ILLINOIS

INDUSTRIAL

UNIVERSITY.

1882-3.

INDEX.

LEARNING AND LABOR.

Catalogue and Circular

OF THE

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Urbana, Champaign County, Ill.

1882-83.

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1883


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Faculty.

SELIM H. PEABODY, Ph. D., LL. D.,
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THOMAS J. BURRILL, M. A., Ph. D.,
Professor of Botany and Horticulture, and Vice-President.

SAMUEL W. SHATTUCK, M. A., C. E.,
Professor of Mathematics.

EDWARD SNYDER, M. A.,
Professor of Modern Languages.

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Professor of English Language and Literature.

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Professor of Architecture.

JAMES D. CRAWFORD, M. A.,
Professor of History and Ancient Languages, and Secretary.

GEORGE E. MORROW, M. A.,
Professor of Agriculture.

FREDERICK W. PRENTICE, M. D.,
Professor of Veterinary Science.

PETER ROOS,
Professor of Industrial Art and Designing.

WILLIAM T. WOOD,
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Professor of Military Science and Tactics.

IRA O. BAKER, C. E.,
Professor of Civil Engineering.

WILLIAM McMURTRIE, E. M., Ph. D.,
Professor of Chemistry.

BENJAMIN C. JILLSON, M. D., Ph. D.,
Professor of Geology and Zoology.

CECIL H. PEABODY, B. S.,
Assistant Professor of Mechanical Engineering.

EDWIN A. KIMBALL,
Foreman of Machine Shop.

NELSON S. SPENCER, B. S.,
†Foreman of Carpenter Shop.

JEROME SONDERICKER, B. S.,
Instructor in Right Line Drawing.

CHARLES W. ROLFE, M. S.,
Instructor in Mathematics and Botany.

EDWARD A. MORSE, M. A.,
Instructor in Ancient Languages.

† Resigned at end of Winter Term.

MRS. ABBIE WILKINSON,
Teacher of Vocal and Instrumental Music.

HOWARD SLAUSON, B. S.,
First Assistant in Chemical Laboratory.

ARTHUR W. PALMER,
Second Assistant in Chemical Laboratory.

GEORGE W. PARKER,
Foreman of Carpenter Shop, Spring Term.

A. B. BAKER,
Janitor.

List of Students.

RESIDENT GRADUATES.

NAME.	RESIDENCE.
Bogardus, Eva	Champaign.
Seymour, Arthur B, B. S.,	Camp Point.
Sondericker, Jerome. B. S.,	Woodstock.
Taft, Florizel A., B. S.,	Champaign.
Weston, William S., B. L.,	Champaign.

SENIOR CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Abbott, Edward L	Civil Engineering	Union Grove.
Adams, Charles F	Natural History	Champaign.
Bogardus, C Eugene	Chemistry	Champaign.
Brainard, Clarence	Civil Engineering	Buda.
*Chapman N W	Civil Engineering	Gerlaw.
Craig, William P	Lit. and Science and Mil.	Champaign.
Durfee, Elisha B	Literature and Science	Marion, Ohio.
Gates, Alphonso S	Civil Engineering	Hamilton.
Going, Judson F	Lit. and Science and Mil.	Warren.
Goltra, William F	Civ. Engineering and Mil.	Bourbonnias Gr
Gray, Nelson A	Lit. and Science and Mil.	Champaign.
Haven, Dwight C	Lit. and Science and Mil.	New Lenox.
Heath, William A	Literature and Science	Champaign.
Hewes, George C	Chemistry	Farmer City.
Huey, Joseph D	Natural History	Clement.
Kenower, John T	Chemistry	Clement.
Lewis, Ralph D	Civil Engineering	Champaign.
Little, Henry P	Chemistry	Champaign.
*North, Foster	Natural History	Kewanee.

NAME.	COURSE.	RESIDENCE.
McCune, Henry L	Lit. and Science and Mil.	Ipava.
Moore, William D	Mech. Engineering	Chatham.
Palmer, Arthur W	Chemistry	Springfield.
Peirce, Fred D	Chemistry and Military	Polo.
Piatt, Silas H	Chemistry	Monticello.
*Postel, Julius	Ancient Languages	Mascoutah.
Scotchbrook, Geo P	Civil Engineering	Morrison.
Sondericker, William	Ancient Languages	Woodstock.
Weis, Joseph	Chemistry	Tonica.

LADIES.

NAME.	COURSE.	RESIDENCE.
Ashby, Lida	Literature and Science	Champaign.
Boggs, Hattie M	Ancient Languages	Tuscola
Colvin, Mary S	Literature and Science	Mt. Palatine.
Fellows, Clara B	Literature and Science	Milibank, Dak.
Gardner, Jessie	Literature and Science	Champaign.
Healey, Grace	Literature and Science	Champaign.
Knowlton, Lizzie A	Literature and Science	Urbana.
Langley, M Celeste	Literature and Science	Champaign.
Lewis, C Florence	Literature and Science	Farmer City.
Peabody, Kate F	Literature and Science	Champaign.
*Smith, Laura B	Literature and Science	Champaign.
Stewart, Ella M	Literature and Science	Champaign.
Wright, Minnie E	Literature and Science	Champaign.

JUNIOR CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Abbott, William L	Mech. Engineering	Union Grove.
Austin, James	Civil Engineering	Altona.
*Ayres, Judson F	Chemistry	Urbana.
Babcock, Guy H	Agriculture and Military	Ridott.
*Bacon, George H	Literature and Science	Champaign.
*Barber, Henry H	Civil Engineering	Savanna.
*Barmm, Charles E	Chemistry	Chicago.
Bartholf Emmett G	Ancient Languages	Plainfield.
*Bartholf William J	Ancient Languages	Plainfield.

NAME.	COURSE.	RESIDENCE.
Braucher, Arthur C	Civil Engineering	Lincoln.
*Braucher, William B	Mechanical Engineering	Lincoln.
*Burt, Angelo R	Mechanical Engineering	Dubuque, Iowa.
*Cole, T Edward	Elective	Champaign.
*Dunlap, Robert L	Chemistry	Savoy.
Eberlein, Fred W	Chemistry	Mascoutah.
Eliel, Albert L	Mechanical Engineering	LaSalle.
French, George H	Civil Engineering	Milton.
*Haas, Solomon I	Architecture	Savanna.
Herdman, Frank E	Mech Eng. and Military	Zanesville, Ohio
Hermann, David	Civil Engineering	Highland.
Hunt, Thomas F	Agriculture	Ridott.
*Kimball, Edwin R	Chemistry and Military	Champaign.
Lantz, Milo P	Elective and Military	Oak Grove.
Lietze, Frederic A	Civil Engineering	Carlyle.
Lilly, Charles H	Chemistry	Champaign.
*Lilly, James E	Ancient Languages	Champaign.
*North, Arthur T	Architecture	Kewanee.
*McCluer, George W	Agriculture	Farina.
*McEathron, Wm J	Civil Engineering	Lena.
Marshall, John H	Ancient Languages	Charleston.
Montezuma, Charles	Chemistry	Chicago.
*Morgan, George N	Literature and Science	Kinmundy.
*Morse, E Leland	Civil Eng. and Military	Cazenouia.
*Odell, Arthur M	Civil Engineering	East Dubuque.
*Parr, Samuel W	Chemistry	Normal.
Peart, George K	Civil Engineering	Braidwood.
Philbrick, Solon	Lit. and Science and Mil.	Baileyville.
Roberts, Lewis C	Mech. Eng. and Military	Jefferson.
*Roberts, Vertus B	Elective and Military	Plainfield.
*Rupp, Andrew O	Civil Eng. and Military	Chenoa.
Sizer, Lucius N	Civil Eng. and Military	Mahomet.
Speidel, Ernst	Chemistry	Rock Island.
*Spencer, Howard M	Architecture	Dixon.
Stannard, Albert C	Chemistry and Military	Champaign.
Stevens, Hubert A	Civil Engineering	Chicago.
*Stratton, Samuel W	Literature and Science	Litchfield.
Van Petten, Henry S	Chemistry	Chillicothe.
Vial, Edmund R	Agriculture	Western Springs.
*Vial, Frederic K	Agriculture	Western Springs.
West, Charles H	Civil Eng. and Military	Greenville, Miss

Whittemore, Benj M	Lit. and Science and Mil.	Charleston.
Wills, Jerome G	Literature and Science	Sailor Springs.

LADIES.

NAME.	COURSE.	RESIDENCE.
*Ayers, Nettie	Literature and Science	Urbana.
*Barber, Ella U	Literature and Science	Champaign.
Braucher, Alma E	Natural History	Lincoln.
Campbell, Juniata G	Literature and Science	Polo.
Conklin, Anna J	Literature and Science	Champaign.
*Clark, Lucy J	Ancient Languages	Champaign.
Ellis, Lola D	Literature and Science	Canton.
Fuller, Ruth W	Literature and Science	Montague, Mass.
Hall, Lucy A	Literature and Science	Champaign.
*Hall, Nira M	Art and Design	Metamora.
*Hill, Cora J	Literature and Science	Paxton.
Kemball, Georgetta	Literature and Science	Champaign.
*Krause, Josephine	Literature and Science	Chicago.
*Lewis, Georgetta L	Literature and Science	Champaign.
Ranney, Frances L	Literature and Science	Cazenovia.
Sim, Keturah E	Literature and Science	Urbana.
*Somers, Cora	Literature and Science	Urbana.

SOPHOMORE CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Allen, Aleck M	Architecture	Champaign.
Allen, E Wright	Agriculture	Harristown.
*Baxter, Thomas L	Mech. Engineering	Chicago.
*Boller, Chester E	Architecture	Lexington.
Boring, William A	Architecture	Alton.
Brown, George M	Mech. Engineering	Dixon.
*Carter, Harry L	Mech. Engineering	Humboldt.
Clark, William B	Chemistry	Worthington, Pa
Colton, Samuel K	Architecture and Military	Chicago.
Colton, Simeon C	Civil Engineering	Chicago.
Cook, Curtin	Chemistry	Tolono.
*Corwin, Cecil S	Architecture	Racine, Wis.

NAME.	COURSE.	RESIDENCE.
Davis, James O	Civil Engineering	French Grove.
Ellis, George H	Chemistry	Milwaukee, Wis
Gregory, Grant	Literature and Science	Champaign.
Greeley, George H	Mech. Engineering	Waterman.
*Hatch, Henry D	Ancient Languages	Plainfield.
Hicks, George L	Literature and Science	Warren.
Hopper, Charles S	Literature and Science	Bristol.
Huber, Otto	Literature and Science	Rock Island.
Kendall, William F	Civil Engineering	Rock Island.
Kent, James M	Mech. Engineering	Kewanee.
Krause, Frederic F	Mining Engineering	Chicago.
Lattin, Judson	Mech. Eng. and Military	Sycamore.
*Lee, Scovell	Agriculture	Millersburg.
*Manns, Albert G	Chemistry	Chicago.
Marshall, Sherman L	Lit. and Science and Mil.	Ipava.
*Mathers, George B	Civil Engineering	Mason City.
Miller, John A	Chemistry	Buffalo, N. Y.
*Miller, William B	Mech. Engineering	Hyde Park.
Moffett, William D	Civ. Engineering and Mil.	Decatur.
*Moore, George F	Mech. Eng. and Military	Polo.
*Parker, W H	Literature and Science	Oswego.
*Pearman, Ira E	Literature and Science	Champaign.
Peterson, Harry G	Civil Engineering	Champaign.
Petty, George R	Civil Engineering	Pittsfield.
*Randolph, T F	Chemistry	Canton.
*Rankin, Charles H	Civil Engineering	Fall Creek.
Reynolds, Henry L	Mech. Engineering	Camp Point.
Ronalds, Hugh L	Mech. Engineering	Grayville.
Schleder, Theo. H	Civil Engineering	Greenvale.
Schrader, Alfred C	Civil Engineering	New Lenox.
*Scott, John A	Elective	Champaign.
Sherrill, Frank A	Civ. Engineering and Mil.	Belvidere.
*Smith, Tracy A	Elective	Wilmington.
*Smith, William H	Literature and Science	Salem.
Stockham, Wm H	Mech. Eng. and Military	Chicago.
Swern, William C	Architecture	Marshall.
Taggart, James S	Agriculture	Ridott.
*Taylor, John F	Civil Engineering	Taylor.
*Whitmire, Z L	Natural History	Metamora.
Woodworth, Chas. W	Chemistry	Champaign.
Wright, John E	Literature and Science	Champaign.

LADIES.

NAME.	COURSE.	RESIDENCE.
Clark, Kate F	Natural History	Cobden.
*Cumberland, H	Literature and Science	Champaign.
Earle, Mary T	Natural History	Cobden.
*Hays, Gertrude	Literature and Science	Urbana.
*Jones, Emma T	Literature and Science	Champaign.
*McNary, Margaret E	Literature and Science	Pana.
*Maltby, Cora	Literature and Science	Champaign.
Owens, Bessie W	Literature and Science	Urbana.
Parrill, Lizzie	Elective	Farina.
*Plank, Bessie G	Literature and Science	Champaign.
*Scoggins, M Alice	Literature and Science	Champaign.
*Switzer, Lottie	Literature and Science	Champaign.
Reed, E May	Literature and Science	Frankfort, Kan.
Thomas, Fanny	Literature and Science	Kickapoo.
Way, Ada B	Literature and Science	Champaign.
Weston, Abbie	Literature and Science	Champaign.
Wright, Lizzie M	Literature and Science	Champaign.
Wright, Minnie S	Literature and Science	Plainfield.

