.

PROFESSOR MACLEAN.

For the work of the President in this department, consult the statement under his name.

The wide and increasing interest in English, as an old as well as a new tongue, demands a thorough course of study. The language affords an opportunity far scientific discipline, no less valuable than the broad culture its literature offers.

The training in "language" and grammar in the preparatory schools, cannot receive too much attention, for candidates for admission are often deficient in the rudiments of an English education. It is not designed that the preparatory schools shall attempt extended instruction in English literature, but that they shall aid to create a taste for good literature at the most important period in the youth's life.

It is hoped that the schools will teach the Latin elements of the English language, according to the plan for the preparatory class in the University. But those entering the University with the Freshman year, may offer one year's thorough work in Latin Grammar as an equivalent for the Sub-Freshman year's English.

The undergraduate course in the University is arranged progressively and according to the historical development of the subject. The science of the language—the strictly linguistic work—ends with the Sophomore year. The literary and critical study is presented to the upper classes. The work of specialists in philology or in philosophical criticism and studies will be offered in the graduate course.

Students in the literary and scientific courses desiring the full course in English must elect English at the beginning of Sub-Freshman year. In the scientific course all students are free to elect English at the beginning of Freshman year.

### SUB-FRESHMAN CLASS.

*First Term*—Latin elements, with the study of Latin Grammar and exercises in writing and conversation.

*Second Term*—Latin elements, with selections from Latin Reader with special reference to vocabulary and the structure of sentences; exercises in writing and conversation continued.

*Third Term*—English etymologies of Latin and later Romance origin, illustrated by selections from Bacon, Dr. Johnson, and scientific textbooks.

## FRESHMAN CLASS.

*First Term*—Old English (Anglo-Saxon) Grammar, and prose master pieces.

*Second Term*—Old and Middle English poetry.

*Third Term*—1. History of the English language, with Chaucer, for those in the English course. 2. Old English (Anglo-Saxon) elements, and history of the English language, for all not in the English course.

## SOPHOMORE CLASS.

*First Term*—Milton's *Paradise Lost*, and minor poems, studied with reference to diction, derivation of words, figurative language, and classical allusions.

*Second Term*—The English of Shakspeare (Rolfe) with Abbott's *Shakspearean Grammar*; English versification.

*Third Term*—History of Old and Middle English literature; lectures with the reading of authors.

## JUNIOR CLASS.

*First Term*—History of New English literature, lectures and "seminaries," with the reading of authors.

*Second Term*—Shakspeare.

*Third Term*—History of Old and Middle English literature.

## SENIOR CLASS.

*Second Term*—Lectures on oratory by the president, and on the history of Anglo-American literature in the Nineteenth Century by the professor.

*Third Term*—Lectures on the higher criticism of Shakspeare by the president, and on the philosophy of criticism and literature by the professor.

## X. GERMAN LANGUAGE AND LITERATURE.

## PROFESSOR MOORE.

German is required of all students in the literary course. Those of the scientific course are free to commence at the beginning of the Sub-Freshman year. Students of the classical and scientific courses may commence German in the Junior year, and continue the same throughout the Senior year.

Students intending to graduate in the college of mechanic arts, desiring to pursue German, should commence it in the Sub-Freshman year, as their time is occupied with professional studies in the Junior and Senior years.

## FIRST YEAR (SUB-FRESHMAN CLASS).

*First Term*—Macmillan's German course, with blackboard exercises in translating English into German.

*Second Term*—Boisen's German Prose Book (54 pages) and Whitney's Brief German Grammar, with oral and blackboard exercises.

*Third Term*—Boisen's German Prose Book (102 pages) and Whitney's Brief German Grammar completed, with oral and blackboard exercises.

SECOND YEAR (FRESHMAN CLASS).

*First Term*—Schiller's Egmont and Siege of Antwerp, with a review of the complete grammar.

*Second Term*—Wagner's German historical ballads, with German history and geography.

*Third Term*—Lessing's Minna von Barnhelm and German composition.

THIRD YEAR (JUNIOR CLASS).

*First Term*—Schiller's Wilhelm Tell and Goeth's Faust, first part.

*Second Term*—Lessing's Laocoon and Nathan der Weise.

*Third Term*—Deutsche Lyrik and history of German literature; lectures.

SENIOR YEAR.

*Third Term*—Middle High-German, selections from the Nibelungen and Minnesanger.

The objects aimed at in the above course of study are: (1) in the earlier stages, by means of oral and written exercises, to teach the student how to express himself with some degree of facility in German, on topics of everyday life; (2) a systematic study of German grammar; (3) a critical reading of some of the masterpieces of German literature, with collateral instruction and research in geography, history, mythology, biography of the authors, etc.

XI. FRENCH LANGUAGE AND LITERATURE.

PROFESSOR BENTON.

French is required of all students in the modern course in the Sophomore year of the Collegiate Department, and is an option for the other courses, as for students of the College of Mechanic Arts.

French will be required hereafter of students in the modern course during the second term of the Junior year, and will be an elective for students in the other courses; it will also be an elective to students in all the courses in the third term of Junior year.

French is an elective throughout the Senior year in all the courses of all the colleges of the University. Classical and scientific students who have not previously had French can begin it in the Junior or the Senior year.

The course during the past year has been as follows:

SOPHOMORES.

*First Term*—Bocher's Otto' French Grammar and Reader.

*Second Term*—Bocher's course continued.

*Third Term*—Bocher's course completed; Fenelon's Telemaque; exercises in writing and speaking French.

JUNIORS.

*Second Term*—Cinna, tragedie par Corneille. La Philosophie de l'Art par M. Taine. Manuel d'Histoire de la Litterature Francaise par Marcillac.

*Third Term*—La Philosophie de l'Art en Italie et la Philosophie de l'Art dans les Pays Bas par M. Taine; L'Andromaque par Racine; La Litterature Francaise dans le XVI et le XVII siecles.

## SENIORS.

*First Term*—Les Horaces par Corneille; Tartuffe par Moliere; Les Fourberies de Scapin par Moliere; Iphigenie par Racine; La Litterature Francaise Classique.

*Second Term*—Petite Histoire du Peuple Francaise par Paul Lacombe; La Philosophie de l'art en Grece par M. Taine; Lectures in French on the Literature of the 18th Century in France.

*Third Term*—L'ideal dans l'art par M. Taine; Marianne par Sand; Le Lion Amoureux par Ponsard; Lectures on the Literature of the 19th Century.

## XII. SCANDINAVIAN LANGUAGES AND LITERATURES.

PROFESSOR BREDÅ.

Scandinavian languages are offered as an elective in the Junior and Senior years of all the colleges of the University. The course during the past year has been as follows:

## BEGINNERS' CLASS—JUNIORS AND SENIORS.

*First and Second Terms*—E. C. Otte's "How to Learn Danish." Exercises in writing and speaking Dano-Norwegian.

*Third Term*—B. Bjoernson's "En Glad Gut." Exercises in writing and speaking.

## ADVANCED CLASS—SCANDINAVIANS.

*First Term*—Critical reading of masterpieces of Norwegian literature. Essays.

*Second and Third Terms*—Lectures on the History of Danish and Norwegian Literature, with selections from the authors. Essays and conversation.

Swedish language and literature forms part of the course for advanced students, and it will be the aim of the department to meet the wants of students of Scandinavian descent as fully as possible.

## XIII. LATIN LANGUAGE AND LITERATURE.

PROFESSOR CLARK.

The requirements for admission to the Freshman class are—

1. Latin Grammar—Harkness or Allen & Greenough, with Reader—Tetlow, Harkness, or Jones.
2. Composition—Harkness' Part II., or an equivalent,
3. Reading; three books of Cæsar's Commentaries, with syntax; Geography of Gaul; life of Cæsar and history of his times; four orations of Cicero, with syntax; history of the Catilinian Conspiracy; four books of Virgil's Æneid, with syntax; prosody; mythology and legends of the Trojan war.

N. B.—On and after the opening of the University year 1889-'90 the amount of text required will be—Cæsar, three books; Cicero, six orations, viz: four against Catiline, Poet Archias, and the "Plea for Ligarius," or "The Pardon of Marcellus"; Virgil, the first six books of Æneid.

The Freshman Latin is Livy, with review of syntax, Latin composition and Roman history, especially the development of the government as influenced by the plebeians.

The Sophomores read Horace, Tacitus, and Pliny's letters. In connection with Horace, the history of Roman literature is pursued, and with Tacitus the history of Rome under the emperors.

The Juniors have, II term, comedy, Plautus or Terence, with the study of early Latin; language and literature.

III term (elective.) Outline of the history and elements of Roman law, embracing lectures and text book, with translations at sight from Latin writers, illustrating the subject.

The Seniors II term (elective) for 1888 are offered—

(a) Roman Latin (b) Roman Elegiac poetry. The Roman method of pronunciation is used.

The full course in Latin is offered to scientific students, as such students can take French when Seniors, if they desire to do so.

#### XIV. GREEK LANGUAGE AND LITERATURE.

##### PROFESSOR BROOKS.

Greek is begun in the sub-Freshman year, without imposing any conditions upon the candidates. The studies in the course in Greek are as follows:

##### SUB-FRESHMAN CLASS.

1. AUTHORS.—Brooks' Introduction to Attic Greek; Xenophon's Anabasis, 3 books, with Hadley's or Goodwin's Grammar.

2. COMPOSITION.—The exercises are based upon the text.

3. COLLATERALS—(To be recited), Smith's History of Greece, the Introduction, and Chapters 6 and 7, Book II.; (to be read), Smith's History, Book III., and Chapter 36, Book V.