FRESHMAN CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Abbott, Alfred N	Agriculture	Union Grove.
Arnold, C Herbert	Agriculture	Ulah.
Ashby, William M	Literature and Science	Champaign.
Babcock, William A	Literature and Science	Ipava.
Baelz, George	Literature and Science	Metamora.
*Bannister, Geo. S	Architecture	Odell.
Barrett, Dwight H	Chemistry	La Moille.
Bishop, John F	Architecture	Champaign.
*Blakeslee, C E	Mech. Engineering	DuQuoin.
Blandy, Douglass C	Mech. Engineering	Zanesville, Ohio.
Braucher, Edward R	Mech. Engineering	Lincoln.
Brown, Simon	Civil Engineering	Grant Fork.
*Bullard, S Foster	Architecture	Mechanicsburg.
*Burt, Frank A	Mech. Engineering	Dubuque, Iowa.
Chitty, William L	Literature and Science	Champaign.

NAME.	COURSE.	RESIDENCE.
Clark, Arthur S	Architecture	Champaign.
Cromwell, John C	Mech. Engineering	Frankfort, Ky.
*Cummings, H B	Chemistry	Buda.
Dodds, Joseph C	Ancient Languages	Sadorus.
Earle, Charles T	Chemistry	Cobden.
Edwards, Frank R	Civil Engineering	Aledo.
Endsley, Lee	Literature and Science	Milford.
*Everhart, T W B	Ancient Languages	Champaign.
Fulton, James	Civil Engineering	Eureka.
*Grubb, Edwin S	Literature and Science	Springfield.
Harris, James W	Civil Engineering	Blackberry.
*Henshaw, Charles	Civil Engineering	Knightstown, Ind
*Herrington, D E	Mech. Engineering	Greenwood.
Hubbard, Henry T	Literature and Science	Urbana.
*Johnson, Ralph M	Chemistry	Champaign.
Jones, John W	Mech. Engineering	Bodega, Cal.
Kutnewsky, Chas. F	Mech. Engineering	Groveland.
Latham, Ector B	Mining Engineering	Atlanta, Ga.
Lumley, Clinton G	Literature and Science	Ringwood.
*McCune, Myron Q	Literature and Science	Ipava.
McGregor, Wm G	Mech. Engineering	Chicago.
Mackey, John L	Mech. Engineering	Mt. Carroll.
Marquiss, John A	Natural History	Monticello.
Maxwell, William W	Literature and Science	Champaign.
*Meredith, Wynn	Elective	Aurora.
Millar, W Edwin	Civil Engineering	Mattoon.
Milnes, George S	Chemistry	Morrison.
*Moffett, Ocea E		Modesto.
Morse, Henry M	Mech. Engineering	Cazenovia.
*Olshausen, W A G	Mech. Engineering	Davenport, Iowa.
Pease, James F	Agriculture	Quincy.
*Percival, Orin	Literature and Science	Champaign.
Philbrick, Alvah	Civil Engineering	Baileyville.
*Pillsbury, Ithamar	Mining Engineering	Macomb.
Richards, Albert L	Mech. Engineering	Burton.
Samson, John F	Literature and Science	Sidney.
Shlaudeman, Harry	Architecture	Decatur.
*Sickels, F Henry	Literature and Science	Champaign.
*Sims, David P	Chemistry	Champaign.
*Smith, DeWitt	Literature and Science.	Galesburg.
Smith, Elijah S	Elective	Champaign.

NAME.	COURSE.	RESIDENCE.
*Speidel, Hugo	Civil Engineering	Rock Island.
Robison, Elmer C	Agriculture	Tremont.
Vanderlip, Frank	Elective	Aurora.
Walker, Frank W	Literature and Science	Robinson.
*Wallace, John B	Elective	Champaign.
Wilder, Henry W	Ancient Languages	Champaign.
*Williams, Chas. H	Literature and Science	Farm Ridge.
*Woodward, E M	Literature and Science	Odin.

LADIES.

NAME.	COURSE.	RESIDENCE.
Ayres, L Belle	Literature and Science	Urbana.
Boggs, Estelle	Literature and Science	Tuscola.
Elder, Nettie	Literature and Science	Urbana.
Ermentrout, A Mae	Literature and Science	Urbana.
Fairchild, Rozina P	Literature and Science	Metamora.
*Gilkerson, Ida M	Literature and Science	Marengo.
Huff, Bertie	Literature and Science	Champaign.
Jaques, Minnie	Literature and Science	Urbana.
*Lilly Fannie	Literature and Science	Champaign.
McClain, Mary E	Literature and Science	Urbana.
Merboth, Louisa	Literature and Science	Spring Bay.
Oliver, Bertha R	Literature and Science	LaSalle.
Parminter, Grace E	Literature and Science	Metamora.
Paullin, Estelle	Literature and Science	Atlanta.
Sharp, Emma G	Natural History	East Lynne, Mo.
Ranney, Esther J	Literature and Science	Cazenovia
Wills, Etta C	Literature and Science	Sailor Springs.
Zeller, Josephine M	Literature and Science	Spring Bay.

PREPARATORY CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Allison, William B		Macomb.
Andrews, Eugene	Civil Engineering	Lincoln.
Bailey, Frank A	Civil Engineering	Monmouth.
Barclay, William	Civil Engineering	East Wheatland.

NAME.	COURSE.	RESIDENCE.
Bay, John M	Chemistry	Millersburg.
Brayton, Ira S		Blue Island.
Bridges, Charles	Civil Engineering	Mattoon.
Bryden, William J		Monticello.
Caldwell, Frank W	Chemistry	Cisco.
Cannady, Stephen D	Chemistry	Logan, Mo.
Carr, Alfred N	Literature and Science	Macon,
Castle, John E		Ridge Farm.
Clark, William A	Literature and Science	Rossville.
Conkey, Carl A		Homer.
Cope, Walter L	Agriculture	Salem.
Corwin, Arthur M	Civil Engineering	Racine, Wis.
Craig, Jesse	Architecture	Pulaski, Iowa.
Dickinson, Frank H	Literature and Science	Danvers.
Donlan, Patrick H	Literature and Science	Ruthven, Iowa.
Evarts, John L	Natural History	Yorkville.
Fairchild, James D		Springfield.
Fargusson, Mark	Civil Engineering	Chicago.
Folger, Adolphus		Ridge Farm.
Francis, John R		Dudley.
Funk, Clarence P	Civil Engineering	Plainfield.
Gaines, James E	Mech. Engineering	Middletown.
Gilbert, Franklin M	Mech. Engineering	Bryan, Texas.
Gill, Rudolph Z		Urbana.
Goodrich, Leonard		Champaign.
Goodwin, Phil A	Civil Engineering	Wilmington.
Gwinner, Bennie F	Ancient Languages	Canton, Miss.
Gwinner, Henry	Mech. Engineering	Canton, Miss.
Hankins, Walter A	Architecture	Argenta.
Hart, David S	Mech. Engineering	Paradise.
Haven, S Rush		New Lenox.
Hayes, William K	Civil Engineering	Plattville.
Hillis, George S	Chemistry	Hillsboro.
Hoppin, George B	Literature and Science	White Oak.
Hull, Lucius M	Elective	Godfrey.
Hutchinson, Wm H	Civil Engineering	Rantoul.
Lee, Charles H	Elective	Seneca, Kan.
Lemme, Emil	Architecture	Davenport, Iowa.
Lloyd, William B	Natural History	Arcola.
Nicky, John M	Civil Engineering	Oakley.
McCulloch, Chas S	Mech. Engineering	Champaign.

NAME.	COURSE.	RESIDENCE.
Mack, Roscoe D	Mech. Engineering	Paris.
Marshall, X S	Elective	Centralia.
Morehouse, Henry C	Agriculture	Summit.
Munns, Andrew C		Parkville.
O'Neal, Robert	Architecture	Carrollton, Ky.
Paxton, Charles M	Agriculture	Kansas.
Pease, Chester I		Marion.
Plowman, William L	Literature and Science	Virden.
Powers, Mark	Natural History.	Fayetteville, Mo.
Prunk, Frank H	Mech. Engineering	Indianapolis, Ind.
Scott, Archie R	Literature and Science	Champaign.
Simons, Burton R		Oswego.
Smith, Edward A	Chemistry	Morrison.
Smith, Robert E	Agriculture	Athens, Ala.
Sperry, Eldridge H		Champaign.
Sperry, Fred B	Chemistry	Anna.
Stewart, Walter	Chemistry	Wilmington.
Strong, Joe	Agriculture	Keithsburg.
Richardson, Fred S	Mech. Engineering	Janesville, Wis.
Robertson, Henry W	Ancient Languages	Compromise.
Rogan, John E		Carlyle.
Tatarian, Bedros	Agriculture	Constantinople, Turkey.
Taylor, Horace	Elective	Nokomis.
Trowe, John F		Dwight.
Tunnell, Frank W	Chemistry	Edwardsville.
Vail, James E	Ancient Languages	Industry.
Wallace, Edward H		Mt. Jackson, Pa.
Webster, Adelbert W	Literature and Science	Poplar Grove.
Whitcomb, Carrol S	Agriculture	Chicago.
Wilbanks, Frank		Mt. Vernon.
Wilhoit, Pope	Elective	Kansas.
Wilkinson, Dan'l L	Literature and Science	Edgar.
Willard, Reuel		Wilmington.
Young, William F		Oswego.
Zimmerman, H	Agriculture	Bunker Hill.

LADIES.

NAME.	COURSE.	RESIDENCE.
Armstrong, Jennie R	Literature and Science	Tuscola.
Brayton, Minnie E		Blue Island.
Bullard, Julia	Literature and Science	Mechanicsburg.
Burr, Fannie C	Literature and Science	Philo.

NAME	COURSE.	RESIDENCE.
Fisher, Fannie F		Ridge Farm.
Fisher, Virginia B	Literature and Science	Ridge Farm.
Folger, Ida	Literature and Science	Ridge Farm.
George, Alice A	Literature and Science	Crescent City.
Hall, Ida	Elective	Metamora.
Hammett, Laura	Literature and Science	Camargo.
Hill, Addie M		Paxton.
Neagle, Julia A		Ivesdale.
Neely, Kate	Literature and Science	DuQuoin.
Moss, Lucretia O		Champaign.
Oliver, Florence M	Literature and Science	LaSalle.
Page, Luella E		Allerton, Iowa.
Paxton, Anna	Elective	Kansas.
Paxton, Lillian	Elective	Kansas.
Shepherd, Jessie A	Literature and Science	Hennepin.
Willard, Adele J	Literature and Science	Plainfield.

SPECIAL STUDENTS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Bosworth, Walter E	Agriculture	Marseilles.
Earle, Frank S	Botany	Cobden.
Grimm, Edgar	Agriculture	Corvallis, Oregon.
Johnston, Charles	Agriculture	Dewey.
Lester, Ballard P	Agriculture	Penfield.
Mathers, Eugene	Agriculture	Mason City.
Page, Charles A	Horticulture	Metamora.
Peddicord, Edwin S	Agriculture	Marseilles.

LADIES.

NAME.	COURSE.	RESIDENCE.
Castle, Clara A	Art and Design	Ridge Farm.
Merritt, Jennie	Art and Design	Champaign.
Moore, Lutie T	Art and Design	Champaign.
Morris, Ida M	Art and Design	Pesotum.
Shattuck, Mrs S W	Art and Design	Champaign.
Wallace, Mary D A	Art and Design	Champaign.

Summary.

BY CLASSES.	GENTLEMEN.	LADIES.	TOTAL.
Resident Graduates	4	1	5
Seniors	28	13	41
Juniors	52	17	69
Sophomores	53	18	71
Freshmen	64	18	82
Preparatory	80	20	100
Special	8	6	14
Total	289	93	382

BY COURSES.	GENTLEMEN.	LADIES.	TOTAL.
Agriculture	28		28
Mechanical Engineering	39		39
Civil Engineering	52		52
Mining Engineering	3		3
Architecture	18		18
Chemistry	40		40
Natural History	7	4	11
Art and Design		7	7
English and Modern Languages	48	69	117
Ancient Languages	13	2	15
Elective	14	4	18
Not Specified	23	6	29
	285	92	377
Resident Graduates	4	1	5
Total	289	93	382

Illinois Industrial University.

HISTORY.

THE Illinois Industrial University, the State University of Illinois, had its origin in a movement for the higher education of the industrial classes, begun in 1851, and resulting in the congressional grant of lands for this purpose, made to the several States in 1862, and amounting in this state to 480,000 acres. The University was chartered in February, 1867, and opened to students in March, 1868. In addition to the endowment from the land grant, over $400,000 were donated by Champaign county in bonds, buildings, and farms. The State also has made large appropriations for fitting up and stocking the farms, for library and apparatus, and for buildings, including the large Main building erected in 1872 and 1873, the Mechanical Building and Drill Hall, and the Chemical Laboratory. Successive Colleges and schools have been added as required, until four Colleges, including ten distinct Schools, have been organized.

The whole number matriculated as students since the opening is 1779. The number graduated from the several Colleges, including the class of 1882, is 336. In 1871 the University was opened for lady students, on the same terms as to gentlemen. In 1874 a Fine Art Gallery was established. In 1876 the University received from the Centennial Exposition at Philadelphia, three diplomas and a medal. In 1877 its exhibit at the Paris International Exposition gained a diploma and the gold medal.