The acquisition of a thorough and ready knowledge of Greek Grammar—the vocal elements, elision, syllabication, euphony, quantity, accentuation, proclitics, enclitics, inflection, the verbal elements, the principal parts of the irregular verbs, the formation and composition of words, and syntax—is the aim of the work in the sub-Freshman year, and is insisted upon as essential to an admittance to the Freshman class. It is a more important acquisition, in this early stage of Greek study, than a mere, though fluent, reading of the amount of Greek specified, and if it is not made here, it generally never will be. It lays a solid foundation for the intelligent and also for the rapid reading of authors, and makes room for the study of the history, chronology, mythology, antiquities, etc., that stand connected with the authors read, by relieving the instructor from the necessity of continually drilling his class in routine parsing. Of grammatical parsing it may be said that it is an exercise which, however necessary when used in proper measure, and at the beginning of a course of instruction, contributes when confined, as it usually is, to mere technicalities, nothing to a practical acquaintance with the language, and, when continued, as a author after author is read, becomes a positive hindrance to the acquisition of the larger and better knowledge of its literature.

Conversation exercises are prepared by the department, and used with very satisfactory results. Translation at sight of selected passages, is also practiced.

## FRESHMAN CLASS.

1. AUTHORS—Xenophon's Memorabilia, or Cyropædia, and Symposium; Demosthenes' Olynthiacs and Phillipics, or DeCorona.\*
2. COMPOSITION—Exercises based upon the authors read.
3. COLLATERALS—(To be recited) with Xenophon, Smith's History, Sections 8-15 inclusive, Chapter 35, Book IV.; (to be read) Grote's History, Chapter 68; (to be recited) with Demosthenes, Smith's History, Chapters 42 and 46, and Sections 2, 3, 4, Chapter 48, Book VI.; (to be read) Smith's History, Books IV., V., and VI.; Grote's History, Chapters 86-90, inclusive, and 95; Herman's Political Antiquities of Greece; Plutarch's Lives (Demosthenes).

## SOPHOMORE CLASS.

I. AUTHORS—One tragedy, Æschylus' Prometheus, or Agamemnon, or Sophocles' Antigone, or Ædipus Tyrannus; Plato's Apology, and Crito, or Phædo, or Gorgias; Homer 1 book.

II. ESSAYS—Three on the tragedy, to-wit: (if Prometheus be read).

1. *An analysis* of the tragedy.
2. *Quotations* from other literatures suggested by and illustrative of passages found in the tragedy.
3. *Epithets* of Zeus; Prometheus, and the place of his punishment defined and classified.

And three on Plato, to-wit:

1. *An analysis* of the apology, embracing the court, the judges, the accusers, the indictment, the order of procedure, Socrates' method of defense, and the order of argumentation.

2. *A sketch* of Socrates, his times, character, etc.; discussion of the diamonion and the adequacy of his defense.

3. *A disquisition* on the sophists, and Socrates' relation to them.

III. COLLATERALS—(To be recited) with the tragedy; Smith's History, Sections 1 to 7, inclusive, Chapter 35, Book IV.; (to be read) Donaldson's Theatre, Blackie's *Horæ Hellenicæ* (article on Prometheus Bound); (to be recited) with Plato, Smith's History, Sections 5 to 10, inclusive, Chapter 48, Book VI., and Sections 10 to 15, inclusive, Chapter 35, Book IV.; (to be read) Grote's History, Chapters 67 and 68, Blackie's *Wise Men of Greece*, Blackie's *Four Phases of Morals* (article on Socrates).

## JUNIOR CLASS.

1. READING—Homer's Iliad, or Odyssey.

2. COLLATERALS—(To be read) Grote's History, Chapters 15, 19-21, inclusive, Blackie's *Horæ Hellenicæ* (articles on Theology of Homer, and interpretation of Myths in Grecian Mythology).

## SENIOR CLASS.

Lectures on the Greek language and literature; on Greek poetry, with selected readings.

MISCELLANY—Attic Greek is studied connectedly to nearly the end of the Sophomore year. The amount of collateral reading can be extended according to the time and tastes of the students; that given above is required to be read. Greek is pronounced according to the

\* Lysias and Isocrates, with appropriate reading, will be interchanged with Demosthenes.

accents, and with the so-called continental (modified somewhat) sounds of the vowels and diphthongs. The following are the general principles and methods of work in the department: In translation, the radical meaning of words is to be learned, but the precise signification in the passage rendered is to be given. The thing to be done in translating an author, is to give his exact meaning, in the best idiomatic, grammatical English; facts, allusions, tropes, history, chronology, mythology, topography, customs, arts, laws, grammatical forms and elements, etymologies and composition of words, are to be attended to. Translation of English into Greek is based upon the author read. So far as the author himself is concerned, among the things to be noted are: the chief acts of the author's life; the contemporary history and political condition of the country, and of the author's relation to them; the character of the people, and the expression and logical scope of his thoughts, and the wisdom, etc., of his views.

## XV. MENTAL AND MORAL PHILOSOPHY.

MR. PEEBLES.

The course in Philosophy includes:

I. Logic; which is required for all the Juniors in the second term. The course includes: (a) formal logic, comprising the laws of discursive thought, according to both the Aristotelian and modern forms; (b) applied logic, treating of the methods of application in scientific investigation, by induction and deduction. Prominence will be given to oral instruction and practical exercises.

II. Psychology; which is required for the Juniors in the second term. The course is given in lectures, and some of the topics discussed are: body and mind, sense-perception, association, self-consciousness, the mental faculties, and the relation of language to thought; the nature and extent of a *priori* truth. One-third of the time is devoted to recitations, discussions, and reviews.

III. The history of philosophy; which is open to the Seniors in the first term. The course is given in lectures, and embraces a historical exposition of ancient and modern philosophy. The principles of the leading philosophers are expounded, and the historical relations of the succeeding systems are unfolded. The lectures are accompanied by recitations, discussions, and reviews.

IV. Moral philosophy; which is elective in the second term of the Senior year. The course is given in lectures, and embraces: (1) a discussion of the history of ethics, ancient and modern; (2) an exposition of the principles of theoretical ethics, with their application to actual conditions. One-third of the time is given to recitations, discussions, and reviews.

V. Natural theology; which is elective in the third term of the Senior year. The course occupies two hours a week, and is given in lectures. It embraces a discussion of the speculative basis of Theism, and a review of the evidence of God's existence, derivable from the constitution of nature and man.

## XVI. HISTORY.

PROFESSOR JUDSON.

All applicants for admission are examined in the history of the

United States, of Greece and of Rome. Those not presenting Latin are examined in the history of England.

The text-books of Scudder, Swinton, and Anderson are suggested as indicating the amount of knowledge expected in the history of the United States. Creighton's Primer of Roman History, Pyffe's Primer of Greek History, and Thalheimer's England cover the ground of the examination in those subjects.

It should be noted that a definite portion of each examination in history will be devoted to the geography of the country in question.

It is hoped that teachers will not limit the knowledge of their pupils to the bare text-books. Students of history should, from an early period, be accustomed to refer to more extensive works for the clearing up of doubtful points. They should be encouraged to inquiry and discussion on questions of fact, and of cause and effect. A taste for merely reading history, also, even aside from careful study, is invaluable.

So far as possible, students should make a parallel study of manners and customs, by way of making the past more real. The occasional reading of well-selected historical novels will aid to this end; and the books of Wilkins and Mahaffy in the History Primer Series will be found useful helps in ancient history.

The History courses in the University are found in the last three years of the college of science, literature, and the arts, and in the department of graduate study. In the second and third terms of the Sophomore year, History is required of all students. Elective courses are offered in the first and second terms of the Junior year, and in the second term of the Senior year. The following is the schedule of topics:

#### SOPHOMORE YEAR.

*Second Term*—History A.—Europe during the Middle Ages.

*Third Term*—History B.—England in the Middle Ages.

#### JUNIOR YEAR.

*First Term*—History C.—The Modern History of England.

*Second Term*—History D.—The Colonial History of the United States.

#### SENIOR YEAR.

*First Term*—History E.—The History of Civilization, with lectures on the Philosophy of History.

#### GRADUATE DEPARTMENT.

Representative Government in England and the United States.

In the above scheme two things are kept in view. The first is, that the student may gain such a knowledge of facts and their relations as may be of value in his subsequent university work, and such as an American citizen ought to have. It will be seen that the history courses of the Undergraduate classes have an immediate bearing on the courses in literature and political science that follow; and it is equally clear that one can hardly comprehend the institutions of his own country without some idea of the sources from which they have been developed.

In the second place, it is sought from the outset to lead students to form the habit of *research*. Undoubtedly a greater familiarity with facts might be acquired in a given time by merely following text-books supplemented by instruction given in lectures. But such work is re-



moved as far as possible from the methods by which knowledge is gained and opinions are formed in after life; and the power of methodical and logical investigation is worth more to the student than any amount of mere learning.

The library of the university is well equipped with material for research, and important additions are expected during this coming year.

During the past year a beginning has been made of a working library for the exclusive use of the department of History.

## XVII. POLITICAL SCIENCE.

PROFESSOR FOLWELL.

All subjects in this department are electives in the senior year of the college of science, literature, and the arts, and are also open to seniors of other colleges, and to special students found qualified.

*First Term.*—Political Economy, four hours per week. The instruction is given in a course of dictated and conversational lectures. The aim of the teacher is to present clearly the history of the science and to thoroughly inculcate established principles. On disputed points the conflicting views are brought out with all possible impartiality.

*Second Term.*—Political Science, four hours per week. An outline of the subject is presented in a course of twenty lectures. The constitutions of the United States and Minnesota are critically read and commented upon, and the leading titles of legislation discussed. City, county, and town organization and administration are briefly treated. The principal chapters of Tocqueville's *Democracy in America* are read privately by the class, who are examined thereon. An outline of international law is given in a few lectures.

*Third Term.*—American Public Economy, four hours per week. The object of the instructor is to open the subjects of administration and finance, and to discuss, as the time may allow, such particular topics as taxation, national banking, protection, public education, immigration, transportation, money.

The subject of comparative philology attached to this department is offered as an elective two hours a week in the third term. The course embraces an elementary treatment of the following topics: History of philology; classification of languages; origin, development, and nature of language, mechanism of speech and hearing; written language.

The work of graduate students in this department is conducted on the "seminary" plan of the foreign universities, the particular subjects being selected by individuals or groups, upon consultation with the professor.

The library is fairly supplied with the standard authors on political science and political economy, and books are "reserved" for the accommodation of classes.

So far as his stated duties will permit, the professor will gladly confer personally or by correspondence with private students in his department anywhere in the state, who may wish to consult about materials or methods of study.

## XVIII. RHETORIC AND ELOCUTION.

PROFESSOR SANFORD.

In the three lower classes the work is distributed as follows:

SUB-FRESHMAN, first term, Compositions; second term, Elocution.

FRESHMAN, second term, Elocution; third term, Compositions.

SOPHOMORE, first term, Elocution; second term, Elocution; third term, Orations.

The work in elocution comprises class drill and declamation with individual training. In the Freshman and Sophomore classes, students are encouraged to present original pieces for declamation. The aim is to give to students a style manly, direct and clear; to avoid exaggeration and sham, and to enable them to read or speak with simplicity and grace.

In composition, weekly exercises are required upon subjects assigned. It is intended by constant practice to give the students ease and readiness in writing, and, by the subjects selected, to accustom them to think and express their thoughts forcibly and correctly upon such topics as educated people need to handle. In the third term of the Sophomore year, three orations are required, of which one, at least, must be presented before the class.

All students of the Sophomore class take Rhetoric four times a week during the first term. In this study the aim is not so much to teach the rules and formulas of a text-book as to acquaint the pupil with the beauty and strength of our English tongue when correctly used; by the study of the best authors, and constant practice under criticism, to make familiar the essentials of vigorous and effective writing and speaking.

Students of the Junior class are required to present in public one oration for each term, the piece being subject to criticism in composition and delivery. Two essays of ten pages of carefully written manuscript may be substituted for each oration.

In the Senior class orations are required for the first and second terms, and essays of twelve pages may be substituted.

## *XIX. INDUSTRIAL DRAWING.*

PROFESSOR PIKE.

Drawing is required of the Scientific students of the sub-Freshman class, and is optional for them in the Freshman year, except for those intending to take either of the engineering courses. It is optional in both these years for Classical and Literary students.

The course is as follows:

### SUB-FRESHMAN CLASS.

During the first term the students take free hand drawing twice a week, beginning with exercises on straight and curved lines, then drawing simple, plain, and solid geometrical figures. This work is followed by instruction in the elements of shading, after which the foregoing is applied in sketching parts of machinery or other objects. The aim of this course is to train the student in representing solid figures on a flat surface; therefore the drawing is entirely from objects or models, to the exclusion of copying other drawings.

During the second term the students learn the use of the instruments, and draw a series of plates of geometrical problems, elementary projections, and applications of projections.

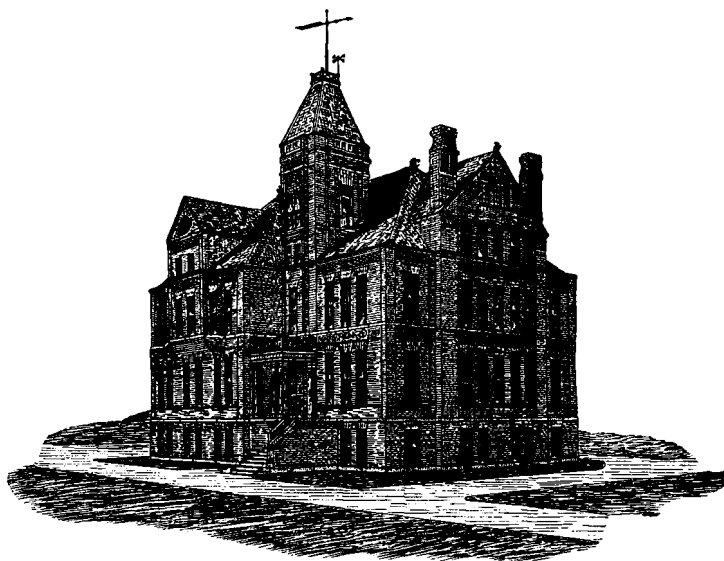
A special text-book, in pamphlet form, has been prepared by the department for the use of students. It contains data for the required problems, directions for lettering, directions about the use of instruments, and an outline of the whole course of elementary drawing.

FRESHMAN CLASS.

The use of the text-book is continued during the first term. Additional examples of projection are first taken up, after which instruction is given by means of models and machines, each student making sketches and taking actual measurements, from which the final drawings are made. Tinting and shading are then taken up, and, after a number of practice plates are made, are applied to one or more projection drawings.

During the third term isometric and cabinet projections, linear perspective and the construction of shadows are taken up. In this, as in projection drawing, the work is done as far as possible from sketches and measurements taken by the students themselves. A text-book, for use in the work of this term, similar in plan to the one used in the previous work, is being prepared by the department, advanced sheets of which, in the form of "blue prints," are at present in use.

Pike and Decker's Manual is used.



## THE COLLEGE OF MECHANIC ARTS.

### FACULTY.

CYRUS NORTHROP, LL. D.,	-	-	-	-	<i>President.</i>
CHRISTOPHER W. HALL, M. A.,	-	<i>Professor of Geology and Mineralogy.</i>			
WILLIAM A. PIKE, C. E.,	-	<i>Professor of Engineering and Director.</i>			
JOHN F. DOWNEY, M. A., C. E.,	-	-	<i>Professor of Mathematics.</i>		
JAMES A. DODGE, PH. D.,	-	-	<i>Professor of Chemistry.</i>		
FREDERICK S. JONES, B. A.	-	-	<i>Instructor in Electricity.</i>		
WILLIAM R. HOAG, B. C. E.,	-	<i>Instructor in Civil Engineering.</i>			
JOHN H. BARR, B. M. E.,	-	<i>Instructor in Mechanical Engineering.</i>			
EDWARD D. MAYO, M. E.,	-	-	<i>Instructor in Drawing.</i>		
*	-	-	<i>Instructor in Metal-working.</i>		
*	-	-	<i>Instructor in Wood-working.</i>		

During the past year Mr. J. M. Hazen, city inspector of plumbing gave a series of talks on "House Drainage and Plumbing."

\* To be appointed before the work of the new year begins.

STUDENTS, 1886-'87.

CIVIL ENGINEERING.

*Regular*—Messrs. Crane, Coe, Webster, Wolff, Jackson, and Sacre.

*Special*—Messrs. Anderson, Ch., Glasby, Schumacher, and White.

MECHANICAL ENGINEERING.

*Regular*—Messrs. Andrews and Morris.

*Special*—Messrs. Baker, E. R., and Loe.

ARCHITECTURE.

*Special*—Mr. Ludlum.

ARTISAN'S TRAINING SCHOOL.

*A. Division*—Messrs. Bois, Linden, Marks, Nash, Strandberg, and Wetsue.

*B. Division*—Messrs. Brandt, Brzezinsky, Evans, M., Goodwin, Hilferty, Landes, Michelet, Lindman, Moyer, Neiler, Repath, Stanton, Strand, Thornton, and Turner.

*C. Division*—Messrs. Anglund, Evans, C. E., Hall, Hayes, Jennison, McCarthy, Mason, Meyer, Moore, Nelson, Nichols, Thompson, and Tucker.

*D. Division*—Messrs. Smith, G. F., Reed, Peterson, J. L., Plachta, Omeare, Williamson, and Swohn.

In this college there are to be hereafter 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 Artisan's Training School, a department of this college, special courses are arranged in shop-work, drawing, and mathematics, and in the care and management of engines and boilers.

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 college of science, literature, and the arts. See page.

CURRICULUM.

The following schedule shows the studies for the various classes and terms in the different courses :

PREPARATORY CLASS—SUB-FRESHMAN.

ALL COURSES.

I. TERM.	II. TERM.	III. TERM.
1. { Botany. (2) { Chemistry. (3) 2. { Higher Algebra. (2) { Drawing, Free Hand. (3) 3. { English, or { Latin, or { German.	1. Drawing (10 hours . 2. Higher Algebra. { English, or { German, or { Latin.	1. { Chemistry. (2) { Botany. (3) 2. Solid Geometry. { English, or 3. { German, or { Latin.

FRESHMAN CLASS.

ALL COURSES.

I. TERM.	II. TERM.	III. TERM.
1. Drawing (10 hours). 2. Trigonometry. { English, or 3. { German, or { Latin.	1. Drawing— <i>Perspective</i> . { Theory of Equations and Anal. Geometry. { English, or 3. { German, or { Latin.	1. <del>Chemistry</del> . 2. Botany. 3. English. 4. Surveying (twice a week.)

SOPHOMORE CLASS.

TERM	CIVIL ENGINEERING.	MECHANICAL ENGINEERING.	ELECTRICAL ENGINEERING
I.	1. Analytical Geometry. 2. Physics. 3. { English or French or { Latin. 4. Topography and Draw'g.	1. Analytical Geometry. 2. Physics. 3. { English or French or { Latin. 4. Carpentry and Drawing.	1. Analytical Geometry. 2. Physics. 3. { English or French or { Latin. 4. Carpentry.
II.	1. Differential Calculus. 2. Physics. 3. English or French. 4. Field Work and Draw'g.	1. Differential Calculus. 2. Physics. 3. English or French. 4. { Pattern Work and { Drawing.	1. Differential Calculus. 2. Physics. 3. English or French. 4. { Pattern Work and { Drawing.
III.	1. Integral Calculus. 2. Higher Surveying. { English or French or { Latin. 4. Field Work and Draw'g.	1. Integral Calculus. 2. Elements of Mechanism. { English or French or { Latin. 4. { Foundry Work and { Drawing.	1. Integral Calculus. 2. Elem'ts of Mechanism. { English or French or { Latin. 4. { Foundry Work and { Drawing.

JUNIOR CLASS.