LOCATION.

The University has a beautiful and healthful situation on the high grounds between the cities of Champaign and Urbana, and within the corporate limits of the latter. It is one hundred and twenty-eight miles south from Chicago, at the junction of the Illinois Central, the Indiana, Bloomington and Western, and the Wabash railways. The county is a

region of beautiful rolling prairies, with large belts of timber along the streams, and is one of the richest farming districts in the State.

BUILDINGS AND GROUNDS.

The domain occupied by the University and its several departments, embraces about 623 acres, including stock farm, experimental farm, orchards, nurseries, forest plantations, arboretum, ornamental grounds, and military parade ground.

The University buildings, fifteen in number, include a grand Main Building, a spacious Mechanical Building and Drill Hall, a large Chemical Laboratory, a Veterinary Hall, a small Astronomical Observatory, two dormitories, three dwellings, two large barns, and a green-house.

The Main University Building, designed wholly for public uses, occupies three sides of a quadrangle, the frontage being 214 feet and upon the wings 122 feet. The Library wing is fire-proof and contains in spacious halls the Museum of Natural History, the Library, the Art Gallery, and the Museum of Engineering. The Chapel wing contains the Chapel, the Physical Laboratory and Lecture Room, and rooms for draughting and drawing. In the main front are convenient class-rooms; on the upper floor, elegant halls for literary societies. The building is warmed by steam from a boiler house which forms the fourth side of the quadrangle in the rear.

The Mechanical Building and Drill Hall is of brick, 126 feet in length, and 88 feet in width. It contains a boiler, forge and tank room; a Machine Shop, furnished for practical use with a steam engine, lathes and other machinery; pattern and finishing shops, shops for carpentry and cabinet work, furnished with wood-working machinery; paint and draughting-rooms, and rooms for models, storage, etc. In the second story is the large Drill Hall, 124 by 80 feet, sufficient for the evolutions of a company of infantry or a section of a battery of field artillery. It is also supplied with gymnastic apparatus. One of the towers contains an armoror's shop and an artillery room; the other contains a printing office and editor's room.

The Chemical Building, erected in 1878, at a cost, including furniture, of $40,000, contains five laboratories, and is one of the best and largest in the United States.

PROPERTY AND FUNDS.

Besides its lands, buildings, furniture, library, etc., valued at $400,000, the University owns 25,000 acres of well selected lands in Minnesota

and Nebraska. It has also endowment funds invested in State and county bonds amounting to $319,000, besides other property and avails valued at $33,000.

MUSEUM AND COLLECTIONS.

The Museum already contains collections illustrating the several departments of science, unusually rich and equalled at few, if any, of the colleges of the west. Among these collections are included the following:

Fossils.—Casts of the most remarkable fossils hitherto discovered in the various geological formations, illustrating the general progress of life in the molluscs, fishes, reptiles, and mammals, from the oldest palæozoic time to the present. A fine set of fossils obtained from Germany, with collections of fossils of this and other States, illustrates the different formations, and is suitably arranged for practical study. There is a good collection of foot-prints from the Connecticut sand-stones.

Conchology.—A large collection of shells fully illustrating the principles of conchology as to growth, form, habits, etc., representing all the classes and orders by their typical genera and species. The fluviatile shells of the State are fully exhibited, while the specimens of marine and land shells are also abundant.

Osteology.—The skeletons include mounted specimens of all the orders of birds and mammals, with the single exception of the order of proboscidea; also typical representatives of the amphibious reptiles and of fish.

The Mammals comprise an unusually large and complete collection of the ruminants of our country, including male and female elk, bison, deer, antelope, etc. Also some of the larger carnivors and fur bearing animals, and numerous rodents.

Ornithology.—The collection of stuffed birds is large, including representatives of all the orders, and embracing most of the families of North America, as also a number of characteristic tropical forms.

Entomology.—The collection includes about three thousand species of insects, illustrating all the orders and giving types of numerous families.

Botany.—The herbarium contains about one thousand species of plants indigenous to Illinois, including nearly complete sets of the grasses and sedges. There are besides many other North American plants and some exotics. A collection of Fungi includes examples of those most injurious to other plants, causing rusts, smuts, moulds, etc. A collection of wood specimens from two hundred species of North American trees, well illustrates the varieties of native wood. The trees and shrubs of Stephenson County, Illinois, are represented by a distinct collection.

Plaster casts represent fruits of many of the leading varieties, as well as interesting specimens of morphology, showing peculiarities of growth, effects of cross fertilization, etc.

Lithology.—This collection embraces the principal kinds of metamorphic and volcanic rocks ; examples of stratification in the limestone and fragmental kinds, with many samples of such rocks as are found most valuable for building purposes.

Mineralogy.—The specimens of minerals show all the groups, and all the important and typical species. All the metals are represented, also many of their most important combinations. Many of the specimens are finely crystallized ; these, with a complete set of imported models, fully illustrate crystallography.

Agricultural.—A large collection of soils from different portions of Illinois, and other States ; many varieties of corn, wheat, and other cereals and seeds ; specimens illustrating the official State Inspection of grains at Chicago, showing the quality of the different grades recognized ; a collection of grains, seeds, nuts, etc., from Brazil ; some hundreds of models of agricultural inventions ; models illustrating modes and materials for drains ; casts of ancient plows ; engravings, lithographs, and photographs of typical animals of noted breeds.

The farms give good illustrations of farm buildings, implements, machinery, modes of culture, and of domestic animals of various classes.

Physics.—Tne Cabinets of the Physical Laboratory contain a collection of apparatus from the most celebrated European and American makers, illustrating the subjects of Mechanics, Pneumatics, Optics, and Electricity. Ample facilities are afforded to students for performing experiments of precision by which the theories of Physical Science may be tested and original work may be done.

A series of standard weights and measures has been received from the office of the Coast and Geodetic Survey of the U. S. Government and may be consulted at the Physical Laboratory.

The Mechanical Laboratory is provided with a steam engine, engine and hand lathes, planer, drill presses, and the requisite hand tools benches, vices, anvils, etc., for pattern-shop, blacksmith-shop, moulding room and bench work. Its cabinets contain several hundred models of elements of mechanism and machines from Schroeder, Riggs, the patent-office, and from the work shops of the University.

Mining Engineering is illustrated by a valuable series of models, obtained from Freiburg, illustrating sections of mines, machinery for

elevating and breaking ores, with furnaces and machinery for metallurgical processes.

ART GALLERY.

The University Art Gallery is one of the largest and finest in the West. It was the gift of citizens of Champaign and Urbana. It occupies a beautiful hall, 61x79 feet, and the large display of Art objects has surprised and delighted all visitors. In sculpture, it embraces thirteen full size casts of celebrated statues, including the Laocoon group, the Venus of Milo, etc., forty statues of reduced size, and a large number of busts, ancient and modern, bas reliefs, etc., making over 400 pieces. It includes also hundreds of large autotypes, photographs, and fine engravings, representing many of the great master-pieces of painting of nearly all the modern schools. Also a gallery of historical portraits, mostly large French lithographs of peculiar fineness, copied from the great national portrait galleries of France. The value of this splendid collection, as a means of education, is already showing itself in the work of the School of Drawing and Design of the University.

Museum of Engineering and Architecture.—A large room is devoted to the gathering of a museum of practical art, the materials for which have been constantly accumulating in the various schools of science. It will contain full lines of illustrations of the work of the shops; models made at the University and purchased abroad; drawings in all departments; patent-office models, etc.; samples of building materials, natural and artificial; with whatever may be secured that will teach or illustrate in this most important phase of University work.

A notable feature of the collections is the gift of Henry Lord Gay, Architect of Chicago. It consists of a model in plaster, and a complete set of drawings, of a competitive design for a monument to be erected in Rome, commemorative of Victor Emanuel, first King of Italy. The monument was to be of white marble, an elaborate gothic structure, beautifully ornamented, and 300 feet high. Its estimated cost was to have been seven and a quarter millions of francs. The design was placed by the art committee second on a list of 289 competitors; but both the first and second were set aside for political reasons. Mr. Gay's generous gift will occupy the place of honor in the Museum of Engineering and Architecture.

LIBRARY.

The Library, selected with reference to the literary and scientific studies required in the several courses, includes over 13,000 volumes, and additions are made every year.

The large library hall, fitted up as a reading room, is open throughout the day for study, reading, and consulting authorities. It is intended that the use of the Library shall largely supplement the class-room instruction in all departments. Constant reference is made in classes to works contained in the Library, and their study is encouraged or required. The reading-room is well provided with American, English, French, and German papers and periodicals, embracing some of the most important publications in science and art. The following periodicals are regularly received :

AGRICULTURAL AND HORTICULTURAL.

Prairie Farmer.
Western Rural.
Country Gentleman.
Breeder's Gazette.
Indiana Farmer.
New England Farmer.
Michigan Farmer.
Farmer and Fruit Grower.
Iowa Homestead.
Agricultural Gazette, *London.*
Gardner's Chronicle, *London.*
American Agriculturist.
Western Agriculturist.
Live Stock Journal.
Horticulturist.
Farmer's Review
Veterinary Journal.

ENGINEERING.

Encyclopedie d'Architecture, *Paris.*
Engineering, *London.*
Builder, *London.*
Skizzen-buch, *Berlin.*
American Engineer.
Transactions American Society of Civil Engineers.
Engineering News.
Engineering and Mining Journal.
Scientific American.
Scientific American Supplement.
Sanitary Engineer.
Van Nostrand's Engineering Magazine
The Workshop.
American Architect.
American Machinist.
Western Manufacturer.
Gazette of Patent Office.

SCIENTIFIC.

Annales des Sciences Naturelles, *Paris.*
Science.
Nature, *London.*
American Naturalist
Grevillea, *London.*
Comptes Rendus, *Paris.*
American Journal of Pharmacy.
The Druggist.
Chemical News, *London.*
Journal of Chemical Society, *London.*
American Journal of Chemistry.
Boston Journal of Chemistry.
Jahrbericht der Chemie, *Giessen.*
Zeitschrift fur An. Chemie.
Berichte der Deutschen Chemischen Gesellschaft, *Berlin.*
Lancet, *London.*
Popular Science Monthly.
American Journal of Mathematics.
American Journal of Science and Art.
Journal of Franklin Institute
Journal de Mathematiques.
Mathematical Quarterly.
Mathematisches Journal.
Monthly Weather Review.

LITERARY AND NEWS.

International Review.
Nineteenth Century.
Edinburg Review.
Contemporary Review.
Fortnightly Review.
North American Review.
Atlantic Monthly.
Century.
Library Journal.
Literary World.
American Journal of Education.
Education.
Legal Adviser.
Revue des Deux Mondes, *Paris.*
Deutsche Rundschau, *Berlin.*
Princeton Review.
United Service Magazine.
Nation.
Congressional Record.
American Protectionist.
Champaign County Gazette.
Champaign County Herald.
Champaign Times.
Musical Record.
Signal.

The exchanges of the *Illini* are also free to the students in the Library.

Aims of the University.

THE University is both State and National in origin. Its aims are defined by the following extracts from the laws of Congress and of the State Legislature :

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

"The Trustees shall have the power to provide the requisite buildings, apparatus, and conveniences, to fix the rates of tuition, to appoint such professors and instructors, and establish and provide for the management of such model farms, model art, and other departments and professorships, as may be required to teach, in the most thorough manner, such branches of learning as are related to agriculture and the mechanic arts, and military tactics, without excluding other scientific and practical studies."—*Act of General Assembly, 1867, Sec. 7.*

In accordance with the two acts above quoted, the University holds, as its principal aim, to offer freely the most thorough instruction which its means will provide, in all the branches of learning useful in the industrial arts, or necessary to "the liberal and practical education of the industrial classes, in the several pursuits and professions in life." It includes in this all useful learning—scientific and classical,—all that belongs to sound and thorough scholarship.

ORGANIZATION OF THE UNIVERSITY.

COLLEGES AND SCHOOLS.

The Institution is a University in the American sense, though differing designedly in the character of some of its Colleges from the older Institutions of this country. It embraces four Colleges, which are sub-

divided into Schools. A School is understood to embrace the course of instruction needful for some one profession or vocation. Schools that are cognate in character and studies, are grouped in the same College. The following are the Colleges and Schools:

I. COLLEGE OF AGRICULTURE.

II. COLLEGE OF ENGINEERING.

School of Mechanical Engineering. School of Architecture.
School of Civil and Mining Engineering.

III. COLLEGE OF NATURAL SCIENCE.

School of Chemistry. School of Natural History.

IV. COLLEGE OF LITERATURE AND SCIENCE.

School of English and Modern Languages.

School of Ancient Languages.

V. ADDITIONAL SCHOOLS.

School of Military Science. School of Art and Design.

Vocal and Instrumental Music, and Elocution are also taught, but not as parts of the regular courses.

CHOICE OF STUDIES.

From the outset, the University has permitted great freedom in the selection of studies. It is, however, necessarily required:—that the student shall be thoroughly prepared to enter and to keep pace with the classes in the chosen studies, and that he shall take these studies in the terms in which they are taught. Candidates for a degree must take the course of study prescribed for that degree.

Each student is expected to have three distinct studies, affording three class exercises each day. On special request, the Faculty may allow less or more.

No change in studies may be made after the beginning of a term without permission of the Faculty.

Due care will be taken to prevent, as far as possible, all abuse of the liberty of choice. Students failing to pass satisfactory examinations in their chosen studies, will not be permitted to remain and take other studies without a vote of the Faculty.