TERM	CIVIL ENGINEERING	MECHANIC'L ENGINEERING	ELECTRICAL ENGINEERING
I	1 Curves and Earthwork. 2 Descriptive Geometry. 3 { Any Junior first term elective. 4 Field Work & Drawing	1 Kinematics. 2 Descriptive Geometry. 3 { Any Junior first term elective. 4 Forge work & Drawing.	1 { Physics (Electricity and Acoustics). 2 Descriptive Geometry. 3 Any Junior first term elec'tive. 4 Physcal Laboratory work.
II	1 Mechanics. 2 Hydraulics. 3 Mineralogy. 4 { Carpentry and Drawing.	1 Mechanics. 2 Hydraulics, etc. 3 Mineralogy. 4 { Drawing, Vise and Machine work.	1 Mechanics. 2 { Physics (Electricity and Acoustics). 3 Mineralogy. 4 Drawing.
III	1 Mechanics. 2 Testing Materials. 3 { Any Junior third term elective. 4 Railroad work and Drawing.	1 Mechanics. 2 Testing Materials. 3 { Any Junior third term elective. 4 Machine work, and Drawing.	1 Mechanics. 2 Testing Materials 3 { Any Junior third term elective. 4 { Physical Laboratory work.

SENIOR CLASS.

TERM	CIVIL ENGINEERING	MECHANIC'L ENGINEERING	ELECTRICAL ENGINEERING
I	1 Practical Astronomy. 2 Geology. 3 { Arches, Retaining Walls, etc. 4 Drawing.	1 { Applied Descriptive Geometry. 2 Geology or Astronomy. 3 Machinery. 4 Drawing.	1 { Dynamos and Electric Motors. 2 Geology or Astronomy. 3 Machinery. 4 Drawing.
II	1 Roofs, Trusses, etc. 2 Stereotomy. 3 { Any Senior second term elective. 4 Drawing.	1 { Steam Engines and other Motors. 2 Experimen'l Mechanics. 3 { Any Senior second term elective. 4 Drawing.	1 { Steam Engines and Motors. 2 Expe'iment'l Mechanics. 3 { Any Senior second term elective. 4 Electrical Tests.
III	1 { Designs, Specifications, etc. 2 Bridges and Thesis. 3 { Any Senior third term elective. 4 Drawing.	1 { Designs, Specifications, etc. 2 Machine Tools & Thesis. 3 { Any Senior third term elective. 4 Drawing.	1 { Designs, Specifications, etc. 2 Photometry and Thesis. 3 { Any Senior third term elective. 4 Drawing.

ARCHITECTURE.

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

1. The drawing throughout the 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 buildings, 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 Artisans' Training School may receive certificates of proficiency from the faculty.

Special students receive certificates for successful examinations in 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.

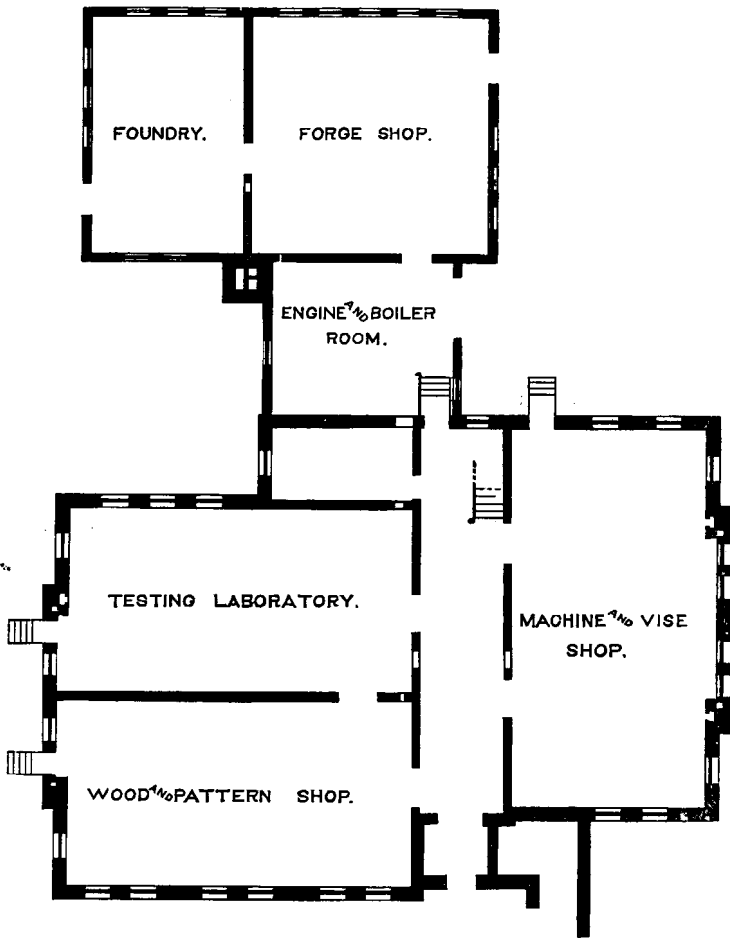
#### METHODS OF INSTRUCTION.

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. The department is accumulating a good





**BASEMENT.**

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, etc., 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, etc. 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 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, etc., and to writing a graduating thesis which is intended to show, to a certain extent, the result of the technical training of the course.

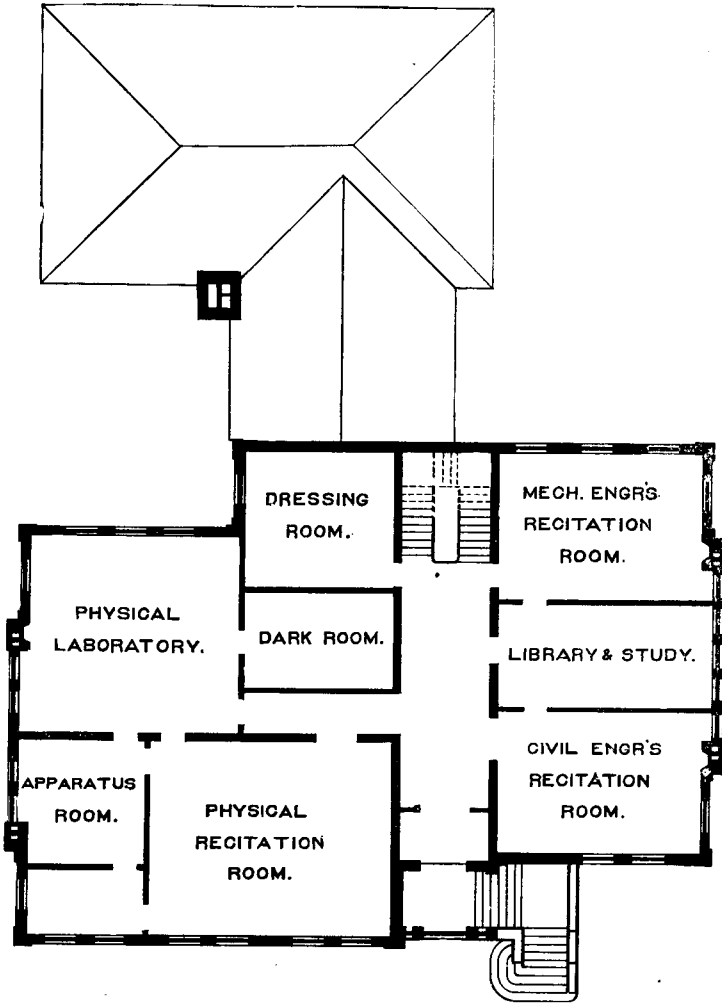
#### **MECHANICAL ENGINEERING.**

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, etc., 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



**FIRST FLOOR.**

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 collecting 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.

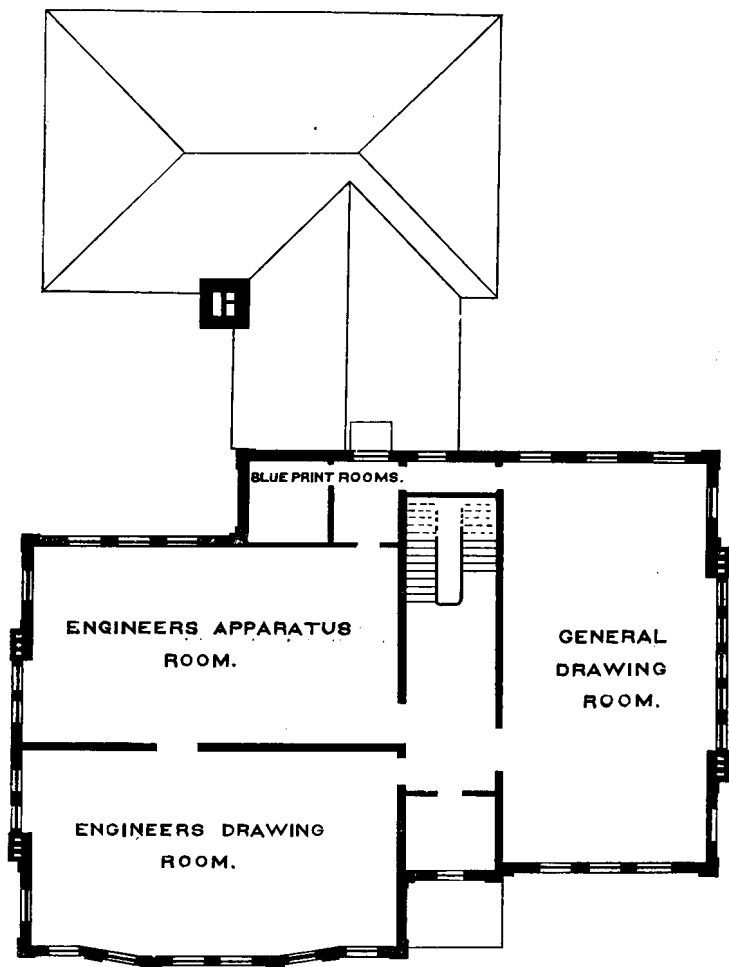
### APPARATUS.