REQUIRED STUDIES.

To secure the diffusion of the sciences relating to the great industries, the State Legislature, in 1873, prescribed that each student should be taught some of those sciences.

The Trustees accordingly require that each student shall take, each term, one study at least from the following list:

Physics, Chemistry, Mineralogy, Physiography, Anatomy and Physiology, Botany, Zoology, Geology, Entomology; Drawing and Designing, Mathematics, Surveying; Elements of Agriculture and Horticulture, Vegetable Physiology, Agricultural Chemistry, Agricultural Engineering and Architecture, Animal Husbandry, Rural Economy, Landscape Gardening, History of Agriculture, Veterinary Science; Architectural Drawing and Designing, Elements of Construction, Graphical Statics, History and Esthetics of Architecture, Estimates, Mining Engineering, Metallurgy, Analytical Mechanics, Geodesy, Principles of Mechanism, Hydraulics, Thermodynamics, Strength of Materials, Prime Movers, Mill Work, Machine Drawing, Roads and Railroads, Construction and Use of Machinery, Modeling and Patterns, Bridges, Stone Work, Astronomy; Military Science, and Political Economy.

EXAMINATIONS FOR ADMISSION.

Examinations of candidates for admission to the University, or any of its departments, are held at the University itself, on the two days previous to the opening of each term. These examinations embrace the following studies:

1. English Grammar, Arithmetic, Geography, and History of the United States, for all the Colleges. These examinations are as thorough as those required for second-grade certificates for teachers in the public schools.

2. Algebra, including equations of second degree and the calculus of radical quantities; Geometry, plain and solid. These are required also for all the Colleges.

3. Physiology, Botany, Natural Philosophy, English Rhetoric Composition. These are required, in addition to the subjects specified in 1 and 2, for candidates for the Colleges of Agriculture, Engineering, and Natural Science.

4 Physiology, Botany, Natural Philosophy, Latin Grammar and Reader. Cæsar, Cicero, Virgil, and Latin Prose Composition, in addition to 1 and 2, for School of English and Modern Languages.

5. Latin (as in 4), Greek Grammar and Reader, four books of Xenophon's Anabasis, and Greek Prose Composition, in addition to the subjects of 1 and 2, for candidates for School of Ancient Languages.

For further information concerning terms of admission, see "*Admission*" under the several Colleges; also "*Preliminary Year.*"

COUNTY SUPERINTENDENT'S CERTIFICATES.

To prevent loss to those who are not prepared to enter the University, but might come, hoping to pass the examinations for admission, the following arrangement has been made:

County Superintendents of Schools will be furnished with questions and instructions for the examination of candidates in the four common branches, Arithmetic, Geography, English Grammar, and History of the United States; applicants who pass creditably will, when they present the Superintendent's certificate to that effect, be admitted to the classes of the Preliminary year.

College of Agriculture.

SPECIAL FACULTY.

THE REGENT.

PROFESSOR MORROW, Dean, | PROFESSOR PRENTICE,
PROFESSOR BURRILL, | PROFESSOR McMURTRIE.

PROFESSOR JILLSON.

ADMISSION.

CANIDATES for admission to the College of Agriculture must be at least fifteen years of age, and must pass satisfactory examinations in the common school branches, and in the studies of the preliminary year. While by law, students may be admitted at fifteen years of age, in general it is much better that they shall be eighteen or twenty. It will be well if candidates shall have pursued other studies besides those required for admission. Tho better the preparation the more profitable the course.

OBJECT OF THE COLLEGE.

The aim of this College is to educate scientific agriculturists and horticulturists. The frequency with which this aim is misunderstood, demands that it shall be fully explained. Many ,who look upon agriculture as consisting merely in the manual work of plowing, planting, cultivating, and harvesting, and in the care of stock, justly ridicule the idea of teaching these arts in a college. The practical farmer who has spent his life in farm labors, laughs at the notion of sending his son to learn these from a set of scientific professors. But all this implies a gross misunderstanding of the real object of agricultural science. It is not simply to teach *how* to plow, but the reason for plowing at all—to teach the composition and nature of soils, the philosophy of plowing, of manures, and the adaptation of the different soils to different crops and cultures. It is not simply to teach *how* to feed, but to show the composition, action, and value of the several kinds of food, and the laws of feeding, fattening, and healthful growth. In short, it is the aim of the true Agricultural College to enable the student to understand thoroughly all that

man can know about soils and seeds, plants and animals, and the influences of light, heat, and moisture on his fields, his crops, and his stock; so that he may both understand the reason of the processes he uses, and may intelligently work for the improvement of those processes. Not "book farming," but a knowledge of the real nature of all true farming —of the great natural laws of the farm and its phenomena—this is the true aim of agricultural education. Agriculture involves a larger number of sciences than any other human employment, and becomes a fit sequence to any collegiate training.

The steady aim of the trustees has been to give the College of Agriculture the largest development practicable, and to meet the full demand for agricultural education, as fast as it shall arise. Agricultural students are especially invited to the University.

Boards of Agriculture, Agricultural and Horticultural Associations, State and County, are invited to co-operate with the University in its efforts to awaken a more general appreciation of the value of education, and to add, by the establishment of scholarships, or other means, to the number of those who avail themselves of its facilities for instruction.

INSTRUCTION.

The instruction unites, as far as possible, theory and practice—theory explaining practice and practice illustrating theory. The technical studies are taught mainly by lectures, with careful readings of standard agricultural books and periodicals, and frequent discussions, oral and written, by the students, of the principles taught. These are also illustrated by demonstrations and observations in the fields, stables, orchards, gardens, plant-houses, etc.

SPECIAL STUDIES.

AGRICULTURE.

Elements of Agriculture.—Outline of the general principles underlying Agriculture in its theory and practice, introductory to the other technical and scientific studies of the course.

Agricultural Engineering and Architecture.—Arrangement of the Farm; its improvement by mechanical means, as drainage and irrigation; its divisions, fences, hedges, etc.; its water supply; the construction of roads; arrangement, planning, and construction of farm buildings; the construction, selection, care, and use of farm implements and machinery.

Animal Husbandry.—Principles of breeding and management of our domestic animals; description of all important breeds and varieties, giving their history and adaptations.

Rural Economy.—Relation of agriculture to other industries and to national prosperity; influences which should determine the class of farming to be adopted; comparisons of special and general systems; uniting of manufacturing with farming; culture of the various farm crops—cereals, grasses, etc.; farm accounts.

History of Agriculture.—Progress and present condition in this and in other countries. Influence of climate, civilization, and legislation in advancing or retarding. Agricultural literature and organizations.

Rural Law.—Business law; Laws especially effecting agriculture—tenures of real estate; road, fence, drainage laws, etc.

HORTICULTURE.

Elements of Horticulture. - The following topics are discussed: Orchard sites, the Age of Trees to Plant, the Season to Plant, How to Plant, What to Plant, the Management of the Soil, Pruning and Care of Trees, Gathering and Preserving Fruit, Diseases and Injuries, the Nursery, Ornamental Trees and Shrubs, Flower Gardens, Vegetable Gardens including Propagating Beds and Houses, the Vineyard and Small Fruits, and Timber Tree Plantations. Students have instruction and practice in grafting, budding, propagation by cuttings, etc. Each student has usually grafted from two hundred to one thousand root-grafts of apples.

Landscape Gardening. - Lectures are given upon the general principles of the art, the history and the styles, the kinds and uses of trees, shrubs, grass, and flowers, the introduction and management of water, the construction and laying out of drives and walks, fences, buildings, etc. The class draw first from copy, then, after the actual study of some locality with its environments, design and draw full plans for its improvement, indicating positions of all prominent objects including the kinds and groups of trees and other plants. These plans, with specifications, are to be deposited in the library of the College. Excursions are made when found practicable for the study of public and private grounds.

The three following studies constitute a year's work designed for those who wish to prepare themselves for specially horticultural pursuits and may be taken as substitutes for agricultural or veterinary studies:

Floriculture.—The study of the kinds, propagation, growth, and care of flowering and other ornamental plants. Each student has practice in propagating by cuttings and otherwise, in potting and shifting, and in care of plants requiring various treatments. Insects and diseases, with the remedies, are thoroughly treated, and the means of securing vigor of

growth and abundance of flowers are studied and illustrated by practice.

Pomology and Forestry.—Much of the first half of the term is spent in the orchards, nurseries, and forests, making observations and collections, and in laboratory work, determining species, varieties, etc. A large collection of apples, pears, grapes, peaches, etc., is made each year, and the chief characteristics of each pointed out. Practice is had in making drawings and plaster casts. Written descriptions of the fruits are carefully made and compared with those given in the books, and systems of analysis and classification are put to practical tests. Students see and perform the skilled operations usually practiced in the propagation and growth of trees. Various methods of pruning and training, especially of grapes, are discussed In the class-room, and illustrated upon the grounds. Students study the injurious insects and fungi which cause or accompany diseases of trees and fruits, and the methods of preventing or diminishing their ravages. The native forests of the vicinity and of the country at large are studied as a foundation for the lessons upon the influence and value of timber and other trees, and their artificial culture. For the latter, the forest tree plantation on the University grounds, and the arboretum, afford practical illustration.

Plant Houses and Management.—This study includes gardening and landscape architecture, the methods of construction, heating and ventilation, and general management, so as to secure, under the different circumstances, the best plant growth. The class-room work consists of lectures and architectural designing and drawing. Illustration and practice are afforded by the plant-houses of the University.

VETERINARY SCIENCE.

This science is taught during the third year. In the first term the Anatomy and Physiology of the Domestic Animals is taught by lectures, demonstrations, and dissections. Post-mortems of healthy and diseased animals are made, so that the student may become practically acquainted with the tissues in health and in disease. The first six weeks of the second term are devoted to the study of Veterinary Medicines, their action and uses; the remainder of the term to lectures on the principles and practice of Veterinary Science. During the third term, practical instruction is given in clinical work, as cases present themselves, at the veterinary infirmary, where animals are treated or operated on free of charge, for the instruction of the students. Lectures are also given on

Veterinary Sanitary Science and the Principles and Practice of Veterinary Surgery.

Students desiring to pursue the study of Veterinary Science, further than is laid down in the agricultural course, will find ample facilities for so doing.

Text Books and Books of Reference.—Williams' Principles and Practice of Veterinary Medicine; Williams' Principles and Practice of Veterinary Surgery; Veterinary Medicines, their Action and Uses, by Finlay Dun; Dobson on the Diseases of the Ox; Fleming's Veterinary Obstetrics; Fleming's Veterinary Sanitary Science; Chauveau's Anatomy of the Domestic Animals; Law's Farmer's Veterinary Adviser.

LABORATORY WORK.

Experiments and Special Investigations by each student. A Thesis is required embodying the results of original observation and research.

For details as to the study of Botany, Chemistry, Zoology, Entomology, Geology, and Meteorolegy, see statements in *College of Natural Science.*

APPARATUS.

The College has for the illustration of practical agriculture, a Stock Farm of 400 acres, provided with a large stock-barn fitted up with stables, pens, yards, etc.; also an Experimental Farm of 180 acres, furnished with all necessary apparatus. It has fine specimens of neat cattle, Short-Horns and Jerseys, and several breeds of swine, to illustrate the problems of breeding and feeding. The Experimental Department exhibits field experiments, in the testing of the different varieties and modes of culture of field crops, and in the comparison and treatment of soils. It includes experiments in agriculture and horticulture under the direction of the Professors of Agriculture and of Horticulture, and experiments in feeding animals of different ages and development, upon the various kinds of food. In common with similar departments in the several Agricultural Colleges of the country, it attempts to create positive knowledge towards the development of an agricultural science.

The Barn on the Stock Farm has north and west fronts of 80 feet each. Each limb, or L, is 40 feet wide. It is of the kind known as the side-hill barn. The Barn on the Experimental Farm is of less size, but is fitted up with great convenience, and is supplied with a large wind-mill which furnishes power for grinding feed, and for other purposes.

A Veterinary Hall and Stable has been provided, and a Clinic is held to illustrate the lectures on veterinary science. The department has Dr. Auzoux's celebrated complete model of the horse in 97 pieces, exhibiting 3,000 details of structure; also *papier-mache* models of the foot and teeth of the horse at different ages.

Surveying and Drainage are illustrated by field practice, with instruments and by models. Agricultural Chemistry is pursued in connection with laboratory practice, in the analysis of soils, fertilizers, foods, etc. The College has fine collections of soils, seeds, plants, implements, skeletons of domestic animals, plants, charts, and other apparatus, including a large number of models of agricultural machinery.

Upon the grounds devoted to the use of the College, there are: 1. A very large specimen apple orchard planted in 1869, and containing about 1,000 varieties,—many varieties of pears, cherries, grapes, and small fruits. 2. A nursery of young trees, in which students have regular work in propagation, etc. 3. A forest-tree plantation embracing the most useful kinds of timber. 4. An aboretum in which all hardy indigenous and exotic trees are planted as fast as they can be secured, and which now contains nearly 100 varieties. The ornamental grounds which surround the University building, embrace about twenty acres, and are kept in neat and attractive style. These, with all the adjuncts of trees and flowering shrubs, lawns, beds of flowers and foliage plants, walks of different material and styles of laying out, give illustration to the class-room work in landscape gardening. A green-house, contains a collection of plants of great value for the classes in floriculture and landscape gardening, besides furnishing students with practice in hot-house and green-house management. The library contains the best literature upon these subjects.

The cabinet contains a series of colored plaster-casts of fruits prepared at the University; *models clastigues* of fruits and flowers by Auzoux of Paris; collections of seeds of native and exotic plants; of specimens of native and foreign woods; of beneficial and injurious insects and specimens showing their work; numerous dry and alcoholic specimens and preparations; maps, charts, diagrams, drawings, etc.

The College is well supplied with compound microscopes and apparatus, and students have abundant opportunity to learn their use, and to make practical investigations with them. The herbarium is rich in specimens of useful and noxious plants, including many of the fungous parasites which cause disease to cultivated crops.

AGRICULTURAL COURSE.

Required for the Degree of B. S., in College of Agriculture.

FIRST YEAR.

1. Elements of Agriculture; hemistry; Trigonometry; Shop Practice (optional).
2. Elements of Horticulture; Chemistry; British Authors, or Free Hand Drawing.
3. Economic Entomology; Chemistry; Rhetoric.

SECOND YEAR.

1. Chemistry and Laboratory Practice; Botany; German.
2. Agricultural Chemistry (Soils and Plants); Zoology or Botany; German.
3. Agricultural Chemistry; (Tillage, Fertilizers, Foods); Vegetable Physiology; German.

THIRD YEAR..

1. Agricultural Engineering and Architecture; Animal Anatomy and Physiology; German.
2. Animal Husbandry; Veterinary Science; Veterinary Materia Medica. (optional extra); Physics or Geology.
3. Landscape Gardening; Veterinary Science; Physics or Geology.

FOURTH YEAR.

1. Physiography; Mental Science; History of Civilization.
2. Rural Economy; Constitutional History; Logic.
3. History of Agriculture and Rural Law; Political Economy; Laboratory Work.

N. B.—Students in Horticulture will take the special branches in Horticulture described on pages 32 and 33.

FARMER'S COURSE.

Students who can not give the time necessary for the full course, and yet desire to better fit themselves to be successful farmers, may give exclusive attention to the technical Agricultural studies, including Veterinary Science, and complete these in one year.

The studies of the second, or winter term of this course, are arranged so as to be profitably studied by those who can be in attendance only during that term.

Students will be admitted to this course on passing a satisfactory examination in the common school branches, but they will receive greater benefit from it if they have made better preparation, especially if they have a good knowledge of Botany and Chemistry. They should not be less than eighteen years of age.

The studies are taught in the following order:

1. Elements of Agriculture; Agricultural Engineering and Architecture; Animal Anatomy and Physiology; Shop Practice.
2. Animal Husbandry; Rural Economy; Veterinary Science.
3. History of Agriculture and Rural Law; Veterinary Science; Economie Entomology or Landscape Gardening.

College of Engineering.

SPECIAL FACULTY.

THE REGENT.

PROFESSOR RICKER, Dean,
PROFESSOR SHATTUCK,
E. A. KIMBALL,

PROFESSOR BAKER,
PROFESSOR C. H. PEABODY.
J. SONDERICKER.

SCHOOLS.

MECHANICAL ENGINEERING, ARCHITECTURE,

CIVIL AND MINING ENGINEERING.

ADMISSION.

APPLICANTS should be at least eighteen years of age. None are admitted under fifteen. The requirements for admission embrace the common school branches and the studies of the preliminary year. The examinations in Mathematics are especially thorough.

Those who make further preparations than that required before entering, can make their course more extensive and profitable. The following suggestions are offered to such as wish to make thorough work:

Either French or German are studied during two years; some preparation in Latin will be of great assistance in these languages. The engineer and architect should be adepts in the various departments of drawing, and some previous study of this branch will be of great advantage. "Warren's Draughting Instruments" may be used as a textbook, and the drawings made on smooth paper, eight by ten inches.

STUDIES PURSUED BY ALL ENGINEERING STUDENTS.

The subjects common to all the schools in the College of Engineering will be described first; the topics peculiar to each will be noticed under their specific names.

PURE MATHEMATICS, FIRST YEAR.

Trigonometry.—Plain and spherical. Fundamental relations between the trigonometrscal functions of an angle or arc; relations between the functions of different angles or arcs; construction and use of tables; solution of triangles; projection of spherical triangles; angles as functions of sides and sides as functions of angles; general formulas; applications.

Analytical Geometry.—The point and right line in a plane; conic sections, their equations and properties; the tangent and subtangent, normal and subnormal, pole and polar, supplementary chords, conjugate diameters, etc. Discussion of the general equation of the second degree containing two variables.

Advanced Algebra.—Functions and their notation; series and the theory of limits; imaginary quantities; general theory of equation.

PURE MATHEMATICS, SECOND YEAR.

Differential Calculus.—Rules for the differentiation of functions of a single variable; successive differentiation; development of functions; maxima and minima of functions of a single variable; differentials of an arc, plane, area, surface, and volume of revolution; elementary discussion of higher plane curves; the spirals, logarithmic curve, trochoid, etc.; algebraic curves.

Integral Calculus.—Integration of elementary forms and rational fractions; rectification of plane curves; quadrature of plane areas and surfaces of revolution; cubature of solids of revolution.

Advanced Analytical Geometry. –Loci in space; the point, right line, plane, and surface of the second order.

Advanced Calculus.—Development of the second state of functions of any number of variables; differential equations; maxima and minima of functions of two or more variables; construction and discussion of curves and surfaces; integration of irrational and transcendental differentials and of differential equations of the higher orders and degrees; applications; elements of elliptic integrals.

PHYSICS.

The course of Physics embraces the kinds of work following:

1. Recitations, five exercises a week, in which a text book is used as a guide.

2. Experiments in Physical Laboratory one day each week, in which the student uses the instruments in testing the principles taught.

3. Illustrated experiments once each week, in which the more costly apparatus is used before the whole class, in such experiments as are difficult to perform, and which are most effective when prepared for an audience.

4. Higher physical experiments by advanced classes, consisting either of researches, or of reviews of careful and elaborate experiments previously worked up by others.

The department of Physics is provided with illustrative apparatus for use in the lecture-room, and with an extensive Physical Laboratory. The collection of instruments embraces acoustic apparatus from R. Koenig, of Paris; apparatus for heat and molecular physics from J. Salleron, of Paris; for light, optics and electricity from Stoehrer of Leipsic, and Browning and Newton of London; pneumatic and electrical apparatus from E. S. Ritchie of Boston; and a large number of pieces prepared at the mechanical shops of the University. It includes, also, Browning's electric lamp; and from Eliot Bros., London, resistance coils, galvanometers, etc., for higher researches in electricity.

DRAWING.

Projection Drawing.—Use of instruments in applying the elements of descriptive geometry; use of water colors; isometrical drawing; shades and shadows; perspective; drawing of machines, bridges, roofs, etc., finished by line shading, tints, and colors.

Free Hand Drawing.—Outline sketches; drawing from casts; sketches of machines, etc.

Lettering.—Plain and ornamented alphabets; titles and title-pages; round and stump writing.

Descriptive Geometry.—Problems on the point, right-line and plane; warped surface; perspective; shades and shadows; practical problems.

APPLIED MATHEMATICS.

Analytical Mechanics.—Polygon of forces; equations of equilibrium of moments; center of gravity; moment of inertia; acceleration, work, momentum, impact; motion of free particles; central forces; constrained motion.

Strength of Materials.—Elasticity; safe limits; shearing stress; flexure and strength of beams and columns; practical formulas.

Hydraulics.—Amount and center of pressure upon submerged surfaces; flow of liquids through orifices, weirs, pipes, and channels; distribution of water in cities. Forms and arrangement of orifices for fountains.

REGULATION PAPER.

The following sizes and qualities of paper will be required in all the College exercises.

For manuscripts and unimportant drawings, a heavy flat-cap paper.

For ordinary drawings, not colored, a heavy, first-quality, smooth drawing paper. For drawings finished in colors, the best Whatman's paper. For topographical and right line drawings, and lettering, the best three-ply Bristol board. For problems, exercises, lecture notes, theses, and other manuscripts, and for geometrical projection, topographical, railroad, typographical, and construction drawings, paper 8x11½ inches, the size of the plate being 8x10, with 1½ added for binding. If Bristol board is used it must be cut 8x10 inches, and the binding margin hinged on with muslin.

THESES.

In all the schools in this College a thesis is required as a condition of graduation. It must be an original composition of suitable length, upon a subject appropriate to the school, and approved by the Professor in charge. It must be illustrated with such photographs, drawings, and sketches as may be needed, and embellished with a title page neatly lettered with India ink or colors. It must be upon regulation paper and securely bound. It will be prepared during the latter part of the fourth year and presented at the close of the course, after which it will be deposited in the library of the University.

CONTRIBUTIONS.

Our friends and students are invited to send us specimens of material and manufactures, and drawings, models, or photographs of machinery, bridges and other engineering and architectural works. Finished and detailed working drawings, perhaps otherwise useless, may be of great value for instruction. Illustrated circulars and price lists of manufacturing firms are desired. Contributions will be labeled with donors' names, and placed in the Museum of Engineering and Architecture, for the inspection of students and the illustration of lectures.

SCHOOL OF MECHANICAL ENGINEERING.

OBJECT OF THE SCHOOL.

This school seeks to prepare students for the profession of Mechanical Engineering. It aims to fit them to invent, design, construct, and manage machinery for any branch of manufactures. The state needs

men who to a thorough knowledge of the principles of machinery and of the various motors, add the practical skill necessary to design and construct the machines by which these motors are made to do work.

INSTRUCTION.

The instruction, while severely scientific, is thoroughly practical. It aims at a clear understanding and mastery of all mechanical principles and devices. Practice in the mechanical Laboratory, is counted as one of the studies of the course.

In *principles* instruction is imparted by lectures, illustrated plates, and by text books. Examples are given showing the application of the theories and principles taught. Experiments in the testing of machines and motors are undertaken by the student.

In *practice* elementary forms are produced and projects are executed, in which the student constructs machines, or parts thereof, of his own designing, and from his own working drawings.

In *designing* the student begins with elements, and proceeds with progressive exercises till he is able to design and represent complete machines.

MECHANICAL ART AND DESIGN.

An elementary course of shop practice has been carefully arranged, to familiarize the student with the forms of the parts of machines, and the mode of producing them. He is made familiar with all the ordinary cutting tools for iron or wood; with the form and condition for most effective work; with the machines and appliances by which they are put in action, and the instruments by which desired dimensions of product are obtained. This practice is obtained in the Mechanical Laboratory, and represents four different shops, viz:

1—PATTERN MAKING.
2—BLACKSMITHING.
3—BENCH WORK FOR IRON.
4—MACHINE TOOL WORK FOR IRON.

In the 1st, the practice consists in planing, turning, chiseling, etc., in producing true surfaces in various forms in wood, and also in combining pieces by glue joint, etc., preliminary to correct pattern making. Patterns are finally made, from which are cast pieces in iron, brass, etc., to be worked in the subsequent shops.

In the 2d, the student uses the forge and performs the various elementary operations, such as drawing, upsetting, bending, welding, etc.

In the 3d, there is first a course of free-hand bench work, the cold-

chisel and file being the only tools. After the hand and eye are sufficiently trained, fitting is begun, and the square, bevel, rule, compasses, and other auxiliary bench tools are used. Pieces are then fitted together by the file, with surfaces carefully finished.

In the 4th shop the ordinary machine tools of the machine shop are used. The first practice employs these machines with their cutting tools or bits, in common operations, such as turning cylinders, discs, grooves, and fillets; boring, drilling, hand-turning, milling, planing, etc. Following this is a course of practice in fitting and finishing, in which calipers, rules, etc., are introduced, and many of the various fittings employed in machinery are produced.

Lectures are given in which the most favorable forms and manipulations of cutting tools and auxiliary appliances are explained.

Previous to the shop work, drawings of the pieces are made by the student and the exact thing to be done is indicated; thus mistakes are avoided and practice facilitated.

The designing of such machine elements as pulleys, journal boxes, cranks, stuffing boxes, etc., cultivates a knowledge of proportion, and of its proper representation on paper.

This course of elementary practice fits the student for the advanced shop practice in designing and construction of complete machines undertaken later in the course.

TECHNICAL STUDIES.

Kinematics and Principles of Mechanism.—Relative motion of points in a system of connected pieces; motion independent of force; velocity ratio; investigation of motion of elementary parts of machines, as friction and non-circular wheels in rolling contact, cams and curves in sliding contact gear teeth; gearing chains; escapements; link work.

Prime Movers.—The theory and useful effects of turbine water-wheels and best form of the parts for high efficiency. Other water-wheels and wind-wheels. Application of thermodyamics in the study of heat engines. Relative economy of different engines.

Mill-work and Machinery.—Trains of mechanism, studied with reference to their resistence and efficiency; best forms for transmission of power for short or great distances; forms of the parts for securing desired results in power and velocity; elastic and ultimate strength of parts.

Machine Drawing.—Working drawings of original designs; finishing in water colors, and in line shading; details for shop use according to the practice of leading manufacturers.

PROJECTS AND PRACTICE.

The shop practice of the first year has already been described. The second year practice will have for its object the production of some model or machine. The students, under the immediate direction of the teachers, carefully determine the dimensions and shapes best suited for the parts of some machine, produce them in neat and accurate working drawings, and make tracings for shop use. No student will commence his advanced shop practice without working drawings. The designs are such as require execution in iron, brass, and wood, for the purpose of giving variety of practice. The student is required to make the patterns and castings, finish the parts, and put them together in accordance with the working drawings and the required standard of workmanship. This acquaints him with the manner in which the mechanical engineer carries his designs into execution, and teaches him to so shape, proportion, and dispose the parts of a machine as to secure the greatest economy of construction and durability in use. The practice of the third year will include the careful construction of mechanical movements, strictly in accordance with the theoretical determination of the form of the parts.