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, and a pump for testing boilers.

For civil engineering—a plane-table, a compass, three transit instruments (one with solar attachment), two levels with rods, two chains, three tapes, pins, transit rods, a self reading rod, a hand level, several models of bridges and roofs, a few drawings and tools for modeling in the course in stereotomy.

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



**SECOND FLOOR.**

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 laboratory of this college. The first floor provides recitation rooms, laboratories, 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 with 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 tensile tests, is capable of accurately 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.

### 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.

The engineering drawing room, 24x44 feet, contains tables, cases, etc., for students in civil and mechanical engineering, architecture, and other advanced work. An engineering apparatus room joins the draw-

ing 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 equipped completely 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 that of 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 Artisan's Training School, and carpentry required of students in architecture and civil engineering.

**THE ENGINE ROOM.**—The engine and boiler room, 20 x 24 feet, is provided with an automatic cut-off engine, of modern type, capable of developing thirty-five horse powers, with an initial steam pressure of eighty pounds per square inch, cutting off at one-quarter stroke. A steel boiler of ample size 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, 25 x 50 feet, contain one speed lathe, ten engine lathes 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 in 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 black-smithing.

**THE FOUNDRY.**—The foundry, 20x30 feet, contains a 15-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.

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## THE ARTISANS' TRAINING SCHOOL.

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This school has been established as a department of the College of Mechanic Arts to meet the wants of Mechanics and others, and takes the place of the courses in shop work and drawing heretofore given.

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 years 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 shop work and drawing for those whose time or lack of fitness prevents them from entering division *A.*

*D.* A course in industrial drawing alone for those who wish to devote their whole time to this work.

### A. DIVISION—FIRST YEAR.

<i>I. Term.</i>	<i>II. Term.</i>	<i>III. Term.</i>
Carpentry.	Pattern Making.	Foundry Work.
Drawing.	Drawing.	Drawing.
Elementary Algebra (3) and Free Hand Drawing. (2)	Algebra and Geometry.	Geometry.



SECOND YEAR.

*I. Term.*

Forge Work.  
Trigonometry.  
Drawing (Machine  
Details).

*II. Term.*

Vise and Machine  
Work.  
Mechanics.  
Drawing (Machine  
Details).

*III. Term.*

Machine Work.  
Mechanism.  
Drawing (Design-  
ing).

*I. Term.*

Recitations and Lec-  
tures on Care of  
Engines and Boilers.  
Drawing.  
Engine Running.

*II. Term.*

Principles of Engines  
and Boilers.  
Vise and Machine  
Work.  
Engine Running.

*III. Term.*

Indicators and  
Engine Tests.  
Drawing (Engines  
and Boilers.  
Engine Running.

Shop work and Drawing.

C. DIVISION.

Industrial drawing.

D. DIVISION.

**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 A division who can pass in any of the mathematics or other work of the course, and who pass examinations 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 Artisans' Training School 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 plane 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. 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, plane and solid geometry, and trigonometry, taught with special reference to the needs of this class of students, and giving 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. 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.

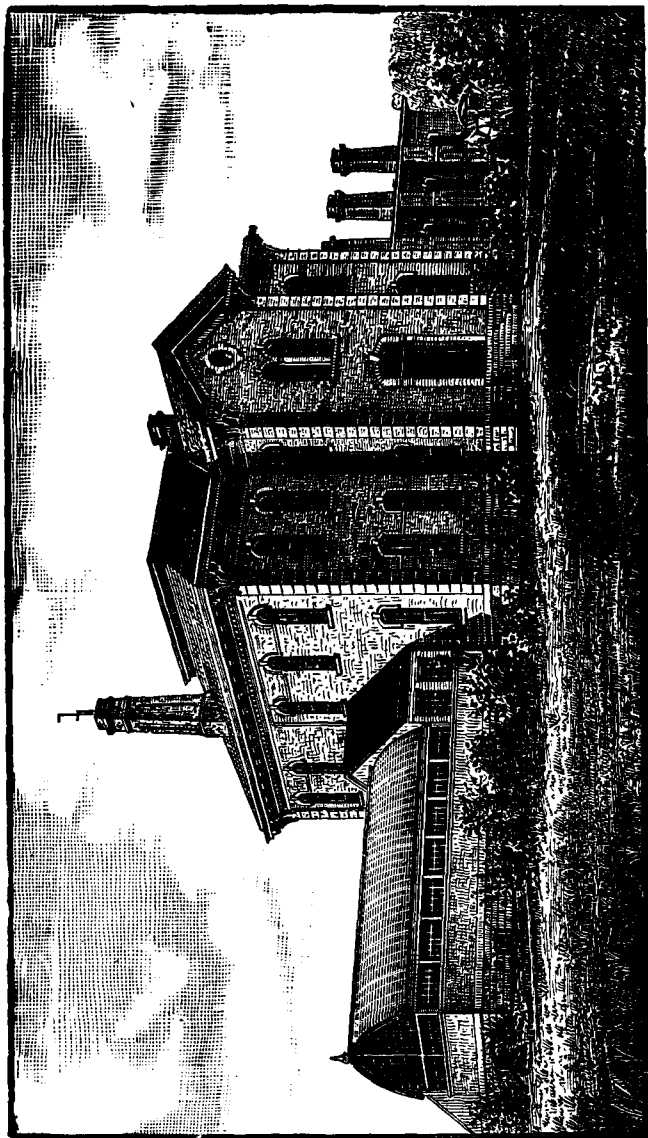
#### REGULATIONS.

Members of all divisions are required to deposit \$5 with the registrar of the University, which will be returned when connection with the school ceases, less such charges as may be made for material furnished and damage to any University property. Members of divisions A, B, and C are required, each term, to deposit \$5 with the director of this college, which will be returned at the close of each term less such charges as may be made for material used in shop-work, which is not made into apparatus of value to the college.

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.



COLLEGE OF AGRICULTURE OF THE UNIVERSITY.



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, immunities, 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 Colleges 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 of 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.

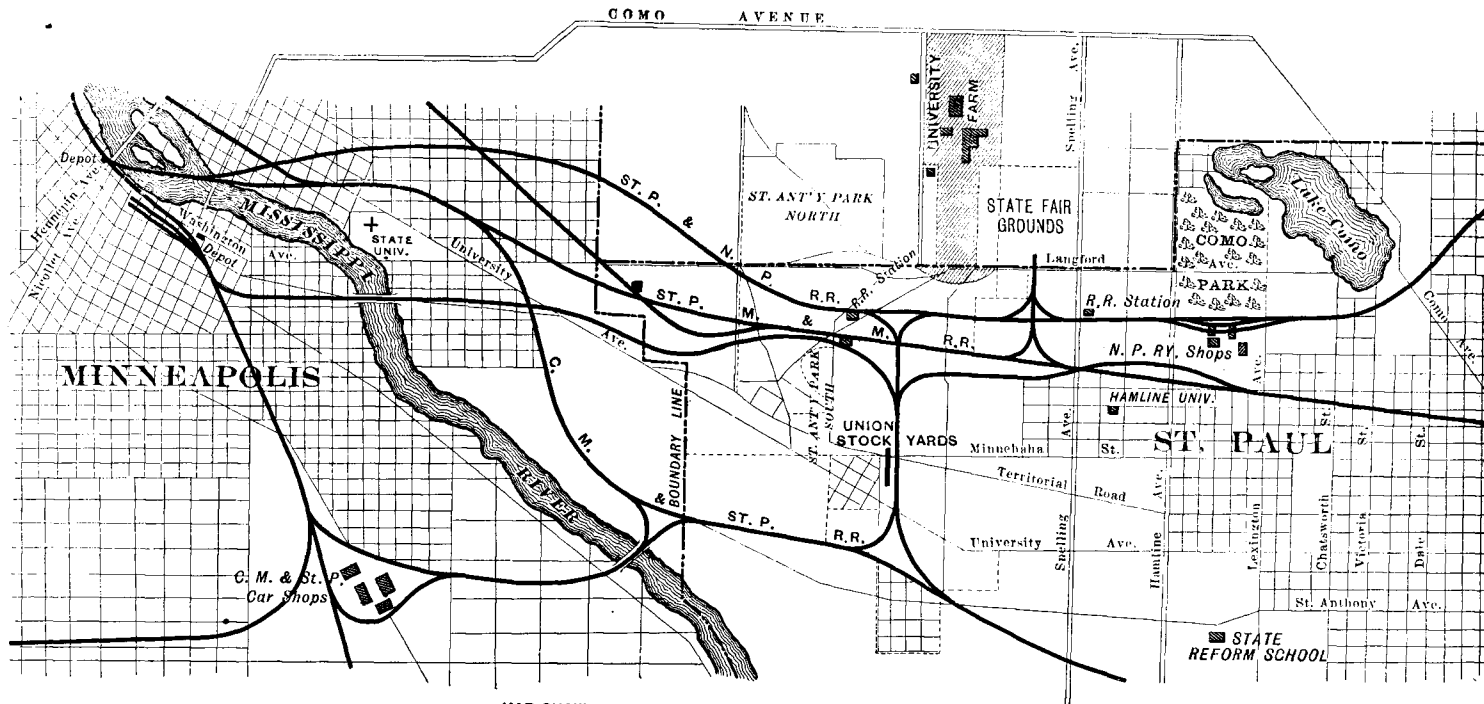
Students in the College of Agriculture receive the benefit of the library and apparatus of the University, as well as of those belonging to the college. The whole may be enumerated as follows:

(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 the insects of Minnesota; a large collection of woods from the United States Department of Agriculture; a collection of plates and



MAP SHOWING THE LOCATION OF THE EXPERIMENTAL FARM.



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, 24x26 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.