Besides these practical exercises, students of sufficient skill may be employed in the commercial work which is undertaken by the shop. For this work they receive compensation. This work includes all kinds of machine building and repairing, and will serve to extend and confirm the practical experience of the student.

Experiments and Practical Problems.—Experiments in the testing of prime movers and other machines, are undertaken by each student. They take indicator diagrams from the engine of the mechanical laboratory and in factories in the adjoining towns, and determine from them the power developed with different degrees of expansion, and the possible defects of valve movement in distribution of steam.

APPARATUS.

This school is provided with plates and a cabinet of models illustrating mechanical movements and elementary combinations of mechanism. This collection is rapidly increasing by our own manufacture, and by purchase from abroad. It includes many of Riggs' models, and others from the celebrated manufactory of J. Schrœder, of Darmstadt, Germany. About two hundred valuable models from the United States Patent Office are also included in the cabinet.

The State has provided a large Mechanical Laboratory and Workshop furnished with complete sets of tools, benches, vises, and forges.

STUDIES.

The studies are given by the year and term in the tabular view of the course. The order there indicated should be closely followed, that the student may avoid interference of his hours of recitation.

MECHANICAL ENGINEERING COURSE.

Required for the Degree of B. S. in School of Mechanical Engineering.

FIRST YEAR.

1. Trigonometry; Projection Drawing; Shop Practice; French or German.
2. Analytieal Geometry; Descriptive Geometry and Lettering; Shop Practice; French or German.
3. Advanced Algebra; Free Hand Drawing; Shop Practice; French or German.

SECOND YEAR.

1. Calculus; Designing and Construction of Machines; German or French.
2. Advanced Analytical Geometry; Designing and Construction of Machines; German or French.
3. Advanced Calculus; Astronomy; German or French.

THIRD YEAR.

1. Mechanism and Mechanical Laboratory; Advanced Descriptive Geometry; Chemistry
2. Analytical Mechanics; Chemistry and Laboratory Practice; Physics.
3. Analytical Mechanics; Modern History; Physics.

FOURTH YEAR.

1. Prime Movers; Resistance of Materials and Hydraulics; Mental Science.
2. Prime Movers; Construction Drawing; Constitutional History.
3. Mill Work; Designing and Laboratory Practice; Political Economy.

In this course the student will take two years of French or German, but not one year of each.

SCHOOL OF CIVIL ENGINEERING.

OBJECT OF THE SCHOOL.

The school is designed to furnish a course of theoretical instruction, accompanied and illustrated by a large amount of practice, which will enable the student to enter intelligently upon the various and important duties of the civil engineer.

INSTRUCTION.

The student should lay a broad foundation in general culture, which

will enable him to pursue his professional studies with greater ease and advantage. With this view, the subjects peculiar to civil engineering are not introduced until the second year.

The instruction is given by lectures, text books and reading, to which are added numerous problems and practical exercises, as serving best to completely explain subjects and fix them in the mind. Models and instruments are continually used, both in lectures and by the students themselves.

COURSE OF STUDIES.

The complete course occupies four years. The studies of the first three years will prepare students for undertaking many engineering operations, such as making land and topographical surveys, building railroads, canals, embankments, etc. The fourth year is intended to fit them for higher engineering operations, such as making geodetic surveys building arches, trussed bridges, and supporting frames of all kinds.

The order of studies as given by the year and term in the tabular view of the course, should be closely followed, so that the student may avoid interference of hours of recitation and because the studies are there given in that order which best meets the preparation of the student.

TECHNICAL STUDIES.

Astronomy—Descriptive Astronomy is given with a text book. The equatorial telescope is in constant use during favorable weather. Practical astronomy is given by lectures and practical work with the alt-azimuth instrument, the astronomical transit, the sextant, and the engineer's transit adapted to astronomical work, and by astronomical calculations. It includes the instruments and their adjustment, the determination of time, latitude, longitude, and azimuth.

Bridges—Calculations of stresses in the various forms of bridge-trusses, by algebraic and graphical methods, consideration being given to weights of bridge and train, and force of wind; designing trusses, and proportioning sections.

Geodesy—Spirit, barometrical, and trigonometrical leveling; base lines, stations, and triangulation; parallels and meridians; projection of maps.

Land Surveying—Areas and distances, by chain, compass, and plane table; omissions and corrections; metrical system; methods of U. S. public land surveys; magnetic variation; determination of true meridian.

Rail-road Surveying—Economic location; curves and grades, and their inter-adjustment; earthwork; curvature and elevation of rail; easement curves; turnouts; crossings; maintenance of way.

Stone Work—Stone, brick, lime, mortar, cement; foundations; retaining walls; arches, etc.

Topography—Use of stadia, plane-table, and level; contours; soundings. Sketching, mapping, conventional signs; city and county maps.

Theory of Engineering Instruments—Examination of workmanship and design; testing instrument maker's adjustments; engineer's adjustments, determination of areas with transit; inaccessible and air line distances; profiles; heights and distances with stadia; measurement of angles with sextant, etc.

PRACTICE.

In the fall term of the second year, the class will solve numerous problems in distances, areas, etc., using the chain, compass, and plane-table. During the winter term the student will have practice with all the engineering instruments, and solve problems with the transit, stadia, level, and sextant. In the spring term an accurate topographical survey of a locality is made by the class, in which the stadia and plane-table are used as in the United States surveys.

In the fall term of the third year the class will execute a project in railroad engineering which will consist of preliminary surveys, location, staking out, drawings, computations of earthwork, etc. The preliminary survey will consist in an examination of the locality, and in running tangent lines, with leveling and topographical sketching. The location will consist in running the line over the route decided upon, with all the necessary measurements and calculations for establishing the grade, setting slope stakes, etc. The drawings will include alignment, profile, plans, etc.

A project in geodesy or higher engineering, will be executed during the fall term of the senior year. During this term the students have exercises in practical astronomy.

APPARATUS.

For Field Practice—The school is well provided with the instruments necessary for the different branches of engineering field practice, which includes chains, tapes, compasses, plane-tables, stadias, transits, levels, barometer for barometrical leveling, base rods and comparing apparatus, sextants, engineer's transits arranged for astronomical observations, and an astronomical observatory, which is provided with an equatorial telescope, an astronomical transit, with an attachment for zenith telescope work, a chronometer, and a set of meteorological instruments.

A portable altitude and azimuth instrument of the latest and best form, from the celebrated makers, Troughton & Simms, of London, is used for instruction in Geodesy and Practical Astronomy. It is read by micrometer microscopes to single seconds, both of altitude and of azimuth.

To facilitate practice in trigonometrical and land surveying, an area has been specially prepared in which the difficulties of plane surveying are presented to the beginner as he is able to meet them, and where he is taught practical methods of overcoming them.

For the Lecture Room—The school has numerous models for illustrating its specialties, including descriptive geometry and astronomy; models of bridges, roofs, joints, and connections; a large collection of drawings, photographs, and photo-lithographs of bridges, roofs, and engineering structures; it has access to the Museum of Engineering and Architecture, which contains models illustrating wood, stone, and metal construction and a complete set of lithographs of the lectures and drawings used in the government Polytechnic Schools of France.

The library is well supplied with the latest and best periodicals and books upon engineering subjects.

CIVIL ENGINEERING COURSE.

Required for Degree of B. S. in School of Civil Engineering.

FIRST YEAR.

1. Trigonometry; Projection Drawing; French or German.
2. Analytical Geometry; Discriptive Geometry and Lettering; French or German.
3. Advanced Algebra; Free-Hand Drawing; French or German.

SECOND YEAR.

1. Calculus; Land Surveying; French or German.
2. Advanced Analytical Geometry; Theory of Instruments and Surveying; French or German.
3. Advanced Calculus; Topographical Surveying and Drawing; French or German.

THIRD YEAR.

1. Advanced Descriptive Geometry; Chemistry; Railroad Engineering.
2. Analytical Mechanics; Chemistry and Laboratory Practice; Physics.
3. Analytical Mechanics; Astronomy; Physics.

FOURTH YEAR.

1. Resistance of Materials and Hydraulics; Geodesy and Practical Astronomy*; Mental Science.
2. Bridges;* Geology; Constitutional History.
3. Stone Work; Bridge Construction*; Political Economy.

MINING ENGINEERING.

Students in Mining Engineering will take a course in metallurgy (see School of Chemistry) in place of the studies marked with a * as above. The geological and mineralogical cabinets are well furnished with specimens of minerals, ores, and rocks. In the Chemical Laboratory, provision is made for metallurgical and assaying laboratories, with stamp mill, furnaces, and other apparatus required for practical instruction in this department.

In each of these courses the student will take two years of German or French, but not one year of each.

GEOGRAPHICAL POSITION OF THE UNIVERSITY.

The Observatory is has the following position :

Latitude 40° 6' 29".6
Longitude, West of Washington, { 11° 10' 37".5 / 44m. 42.5s.
Elevation above sea-level, 720ft

SCHOOL OF ARCHITECTURE.

OBJECT OF THE SCHOOL.

The school prepares students for the profession of Architecture. For this a thorough knowledge of scientific principles applied to building, ability and correct taste in design, and a technical knowledge of the various building trades with skill in the use of tools, are necessary, and are prominent objects of the course of instruction.

INSTRUCTION.

The course embraces the knowledge of theory and principles, of constructive details and of the ordinary routine work of office practice, so far as these can be taught in a technical school. The technical instruction is given chiefly by lectures, with reference to text-books, and is illustrated by sketches, engravings, photographs, and models; practical applications are immediately made by students.

Drawing is practiced throughout the course, and, as far as possible, original work is executed. Drawing from casts and modeling in clay give facility in sketching details and correct knowledge of form.

In shop practice, joints in carpentry and joinery, cabinet making, turning, metal and stone work, are executed; also models at reduced scale of roof and bridge trusses, ceilings, domes, and stairs.

TECHNICAL STUDIES.

Drawing from Casts—Outline sketches and finished drawings in pencil, crayon, and charcoal.

Elements of Drawing—Lectures; designs for specified problems.

Wood Construction—Frames, roofs, ceilings, domes, heavy frames for mills, etc., roof trusses, stairs, doors, windows, external and internal finish.

Stone Construction—Materials, mortars and cements, walls, foundations, stone cutting, tools and mode of using.

Brick Construction—Materials, bonds, walls, arches, vaults and domes, centerings, etc.

Iron Construction—Uses and strength of cast and wrought iron and steel; usual forms and formulæ for columns, lintels, girders, and beams.

Tinner's Work, Slating, Plastering, and Plumbing.

Sanitary Construction—Scientific principles and practical methods employed in plumbing, water supply, and drainage of buildings.

Architectural Drawing—Finishing in line, ink, sepia, and color; working out from sketches full sets of drawings for building; practical perspective, and shades and shadows.

Architectural Designing—Original sketches for specified projects; one full set of drawings for buildings for specified private or public purpose.

History of Architecture—Daily lectures and recitations on principal styles, their characteristics, construction, and decoration, making especially prominent those ideas applicable in American architecture; tracing of details; designs for special problems.

Esthetics of Architecture—Esthetics applied to architecture and allied arts, so far as yet made practical; laying out of grounds, arrangement of plans, grouping of masses; decoration, internal and external; treatment of floors, walls, ceilings; art objects, furniture, carpets, etc. About twenty-five original designs required for specified objects.

Estimates—Methods of measurement, cost of labor and materials, estimates for specified works.

Agreements and Specifications—Preparation of sets.

Heating and Ventilation—Usual methods, by grates, stoves, furnaces, hot water or steam apparatus; fuels, their properties, heating value, and products. Problems and applications to specified buildings.

Graphical Statics—Elements; equilibrium polygon and its applications; roofs, loads, and wind pressures; type forms of trusses; determination of strains and dimensions of parts; details of joints; construction and use of graphical tables.

SPECIAL EXERCISES.

Specimen plates will be required of each student at the close of each term in drawing, to form a part of his record. All such plates must be on paper of regulation size, except when otherwise directed.

SHOP PRACTICE.

To give a practical knowledge of various kinds of work, three terms are occupied in a course of instruction, which all architectural students are required to pursue unless they have already had equivalent practice.

First Term—Carpentry and Joinery. Planing flat, square, and octagonal prisms and cylinders; framing with single, double, and oblique tenons; splices, straight and scarfed; miter, lap, and gained joints; through and lap dovetails; mouldings, miters, and panels.

Second Term—Turning and cabinet making; cylinders, balusters capitals and bases of columns, vases, rosettes, etc.; fret sawing, plain and ornamental veneering; inlaying, carving, and polishing.

Third Term—Metal work, pattern making, moulding and casting, filing and finishing, drilling, screws, hand and machine turning.

Stone work executed in plaster of Paris; production of plane, ruled, warped, and spherical surfaces; voussoirs of arches, vaults, and domes; decorative carving.

APPARATUS.

A collection of casts donated by the Spanish government, and another of casts of various architectural details from Lehr, of Berlin, belong to the Schools of Architecture and Designing; models of ceilings, roof-trusses and stairs, joints, etc.; Schrœder's models of joints in stone cutting, etc.

The casts, photographs, etc., of the Art Gallery. In the library, many of the best English, German, French, and American architectural works and periodicals.

A large carpenter and cabinet shop, containing full sets of tools, for shop practice; foot lathe with slide rest, chuck, drills, etc.; cross and splitting saws; planer, moulding and tenoning machine, lathe, whittler, fret saw, etc.

BUILDER'S COURSE.

The Trustees allow persons desiring to fit themselves for master builders to take a course of a single year, pursuing such technical studies of the course in architecture as they may be prepared to enter upon with profit, and as will be most advantageous to them.

Candidates for the Builder's course must pass the examinations in the common branches, but need not pass in the studies of the preliminary year unless they shall desire to pursue other studies than those marked in the following schedule. Fee, $10 per term.

BUILDER'S COURSE.

1. Wood Construction; Projection Drawing; Shop Practice (Carpentry and Joinery).
2. Stone, Brick, and Metal Construction; Architectural Drawing; Shop Practice (Stair Building).
3. Graphical Statics; Architectural Designing; Shop Practice (Cabinet Making).

ARCHITECTURAL COURSE.

Required for the Degree of B. S., in School of Architecture.

FIRST YEAR.

1. Trigonometry; Projection Drawing; Shop Practice; French.
2. Analytical Geometry; Descriptive Geometry and Lettering; Shop Practice; French.
3. Calculus; Graphical Statics; Shop Practice; French.

SECOND YEAR.

1. Elements of Wood Construction; Advanced Algebra; Free Hand Drawing and Modeling.
2. Elements of Stone, Brick, and Metal Construction; Advanced Analytical Geometry; Architectural Drawing and Designing.
3. Elements of Sanitary Construction; Advanced Calculus; Water Color Sketching.

THIRD YEAR.

1. Architectural Drawing; Descriptive Geometry and Drawing; Chemistry.
2. History of Architecture; Analytical Mechanics; Physics.
3. History of Architecture; Analytical Mechanics; Physics.

FOURTH YEAR.

1. Esthetics of Architecture; Resistance of Materials and Hydraulics; History of Civilization
2. Architectural Designing; Heating and Ventilation; Constitutional History.
3. Architectural Designing; Estimates, Agreements and Specifications; Political Economy.

College of Natural Science.

SPECIAL FACULTY.

THE REGENT.

PROFESSOR BURRILL, Dean,
PROFESSOR McMURTRIE,
MR. ROLFE,

PROFESSOR PRENTICE,
PROFESSOR JILLSON,
MR. SLAUSON.

SCHOOLS.

SCHOOL OF CHEMISTRY. SCHOOL OF NATURAL HISTORY.

ADMISSION.

CANDIDATES for the College of Natural Science must be at least fifteen years of age, and must pass satisfactory examinations in the common school branches and in the studies of the preliminary year.

Their preparation should be specially good in the scientific studies of the preliminary year. Some practice in the drawing of natural objects will greatly facilitate the student's progress. A knowledge of the Latin language is a good preparation for the mastery of the scientific terms which must be learned in this course.

SCHOOL OF CHEMISTRY.

This School aims to impart such knowledge of Chemistry as will enable the student to apply the principles of the science to the related arts, and as will fit him for original research, or for the business of the druggist, pharmaceutist, and practical chemist.

INSTRUCTION.

The first term of the first year is occupied by text-book instruction and lectures on the elementary principles of chemistry, chemical physics,

and inorganic chemistry. The second term is devoted to laboratory practice in qualitative analysis. In the third term recitations upon organic chemistry alternate with laboratory practice in qualitative analysis. During the next three years each student is expected to work two hours daily in the laboratory five days in the week. In order to graduate, each is required at the close of his course, to make an original investigation, and present a Thesis.

Students who pursue Chemistry as a part of other courses, work at least two consecutive hours daily during such time as their specialties may require.

Text-Books—Roscoe's Chemistry; Fresenius' Analysis; Bolton's Analysis; Sutton's Volumetric Analysis; Bunsen's Gasometry; Rickett's Assaying; Gore's Electro-metallurgy; Johnson's How Crops Grow and How Crops Feed.

Books of Reference—Gmelin's Handbook of Chemistry; Graham-Otto's Ausfuehrliches Lehrbuch der Chemie; Watts' Dictionary of Chemistry; Roscoe and Schorlemmer's Treatise on Chemistry; Armstrong's Miller's Chemistry; Lehmann's Physiological Chemistry; Percy's Metallurgy; Mitchell's Practical Assaying; Wormley's Micro-Chemistry of Poisons; Taylor on Poisons.

Five courses of laboratory work have been arranged as follows:

CHEMICAL COURSE.

FIRST YEAR

First Term.—General theoretical and applied chemistry. Lectures and text-book.

Second Term.—Qualitative analysis begun; tests and separation of the bases and acids.

Third Term—Qualitative analysis completed. Examination of 20 simple salts and 20 compound substances, natural and commercial products. Organic chemistry. Text-book and recitations.

SECOND YEAR.

First Term.—Qualitative analysis of Barium chloride, Magnesium sulphate, Ammonio-ferric sulphate, Potassium-sodium tartrate, Sodium phosphate, calcite, Silver coin, nickel nitrate, Copper arsenite. Duplicate determinations in each case. Preparation of salts

Second Term.—Qualitative analysis of calamite, lime-stone, spathic iron ore, copper pyrites, galena, nickel ore, clay, soil. Preparation of salts.

Third Term.—Volumetric analysis, Preparations of standard solutions, alkalimetry and acidimetry, analysis of Sodium hydroxide, Sodium carbonate, Potasium hydroxide, cream of tartar, hydrochloric, sulphuric, nitric, oxalic, and acetic acids; of iron, copper, silver, zinc, lead. Preparation of salts.

THIRD YEAR.

First Term.—Ultimate organic analysis. Determination of carbon, hydrogen, nitrogen, chlorine, phosphorus and sulphur in organic compounds. Analysis of urine. Preparations.

Second Term.—Assaying in both the dry and wet way of gold, siver, and lead ores. Electro-plating with silver, gold, copper and nickel. Preparations.

Third Term.—Analysis of commercial fertilizers, phosphates, nitrogenous matters, and alkaline salts. Analysis of milk, butter, cheese, corn, wheat, potatoes, fodder. Examination of alcoholic liquors. Preparations.

FOURTH YEAR.

First Term.—Gas Analysis. Calibration of Eudiometers. Analysis of air from beings, atmospheric air, marsh gas, illuminating gas, crude coal gas. Analysis of mineral water. Preparations.

Second Term.—Toxicology. Micro-chemistry of poisons. Testing for mineral and vegetable poisons. Separation from organic mixtures. Preparations.

Third Term.—Original researches. Thesis.

PHARMACEUTICAL COURSE.

FIRST YEAR.

Same as in chemical course throughout the year.

SECOND YEAR.

First Term.—Same as in chemical course.

Second Term.—Quantitative analysis of commercial drugs, white lead, Paris green, Bismuth subnitrate, tartar emetic, Sodium bicarbonate, Potassium nitrate, Ammonium carbonate, cream tartar, commercial hydrochloric, nitric, and sulphuric acids. Preparations.

Third Term.—Same as in chemical course.

THIRD YEAR.

First Term.—Same as in chemical course.

Second Term.—Isolation and quantitative estimation of active proximate principles of vegetable drugs, oils, resins, gums, alkaloids, glucosides, etc. Examination of alcoholic liquors.

Third Term.—Materia Medica. Reading and compounding perscriptions. Preparation and valuation of tinctures and extracts. Examination of commercial organic drugs.

FOURTH YEAR.

First Term.—Analysis of urine, normal and pathological. Mineral waters. Examination of alcoholic liquors.

Second Term.—Toxicology. Micro-chemistry of poisons. Separation of poisons from organic mixtures.

Third Term.—Original researches. Thesis.

COURSE IN AGRICULTURAL CHEMISTRY.

Arranged for students desiring to make a specialty of this branch.

FIRST YEAR.

Same as in Chemical course.

SECOND YEAR.

First Term.—Barium chloride, Magnesium sulphate, Ammonium sulphate, Calcium sulphate, dolomite, bone ash, kainit, feldspar.

Second Term.—Analysis of ashes of plants, soil, mineral waters.

Third Term.—Analysis of commercial fertilizers, manures and minerals used for manures, apatite, phosphates, guanos, nitrates.

THIRD YEAR.

First Term.—Same as in chemical course, omitting analysis of urine. Analysis of corn, wheat, and fodder.

Second Term.—Analysis of milk, butter, cheese. Analysis of sugars by polariscope and by titration. Examination of alcoholic liquors

Third Term.—Original researches.

COURSE IN AGRICULTURAL CHEMISTRY.

Especially arranged for students in the School of Agriculture.

FIRST YEAR.

Same as in Chemical course.

SECOND YEAR.

First Term.—Quantitative analysis of Barium chloride, Ammonium sulphate, Calcium sulphate, dolomite, bone ash, kainit, feldspar.

Second Term.—Analysis of soil, ashes of plants, commercial fertilizers, manures, and materials employed in their production, apatite, phosphates, guanos, animal matters, ammonia salts, nitrates, and marls.

Third Term.—Analysis of corn, wheat, hay, milk, butter, and cheese.

METALLURGICAL COURSE.

FIRST YEAR.

Same as in Chemical course, omitting organic chemistry in third term.

SECOND YEAR.

First Term.—Quantitative Analysis of Barium chloride, Magnesium sulphate, Ammonio-ferric alum, nickel nitrate, silver coin, brass, type metal, solder.

Second Term.—Analysis of calamine, spathic iron ore, magnetic iron ore, copper pyrites, galena, nickel ore, manganese ore, cinnabar, grey antimony.

Third Term.—Analysis of slags from copper, zinc, and lead; iron furnace and mill slags.

THIRD YEAR.

First Term.—Analysis of pig iron, wrought iron, steel, commercial copper, lead, zinc, bullion.

Second Term.—Assaying. Same as in Chemical course.

Third Term.—Analysis of fuels, wood, anthracite and bituminous coals, coke, determination of heating power. Analysis of ashes and furnace cinders; mineral waters.

APPARATUS.

The facilities offered for obtaining a practical knowledge of Chemistry are believed to be unsurpassed by those of any other institution in the West. A large Laboratory Building, 75x120 feet, and four stories in height has been erected, at an expense, including furniture, of $40,000.

The basement contains a furnace-room for assaying and metallurgical operations; a mill-room for storing and crushing ores; and a large room for the manufacture of chemicals and pharmaceutical preparations.

The first story contains a lecture-room capable of seating 200 persons, and a qualitative laboratory, which, when completed, will accommodate 152 students; one hundred and four desks are now fitted, each having an evaporating hood and a wash bowl with constant supply of water. There are a spectroscope table, a blowpipe table for general use, and a store-room stocked with apparatus and chemicals.

The second story, designed for the use of advanced students, has the following apartments: A lecture room with mineralogical cabinet, and furnace models for illustrating lectures on metallurgy; laboratory for students in agricultural chemistry; large laboratory for quantitative analysis, now containing sixty-four desks; a balance room, containing eight chemical balances of the manufacture of Bunge (short beam), Becker & Son, Troemner; a pharmacy, furnished like a drug store, with shelves, drawers, prescription desk, balance, graduates, etc., and containing a full set of drugs and pharmaceutical preparations made in the laboratory by students in pharmacy; a private laboratory for instructors; a gas analysis room, entirely cut off from the system of heating and ventilating to avoid undue fluctuations of temperature, furnished with a table specially constructed, and containing a full set of Bunsen's gasometric apparatus; a coil, battery, mercury, etc; and a store room with apparatus for all kinds of work in quantiative analysis.

The apparatus for general use includes a large platinum retort for the preparation of hydrofluoric acid; a Geissler's mercurial air pump; Hoffman's apparatus for illustrating the composition of compound gases; a Soliel-Scheibler's saccharimeter; an excellent set of arometers; a Hauy's goniometer; a camera with Ross' lenses; a Ruhmkorff's coil; galvanic batteries of Grove and Bunsen and a potassium dichromate battery; a galvanometer; a spectroscope; a large binocular microscope; a Hartnack microscope; a gas combustion furnace for organic analysis, etc.

On the mansard floor ample provision has been made for the study of Photography.

COURSE IN CHEMISTRY.

Required for Degree of B. S. in School of Chemistry.

FIRST YEAR.

1. Chemistry, General and Applied; Trigonometry; American Authors or French.
2. Chemistry and Laboratory Practice; Conic Sections; British Authors or French.
3. Organic Chemistry and Laboratory Practice; Free Hand Drawing; Rhetoric or French.

SECOND YEAR.

1. Chemistry and Laboratory Practice; Physiology or Botany; German.
2. Agricultural Chemistry and Laboratory Practice; Microscopy; German.
3. Agricultural Chemistry and Laboratory Practice; Vegetable Physiology; German.

THIRD YEAR.

1. Laboratory Practice; Mineralogy; German.
2. Laboratory Practice; Physics; German.
3. Laboratory Practice; Physics; German.

FOURTH YEAR.

1. Laboratory Work; Mental Science; Meteorology and Physical Geography.
2. Laboratory Work; Constitutional History; Logic.
3. Laboratory Work; Political Economy; Geology.

Students who are candidates for the degree of B. S. in the school of chemistry must perform the laboratory work as laid down in some one of the prescribed chemical courses.

A term of Photography will be provided for students who desire it; it will consist of text-book work, with recitations and daily practice.

SCHOOL OF NATURAL HISTORY.