#### **THE EXPERIMENTAL FARM**

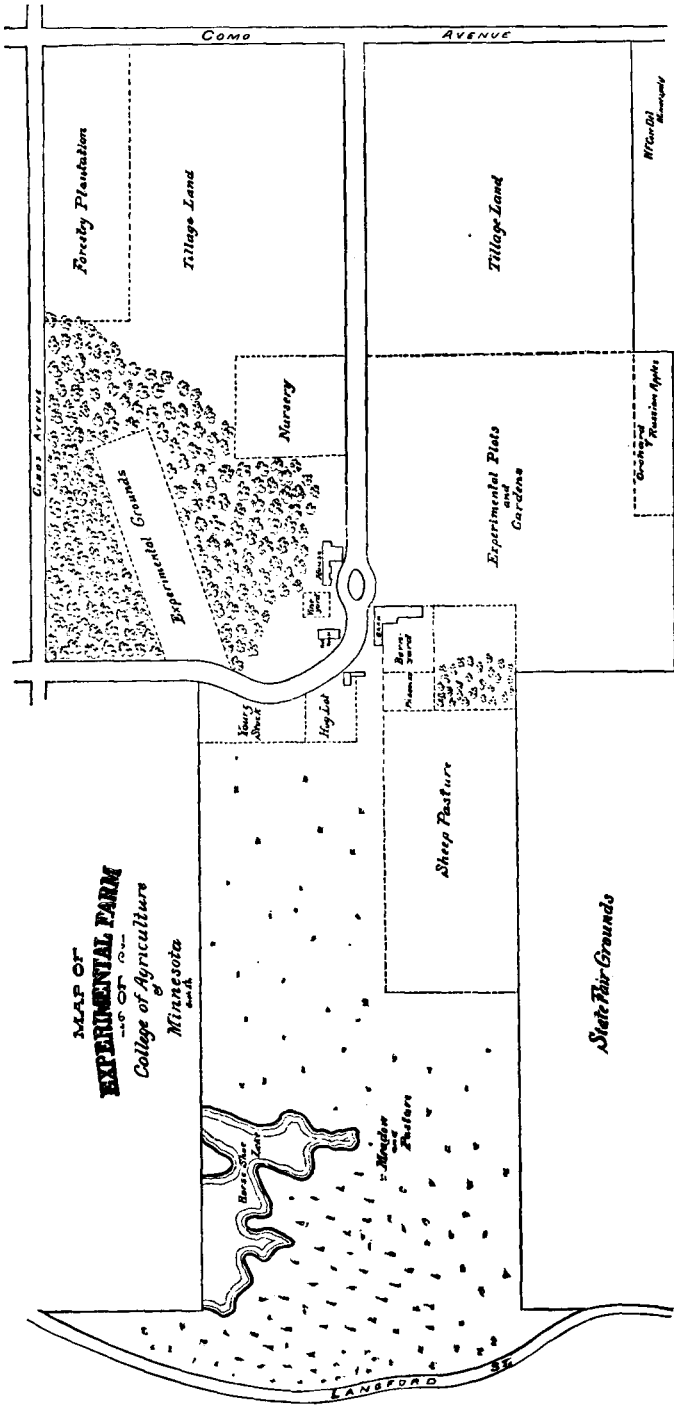
Consisting of 250 acres of most valuable land, is located between St. Paul and Minneapolis, adjoining the State Fair Grounds, and within fifteen minutes ride of either city, by the Manitoba R. R. and St. Anthony Park Station, or ten minutes from the University. It contains every variety of soil and exposure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

The buildings are nearly 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.

MAP OF  
**EXPERIMENTAL FARM**  
 OF THE  
**College of Agriculture**  
 Minnesota



W. C. C. D. L.  
 Minnesota

LANGFORD ST

### 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.

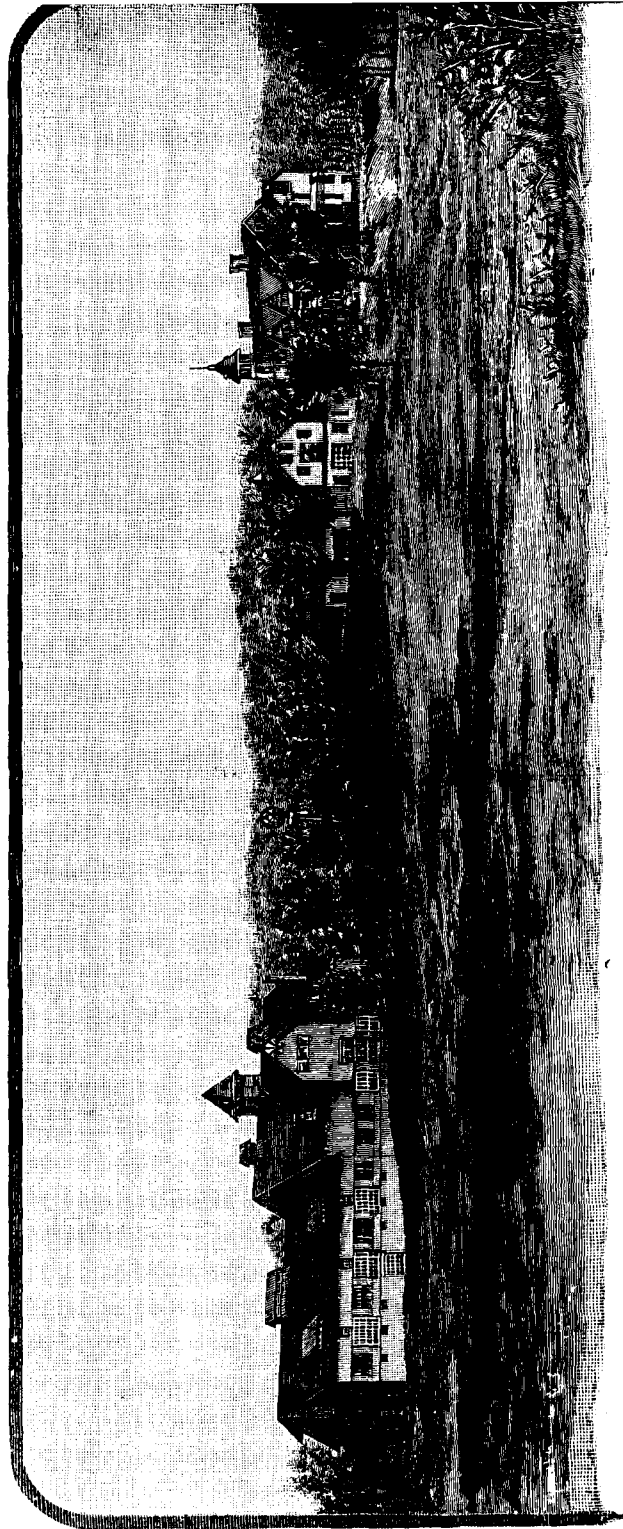
(5.) To carry on the work of an Agricultural Experiment Station, and to assist, by scientific investigation and experiment, in determining the adaptation of new varieties of grain, grasses, fruits, and vegetables to the soil, climate, and wants of Minnesota, and to distribute the results of such investigation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



VIEW OF EXPERIMENTAL FARM BUILDINGS.

IN ARBORICULTURE.—Reasons for planting forest trees; what trees to plant; method 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 FOR 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. Natural Philosophy. Shop Work.	Horticulture, (Farm.) Botany. Chemistry. Natural Philosophy. Surveying.

## 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.) Psychology.

## 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."

#### SCHOOL OF PRACTICAL AGRICULTURE.

The design of this school is to give youngmen a thoroughly practical knowledge of American Agriculture, in all its branches, and to illustrate the instruction of the class room and laboratory.

Pupils in this department will reside upon the University farm, and be regularly employed in all the operations; they will not be required to engage in regular studies or recitations, but will have access to the library of the University, and will be directed in their readings. Practical lectures and instructions will be given upon those branches of work which from time to time engage their attention.

Labor will be paid for at the rate of from five to fifteen cents per hour, depending upon the age, skill, and industry of the pupil.

Board, washing, furnished room, fuel, and lights, will be charged at their cost, and the balance to the credit of the student paid to him in monthly settlements. No student will be retained whose labor will not be equivalent to his board.

This school will open May 1st and close November 1st, but a limited number of students, who wish to prosecute their studies in the winter management of stock and the dairy, can remain the entire year.

Regular and systematic labor will be required of all students on the farm, and strict conformity to all rules and requirements.

All candidates for graduation in the College of Agriculture will be required to take during their course, the equivalent of two full sessions in this school.

#### THE NEW SCHOOL OF AGRICULTURE.

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 youngmen for the practical duties of the farm and work-shop. The five or six years of time devoted to study, without

manual labor, has a tendency to direct attention to other pursuits, and but few such 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.

It is proposed to give in this school thorough instruction in all the elementary branches of a practical education, including Arithmetic and its applications, bookkeeping, penmanship, and composition, practical mensuration, land surveying and levelling, botany, chemistry, elementary physiology, and veterinary science.

The school year will be divided into two terms of five months each, with a vacation in the spring and fall. Students will be admitted to this school at the age of fifteen years and above, and with such preparation as can be obtained in any of the district schools of the State.

All students will devote a portion of each day to the practical and experimental work of the farm and shops, and when such labor is productive, it will be paid for at its full value, thus not only keeping up habits of manual exercise, but aiding young men in defraying a portion of their expenses.

This school is not designed to take the place of the "College of Agriculture," of the University, but to meet the wants of a great number of young men who wish to secure a better education in those branches of science, which relate directly to agriculture than is furnished by the ordinary district schools of the State, but who do not wish to go to the high school or college; while to those who wish to take a more extended course of instruction, the College of Agriculture is open, with all the facilities which the University can furnish.

Full details of this "New School of Agriculture" will be made public as soon as the necessary buildings can be erected and furnished. It is expected to be ready for the reception of students in the spring of 1888.

During the past year the followings students have been in attendance:  
COLLEGE OF AGRICULTURE.—Messrs. Brown, W. S., Donohue, Evans, T. B. C., Hjermstad, Larson, Reynolds, W. A., and Sherman.

SCHOOL OF PRACTICAL AGRICULTURE.—Messrs. Allen, Bilesby, Bryson, Dougall, Gruenson, Heffron, Moldstadt, Munz, Oscar, Rogers, Sheldon, and Tunnell.



## GRADUATE DEPARTMENT.

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:

I. Master's 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 lines of study are offered to candidates:

1. Mathematics, including Astronomy.
2. Natural Science, including Botany, Zoology, and Anthropology.
3. Physical Science, including Chemistry, Physics, Mineralogy, and Geology.
4. Philosophy, including Logic.
5. Political Science, including International Law, History of Civilization, and Comparative Philology.
6. Greek Language and Literature.
7. Latin Language and Literature.
8. German Language and Literature.

9. Romance Languages and Literatures.
10. English Language and Literature, including Rhetoric.
11. Scandinavian Languages and Literatures.
12. History.
13. Pedagogics.

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 Master's degrees:

FOR MASTER OF ARTS.

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

FOR MASTER OF SCIENCE.

1. Two distinct lines of science.
2. Any two other distinct lines of study selected from the list 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 list 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 master's 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 list 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 list 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 list in III. above.
3. A design in architecture.
4. A thesis on a subject in architecture.

XI. 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 and to be examined in the studies of the post-graduate courses, and a certificate of attainments will be given them if they desire it.

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For the year 1887-88, 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 lec-

tures 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.
  - 1. The Lyrics, with critical reading of authors; or,
  - 2. The Dramas, with critical reading of authors.
- V. GERMAN—Alternative courses.
  - I. a. Niebelungenlied.
  - b. History of German Literature during the 12th and 13th Centuries.
  - II. 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 language.
- VII. HISTORY—Representative Government in England and the United States.
- 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.
  - (a) Roman Law. Institutes of Justinian.
  - (b) Roman Satires.
- XI. PEDAGOGICS.
  - (a) The History and Philosophy of Education.
  - (b) School Law.

## THE COLLEGE OF MEDICINE.

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This college has not yet been organized as a teaching school. Application will be made to the next Legislature for such appropriations as may be necessary to enable the University to maintain a teaching School of Medicine, and the Regents have voted to establish such a school as soon as the appropriations are secured. The duties heretofore discharged by the Medical Faculty, as an examining body, have been transferred, by a recent act of the Legislature, to a new State Board. As the present Faculty has completed its work, most of the members have signified their intention to resign, as they do not desire to teach.

The following persons having passed satisfactory examinations, the degree of M. B. will be conferred on them at the next Commencement, May 26th: Miss Catherine E. Burns, of Hopkins, and Mr. E. F. Cuyningham, of Minneapolis.

## GRADUATES.

1873.

Warren Clark Eustis, B. A.,  
Henry Martyn Williamson, B. A.,

Hennepin County.  
Nicollet County.

1874.

George Edwin Ricker, B. A.,  
Edward Chatfield, B. S.,

Hennepin County.  
Fillmore County.

1875.

Andrew Russell Cass, B. A.,  
Julius Elliott Miner, B. A.,  
\*Simon Peter Starritt, B. A.,  
Samuel Addison Rank, B. S.,  
Clark Stewart, B. S.,  
—Helen Mar Ely, B. L.,  
Henry Clay Leonard, B. C. E.,  
Samuel Addison Rank, B. C. E.,  
Clark Stewart, B. C. E.,

Canada.  
Goodhue County.  
Wright County.  
Fillmore County.  
Hennepin County.  
Winona County.  
Fillmore County.  
Fillmore County.  
Hennepin County.

1876.

John Sinclair Clark, B. A.,  
John Corrin Hutchinson, B. A.,  
William Edwin Leonard, B. A.,  
—Martha Appleton Butler, B. S.,  
Robert Henry Crafts, B. S.,  
Lewis Singer Gillette, B. S.,  
Eugene Alvin Hendrickson, B. S.,  
William Herod Locke, B. S.,  
Lewis Singer Gillette, B. C. E.,  
Eugene Alvin Hendrickson, B. C. E.,  
Charles Edward Thayer, B. C. E.,

Nova Scotia.  
Dakota County.  
Hennepin County.  
Missouri.  
Hennepin County.  
Michigan.  
Ramsey County.  
Hennepin County.  
Michigan.  
Ramsey County.  
Hennepin County.

1877.

Graham Cox Campbell, B. A.,  
Joel Nathaniel Childs, B. A.,  
Ebenezer Currie, B. A.,  
Frank Eustis, B. A.,  
Fred Eustis, B. A.,  
Stephen Mahoney, B. A.,  
John Waldo Perkins, B. A.,

Nova Scotia.  
Wisconsin.  
Fillmore County.  
Hennepin County.  
Hennepin County.  
Scott County.  
Wright County.

Charles Wilber Savidge, B. B.,  
 Albert McClure Wells, B. A.,  
 Albert Preston Hendrickson, B. S.,  
 \*John Charles Kassube, B. S.,  
 Edwin Burnham Pribble, B. S.,  
 —Matilda Jane Campbell, B. L.,  
 —Viola Fuller, B. L.,  
 —\*Charlotte Adelaide Rollit, B. L.,  
 Walter Stone Pardee, B. Arch.,

LeSueur County.  
 Ramsey County.  
 Ramsey County.  
 Hennepin County.  
 Hennepin County.  
 Maine.  
 Mower County.  
 Hennepin County.  
 Hennepin County.

## 1878.

Julian Clarence Bryant, B. A.,  
 John Hamilton Lewis, B. A.,  
 Thomas Rogers Newton, B. A.,  
 Evan Roland Pritchard, B. A.,  
 Daniel Williams, B. A.,  
 Fred Leslie Couillard, B. S.,  
 —Nettie Getchell, B. S.,  
 Judson Torrey Howell, B. S.,  
 Henry Clay Leonard (B. C. E., '75), B. S.,  
 —Mary Warwick Robinson, B. S.,  
 Harvey J. Smith, B. S.,  
 Myron DeVere Taylor, B. S.,  
 Win. John Warren, B. S.,  
 —Mary Anna Meas, B. L.,  
 George Albert Wood, B. L.,  
 Charles Spencer Bushnell, B. M. E.,

Nirollet County.  
 Wright County.  
 Hennepin County.  
 Blue Earth County.  
 Iowa.  
 Hennepin County.  
 Hennepin County.  
 Houston County.  
 Hennepin County.  
 Hennepin County.  
 Goodhue County.  
 Stearns County.  
 Rice County.  
 Steele County.  
 Fillmore County.  
 Hennepin County.

## 1879.

John Franklin Collom, B. A.,  
 —Etta Medora Elliott, B. A.,  
 John Finley Goodnow, B. A.,  
 Frank Smith McKean, B. A.,  
 Robert William Rhames, B. A.,  
 Chelsea Joseph Rockwood, B. A.,  
 George Burt Thompson, B. A.,  
 Willis Mason West, B. A.,  
 Walter Barret, B. S.,  
 Fred Capin Bowman, B. S.,  
 —Catherine Amelia Burns, B. S.,  
 Timothy Edward Byrnes, B. S.,  
 —Evelyn May Champlin, B. S.,  
 \*Addison Gage, Jr., B. S.,  
 Allen Jay Greer, B. S.,  
 —Laura Alberta Linton, B. S.,  
 George Henry Partridge, B. S.,  
 —Etta Thompson, B. S.,  
 William Lincoln Bassett, B. L.,  
 Alvin Hildreth, B. L.,  
 William Winchester Keyser, B. L.,  
 —Marion Hooker Roe, B. L.,  
 —Caroline Rollit, B. L.,  
 —Martha Isabel West, B. L.,  
 William Sanborn Dawley, B. C. E.,  
 Pierce Power Furber, B. C. E.,

Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Washington County.  
 Olmsted County.  
 Blue Earth County.  
 Hennepin County.  
 Stearns County.  
 Dodge County.  
 Meeker County.  
 Hennepin County.  
 Meeker County.  
 Hennepin County.  
 Anoka County.  
 Wabasha County.  
 Wabasha County.  
 Winona County.  
 Hennepin County.  
 Hennepin County.  
 Freeborn County.  
 Blue Earth County.  
 Washington County.  
 Hennepin County.  
 Hennepin County.  
 Wabasha County.  
 Washington County.

1880.

—Cora Inez Brown, B. A.,  
 James Francis Bryant, B. A.,  
 Albert William Rankin, B. A.,  
 William Wadsworth Williams, B. A.,  
 \*Frederick Gerald Berry, B. S.,  
 Horace Burnham Greeley, B. S.,  
 Clarence Luther Herrick, B. S.,  
 Robert Peter Andrew Nix, B. S.,  
 —Minnie Aurora Reynolds, B. S.,  
 Alva Lucius Roe, B. S.,  
 Gilman Walter Smith, B. S.,  
 Harvey Page Smith, B. S.,  
 —Lillian Sanborn Todd, B. S.,  
 Andrew Holt, B. L.,  
 Joseph Elisha Horton, B. L.,  
 —Lizzie Augusta House, B. L.,  
 —Bessie Summer Lawrence B. L.,

Hennepin County.  
 Nicollet County.  
 Nicollet County.  
 Iowa.  
 Hennepin County.  
 Blue Earth County.  
 Hennepin County.  
 Brown County.  
 Clay County.  
 Washington County.  
 Goodhue County.  
 Goodhue County.  
 Hennepin County.  
 Carver County.  
 Fillmore County.  
 Hennepin County.  
 Hennepin County.

1881.

George Briggs Aiton, B. A.,  
 Samuel Gilmore Anderson, B. A.,  
 Otway Wilkinson Baldwin, B. A.,  
 \*William Cullen Bryant, B. A.,  
 Herbert Oscar Chowen, B. A.,  
 —Emily Louise Hough, B. A.,  
 Charles Edward Kent, B. A.,  
 William Leslie King, B. A.,  
 Quintin John Rowley, B. A.,  
 Fred Beal Snyder, B. A.,  
 Fred Leslie Bardwell, B. S.,  
 \*Herbert John Broughton, B. S.,  
 —Diana Burnes, B. S.,  
 George Sutherland Grimes, B. S.,  
 James Jennison, B. S.,  
 David Albert Locke, B. S.,  
 Samuel Allen Locke, B. S.,  
 —Sarah Ellen Palmer, B. S.,  
 William Hines Savidge, B. S.,  
 —Lilla Ruth Williams, B. S.,  
 Harlow Horace Bonniwell, B. L.,  
 —Margaret Agnes Campbell, B. L.,  
 —Lettie May Crafts, B. L.,  
 —Emma Elizabeth Grimes, B. L.,  
 William Edmund Harrington, B. L.,  
 —Emma Ernestine Maes, B. L.,  
 Bradley Phillips, Jr., B. L.,

Nicollet County.  
 Hennepin County.  
 Wright County.  
 Nicollet County.  
 Hennepin County.  
 Pennsylvania.  
 Ohio.  
 Blue Earth County.  
 Freeborn County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Goodhue County.  
 Hennepin County.  
 Hennepin County.  
 Mower County.  
 LeSueur County.  
 Blue Earth County.  
 McLeod County.  
 Nova Scotia.  
 Hennepin County.  
 Hennepin County.  
 McLeod County.  
 Steele County.  
 Wisconsin.

1882.

James Bennett Gould, B. A.,  
 Frank Healy, B. A.,  
 Andrew Franklin Hillyer, B. A.,  
 —Carrie Warner Holt, B. A.,  
 —\*Lydia Rossiter Holt, B. A.,  
 —Frances Ada Knox, B. A.,

Hennepin County.  
 Fillmore County.  
 Hennepin County.  
 Fillmore County.  
 Fillmore County.  
 Blue Earth County.



Frank Nichols Leavens, B. A.,  
 Alexander Hamilton Nunn, B. A.,  
 Eli Milton Skiff Pickett, B. A.,  
 Charles Myron Webster, B. A.,  
 Jesse Craig Wilson, B. A.,  
 George Joseph Backus, B. S.,  
 William Wykeoff Clarke, B. S.,  
 —Alice Elizabeth Demmon, B. S.,  
 —Carrie Delania Fletcher, B. S.,  
 —Emmy Laura Hendrickson, B. S.,  
 William Beans Linton, B. S.,  
 Henry Francis Nachtrieb, B. S.,  
 Rasselas Hamlin Prosser, B. S.,  
 Herbert Paine Shumway, B. S.,  
 Edward Duffield Neill Whitney, B. S.,  
 —Agnes Virginia Bonniwell, B. L.,  
 —Grace Webster Curtis, B. L.,  
 Arthur Edward Dickerman, B. L.,  
 —Marie Louise Henry, B. L.,  
 —Mary Eliza Holt, B. L.,  
 —Mary Nancy Hughes, B. L.,  
 Richard Hartwell Johnson, B. L.,  
 —Louise Lilli in Kilbourn, B. L.,  
 —Emily Dana McMillan, B. L.,  
 —\*Ada Eva Pillsbury, B. L.,  
 Harry Amy Strong, B. L.,  
 William Johnson Barrett, B. Agr.,  
 Rice County.  
 Dodge County.  
 Freeborn County.  
 Goodhue County.  
 Rice County.  
 Goodhue County.  
 Blue Earth County.  
 Vermont.  
 Ramsey County.  
 Ramsey County.  
 Wabash County.  
 Washington County.  
 Fillmore County.  
 Fillmore County.  
 Hennepin County.  
 McLeod County.  
 Iowa.  
 Iowa.  
 Hennepin County.  
 Fillmore County.  
 Hennepin County.  
 Winona County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Iowa.  
 Dodge County.

## 1883.

Edward Payson Baldwin, B. A.,  
 William Estman Fay, B. A.,  
 Edson Starr Gaylord, B. A.,  
 David Percy Jones, B. A.,  
 Joseph Henry Locke, B. A.,  
 —Helen Louise Pierce, B. A.,  
 —Martha Alma Sheldon, B. A.,  
 Sumner Lincoln Trussell, B. A.,  
 Robert Mowry Bell, B. S.,  
 Frederick Henry Clark, B. S.,  
 —Louise Elma Hollister, B. S.,  
 Edward Corydon Jones, B. S.,  
 George Nelson Salisbury, B. S.,  
 Charles Frederic Sidener, B. S.,  
 —Emma Jane Ware, B. S.,  
 Samuel Doak Catherwood,  
 —Annie Harriet Jefferson,  
 —Kate Louise Kennedy,  
 —\*Sarah Pierrepont McNair,  
 —Anna Calista Marston,  
 —Jenet Nunn,  
 —Emma Frances Trussell,  
 William George Peters, B. C. E.,  
 Louis Orville Smith, B. C. E.,  
 John Henry Barr, B. M. E.,  
 Dakota County.  
 Massachusetts.  
 Hennepin County.  
 Hennepin County.  
 Stearns County.  
 Olmsted County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Massachusetts.  
 Lincoln County.  
 Hennepin County.  
 Rice County.  
 Goodhue County.  
 Fillmore County.  
 Mower County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Hennepin County.  
 Dodge County.  
 Hennepin County.  
 Hennepin County.  
 Le Sueur County.  
 Blue Earth County.

1884.

Elmer Ellsworth Adams, B. A.,  
 Patrick Joseph Butler, B. A.,  
 Oscar Firkins, B. A.,  
 Joseph Henry Capper Hutchinson, B. A.,  
 Anthony Johnson, B. A.,  
 Eli Larson, B. A.,  
 —Hannah Robie Sewall, B. A.,  
 —Susan Winifred Sewall, B. A.,  
 Zenas Newton Vaughn, B. A.,  
 Nathan Morton Baker, Jr., B. S.,  
 Jeremiah Ignatious Donohue, B. S.,  
 George Loranzo Hendrickson, B. S.,  
 George Horace Klepper, B. S.,  
 —Bessie Laythe, B. S.,  
 James Eugene Manchester, B. S.,  
 Henry Hastings Sibley Rowell, B. S.,  
 Charles Christian Schmidt, B. S.,  
 —Emma Zwinggi, B. S.,  
 —Anna Helen Bonfoy, B. L.,  
 —Belle Marion Bradford B. L.,  
 —Adalya Kinsbury, B. L.,  
 William Ricketson Hoag, B. C. E.,  
 George John Loy, B. C. E.,  
 Irving Webber Matthews, B. C. E.,  
 James Kid Simpson, B. M.,  
 Hugo Speier, B. M.,

Vermont.  
 Hennepin County.  
 Hennepin County.  
 Dakota County.  
 Houston County.  
 Houston County.  
 Ramsey County.  
 Ramsey County.  
 Mower County.  
 Nicollet County.  
 Fillmore County.  
 Ramsey County.  
 Freeborn County.  
 Fillmore County.  
 Steele County.  
 Hennepin County.  
 Brown County.  
 Nicollet County.  
 Hennepin County.  
 Dakota County.  
 Michigan.  
 Olmsted County.  
 Carver County,  
 Rock County,  
 Manitoba.  
 Scott County.

1885.

—Mary Lathrop Benton, B. A.,  
 Samuel Solfest Langland, B. A.,  
 Charles William Moulton, B. A.,  
 James Gray, B. S.,  
 Cassius Marcius Locks, B. S.,  
 Curtis Langdon Greenwood, B. S.,  
 Howard Strickland Abbott, B. L.,  
 Albert Melancthon Baldwin, B. L.,  
 —Bertha Minnie Brown, B. L.,  
 —Mary Eliza Irving, B. L.,  
 —Ida Victoria Mann, B. L.,  
 —Mabel Lorain Smith, B. L.,  
 Elbert Elsworth Bushnell, B. M. E.,  
 Thomas Ezekiel Trussell, B. Agr.,  
 Karl Henry E. Castle, B. M.,  
 Willham Byther Pineo, B. M.,  
 \*Patrick Thomas Fitzgerald, B. C. E.,  
 Albert Irving Reed, B. C. E.,

Hennepin County.  
 Martin County.  
 Ohio.  
 Hennepin County.  
 Hennepin County.  
 Goodhue County.  
 Wright County.  
 Dakota Ter.  
 Hennepin County.  
 Steele County.  
 Hennepin County.  
 LeSueur County.  
 Hennepin County.  
 Hennepin County.  
 Ramsey County.  
 Hennepin County.  
 Stevens County.  
 Dakota County.

1886.

John William Adams, B. A.,  
 Henry James Grannis, B. A.,  
 James Charles Elliot King, B. A.,  
 —Ida Victoria Mann (B. L., '85), B. A.,  
 —Elizabeth Quincy Sewall, B. A.,  
 William Franklin Webster, B. A.,

Lake City.  
 High Forrest.  
 Otsego.  
 Minneapolis.  
 St. Paul.  
 Clearwater.

John William Bennett, B. S.,	Montrose.
Fremont Crane, B. S.,	Mapleton.
—Mary Whitmore Elwell, B. S.,	Minneapolis.
Frank Amos Johnson, B. S.,	Marshall.
Joseph Kennedy, B. S.,	Oshawa.
—Lillian Lincoln Ware, B. S.,	Brownsdale.
—Jennie May Amy, B. L.,	Minneapolis.
Leo Melville Crafts, B. L.,	Minneapolis.
—Ada May Kiehle, B. L.,	Minneapolis.
—Maud Julia Lyall, B. L.,	Minneapolis.
—Josephine Florence Marrs, B. L.,	Minneapolis.
—Mary Alden Powell, B. L.,	Minneapolis.
Charles Comstock Woodmansee, B. Arch.,	Minneapolis.
William C. E. Van Damm, B. M.,	Minneapolis.
A. W. Brunnell, B. M.,	Minneapolis.
James J. O'Reiley, B. M.,	Olga, D. T.