The aim of this School is to give a liberal scientific education. It acquaints the student with the latest researches in respect to the structure of the earth and to the origin and distribution of its organic products; teaches him to collect and preserve specimens and arrange them for study, and to conduct original investigations.

SPECIAL STUDIES.

Botany.—Candidates for admission are examined upon Gray's Lessons in Botany, or an equivalent, and are expected to be able to analyze readily common wild flowers. Beginning with the Fall Term of the Sophomore year, systematic and structural Botany is continued by recitations, illustrated lectures and laboratory work upon fresh, dried, and alcoholic

specimens. Students, throughout the course, are required to observe for themselves, and to make notes and drawings of their investigations. A series of these drawings, upon a uniform scale, together with the accompanying descriptions, is deposited in the Laboratory. Each Student provides himself with suitable pencils, drawing pens, and paper, needles in handles, glass slides for mounting objects, and razor for making thin sections.

For the first term, a Manual of Botany (Gray's or Wood's), and Bessey's Botany are required. For the compound miscroscopes and other apparatus furnished by the University,a deposit of three dollars is required, but no charge is made except for damage and material used. The first half of the term is devoted to the study of the natural orders of flowering plants, their geographical distribution, importance, etc., together with a history of a few special plants and their products. During this time, students analyze in the Laboratory flowering plants of the more difficult orders, Compositæ, Gramineæ, etc., especially such as are best obtained in Autumn. During the last half of the term the general morphology of plants, including vegetable anatomy and histology, is studied, practical laboratory work being the basis of the instruction. Tests are made from time to time by the use of disguised vegetable substances.

The special morphology of the great divisions of the vegetable kingdom, their chief characteristics, their classifications, and the identification of species of flowerless plants, constitute the work of the second term. Special attention is given to injurious fungi, from specimens in the herbarium, or grown in the laboratory. Aquaria furnish numerous kinds of fresh water algæ, and the green-houses supply specimens in nearly all the groups studied.

The most important books of reference in the English language are Sachs' Text-Book of Botany, LeMaout and Decaisne's Botany, Gray's Structural Botany, Lindley's Introduction to Botany, Berkley's Cryptogamic Botany and Fungology, Cooke's Fungi and Handbook of British Fungi.

Vegetable Physiology is studied in the third term. The instruction is given by lectures and experimental practice. The work includes:—the food of plants and its absorption and assimilation; fluids, their kinds, uses, causes of movement, transpiration, respiration, etc.; processes, peculiarities, and results of growth; relations and effects of temperature, light, gravitation, etc.; self and cross fertilization, relations of plants and insects; movements, "sleep of plants," tendrils, climbing vines, etc.; origin and development.

Throughout the course, the attempt is made to introduce the students to the literature of the various subjects, and to acquaint them with the authorities for the facts stated.

Microscopy and Fungology.—Students have in this study further practice in the use of the compound microscope, the management of light for particular purposes, the testing of lenses, measurement of magnifying powers and angles of aperture, drawing and photographing objects, the preparation and mounting of material, etc. The application is mainly but not exclusively devoted to vegetable tissues and products.

The special aim is to afford the opportunity of gaining a skillful and rational use of the instrument and an acquaintance with the best methods and processes of preparing and mounting objects. Students provide themselves with slides and covers, needles, forceps, brushes, and razors. Microscopes, section cutters, turn-tables, etc., are furnished by the University.

Anatomy and Physiology.—This subject is presented during the first term of the Junior year. Anatomy is taught by lectures illustrated by skeletons, manikin, models in *papier-mache*, and microscopical preparations. Fresh specimens of various organs are dissected and demonstrated before the class during the term. Physiology is taught by lectures, demonstrations, and recitations from Martin's treatise, The Human Body.

The library contains many of the best books of reference, including works on Anatomy by Gray, Holden, Quain, Ellis, and Morton ; and on Physiology by Flint, Dalton, Kuss, McKendrick, Kirk, Draper, and Marshall.

Zoology is taught during the whole of the Sophomore year from a text-book, and by lectures and practical work in the Laboratory. The text-book used is Packard's. The laboratory work involves the study by dissection of the organs of respiration, circulation, digestion, and locomotion of the higher animals, and of the lower forms as far as may be done with the aid of the microscope.

Geology is taught during the second and third terms of the junior year. LeConte's Geology is used as a text-book. The first term is given to instruction upon the dynamical effects of water in eroding, transporting and depositing materials ; upon the action of heat as manifested in metamorphism, crystalization, consolidation and the production of mountain folds ; upon the nature and material of rocks, veins, dykes, etc., and upon the arrangement and distribution of metals and their ores. The second term is devoted to the consideration of the historic development of the earth as revealed by the study of the animals and plants entombed

therein ; and to a discussion of the elements of time, the system of life, the origin of species, and the antiquity of man.

Osteology and Taxidermy are taught in extra classes.

Physiography, or "the study of nature" is, taught by illustrated lectures during the first term of the Senior year. The subjects considered are the origin of the earth, and its relation to other worlds ; the distribution of land and water; the direction and extent of mountain chains and of ocean currents; the influences which determine the climate of any locality; the systematic distribution of animals and plants; and especially the biological position of man, and his relation to the animate and inanimate worlds around him.

Entomology.—After some introductory lectures upon the most useful literature, and the methods of collecting and preserving specimens, about five weeks are devoted to the special anatomy of insects and the outlines of classifications. During this time students make collections as fast as possible, reserving, however, the determination of species until the last half of the term. During this latter portion of the term, lectures are given upon the descriptions of insects, both injurious and beneficial, methods of exterminating, etc., with laboratory work, including naming of species, noting habits observed, making detailed descriptions, etc. A careful and complete description of some one species, illustrated by drawings of important parts, is made by each student and deposited in the library of the school. The large collection of named species, the ample reference library, the drawings and other illustrations to which students have access, are invaluable aids in the study.

Students are required to provide themselves with collecting nets and bottles, pins, lined boxes, and books for notes.

Mineralogy.—Fourteen weeks; about six weeks are occupied in lectures on crystallography; Nauman's system of symbols is used and explained. A collection of models, comprising the most important forms and combinations in the various systems of crystalization is used for illustration and study. The remainder of the term is occupied by the descriptive determination of minerals, and the use of the blowpipe. A very complete collection of minerals, both American and foreign, has been furnished for this purpose.

APPARATUS.

In *Botany*, the school has a collection of about one thousand species of the plants indigenous to the State of Illinois, including a very nearly complete set of the grasses; a collection of Rocky Mountain and Western Plants; a collection of plants from Dr. Vasey, Botanist of the Depart-

ment of Agriculture, Washington, D. C.; and others obtained by exchange from various parts of the United States. A collection of fungi contains numerous species. The green-houses and out-door plantations furnish a large amount of illustrative material for the classes. Enlarged *papier-mache* models of flowers and fruits, exhibiting structure and development, are in the cabinet.

In *Entomology* numerous species have been contributed by the State Entomologist, who is required by law to deposit his first series of specimens in the cabinet of the University. Local collections and exchanges have increased the number to about three thousand species.

The University has compound microscopes of four different styles from Europe, two by a prominent American maker, and others of which the glasses were made to order in Europe, and the stands were manufactured in the shops of the University.

Zoology.—The Museum is particularly fortunate in its collections in Zoology, possessing, in mounted specimens or skeletons, nearly all the ruminants of North America, and representatives of all orders of mammals, except Proboscidæ; exhibiting fifty species by eighty mounted specimens, with numerous skeletons. In birds it represents all the families of North America, having two hundred and forty species, represented by over four hundred specimens. Its Articulates number more than three thousand specimens; its fishes, four hundred; its radiates, three hundred, and its reptiles nearly one hundred. Sea, land, and fluviatile shells are represented by seventeen hundred species on deposit. The museum also contains nearly one hundred specimens, representing the osteology of vertebrates; a large collection of the nests and eggs of birds; a collection of Indian implements; and a manikin, a dissected eye, and a trachea, in *papier-mache.*

Geology.—The Geological Cabinet contains Prof. Ward's celebrated college series of casts of famous fossils, including the gigantic megatherium nearly eighteen feet in length; the head of the Elephas Ganesa with tusks ten and a half feet long; the Collossochelys Atlas,—a gigantic tortoise with a shell eight feet by six; and the Plesiosaurus Cramptoni twenty-two and a half feet by twelve and a half feet. It also contains a series of tracks in the sandstone of the Connecticut river; a large collection of carboniferous ferns from the celebrated locality at Morris, Ill.; several thousand specimens of fossils from the State Geological Survey, and from purchase in Europe; and a large number of specimens illustrating building materials, dikes, veins, metamorphism, drift bowlders, etc.

Mineralogy.—The Cabinet of Minerals consists of a valuable and extensive collection of the leads of the State, and accompanying mineral; a collection of models, comprising the most important forms, and combinations in the various systems of crystallization; and a very complete collection of minerals, both American and foreign.

COURSE IN SCHOOL OF NATURAL HISTORY.

Required for the Degree of B. S. in School of Natural History.

FIRST YEAR.

1. Chemistry; Free-Hand Drawing, (optional); Trigonometry; French.
2. Chemistry; Free-Hand Drawing, (optional); Conic Sections; French.
3. Chemistry or Free-Hand Drawing; Economic Entomology; Rhetoric; French (extra).

SECOND YEAR.

1. Zoology; Botany; German.
2. Zoology; Botany; German.
3. Zoology; Vegetable Physiology; German.

THIRD YEAR.

1. Anatomy and Physiology; Mineralogy; German; Ancient History (optional, extra).
2. Geology; Physics; German; Mediæval History (optional, extra).
3. Geology; Physics; Modern History.

FOURTH YEAR.

1. Physiography; History of Civilization; Mental Science.
2. Microscopy; Constitutional History; Logic.
3. Political Economy; Astronomy; Natural History Laboratory Work.

In this course three terms of University Latin will be accepted in lieu of three terms of French; and five terms of such Latin for five terms of German.

College of Literature & Science.

SPECIAL FACULTY.

THE REGENT.

PROFESSOR SNYDER, Dean, | PROFESSOR SHATTUCK,
PROFESSOR PICKARD, | PROFESSOR CRAWFORD,

MR. MORSE.

SCHOOLS.

ENGLISH AND MODERN LANGUAGES.
ANCIENT LANGUAGES AND LITERATURE.

ADMISSION.

CANDIDATES for the School of English and Modern Languages will be examined in Algebra, Geometry, Natural Philosophy, Physiology, and Botany, and the Latin mentioned below, but not the Greek. Students not prepared in the Latin for this School will be allowed to make up the required Latin after entering, with the aid of private tutors, but such students will be required to pass an examination in English Composition and Rhetoric.

Candidates for the school of Ancient Languages will be examined in Greek, but not in the elements of Botany, Physiology, or Natural Philosophy. The examinations in Latin and Greek will be as follows:

LATIN.

Latin Grammar, including Prosody, (Harkness', or Allen and Greenough's); Latin prose composition, (forty-four exercises, to the passive voice, in Arnold's Latin Prose Composition, or parts one and two, to page 166, of Harkness' Introduction to Elementary Latin Prose Composition, or an equivalent in Allen and Greenough's Latin Composition); four books of Cæsar's Commentaries, six orations of Cicero, and six books of Æneid. *Real equivalents* for any of the above mentioned works will be accepted.

GREEK.

Greek Grammar (Goodwin's or Hadley's), Greek Prose Composition (Jones' Exercises in Greek Prose Composition or an equivalent in Arnold's), and four books of Xenophon's Anabasis. Writing Greek with the accents will be required. *The Greek Etymology must be thoroughly learned.*

The so-called Continental sounds of the vowels and diphthongs, and pronunciation according to the accent, are recommended.

OBJECT OF THE SCHOOLS.

The object of the Schools in this College is to furnish a sound and liberal education to fit students for the general duties of life, and especially to prepare them for those business pursuits which require a large measure of literary and scientific knowledge and training. They meet the wants of those who wish to prepare themselves for the labors of the press as editors and publishers, for teachers in the higher institutions, or for the transaction of public business.

Students in the Agricultural and other Technical Schools, desiring to educate themselves as teachers, writers, and professors, in their special departments, require a knowledge of the ancient, as well as of the modern languages, to give them a full command of all the instruments and facilities required for the highest proficiency in their studies and proposed work. The University seeks through these Schools to provide for this important part of its mission—the furnishing of teachers to the industrial schools of the country, and investigators and writers for the arts.

INSTRUCTION.

The plan of instruction embraces, besides the ordinary text-book study, lectures and practical exercises in all the departments, including original researches, essays, criticism and other work intended to illustrate the studies pursued, and exercise the student's own powers.

A prominent aim will be to teach the right use of books, and thus prepare the students for self-directed investigation and study, which will extend beyond the curriculum of his school and the period of his graduation. With this view, constant use of the already ample and continually enlarging stores of the Library will be required and encouraged. As a further aid in this direction, members of the advanced classes are usually selected to act as assistant librarians. In this service they are able to obtain much valuable knowledge of various departments of literature and science, of prominent authors, and the extent and scope of their writings. Of special value as an incentive to, and the means of

practice in, English Composition, should be mentioned THE ILLINI, a semi-monthly paper edited and published by the students of the several colleges, each of which is appropriately represented in its columns. A printing office has been provided in the mechanical building, and a press with a requisite supply of type.

The Library is well supplied with works illustrating the several periods of English, American, French, and German Literature, as also those of Ancient Literature. It contains at present over thirteen thousand well selected volumes, and is constantly growing by purchase at home and abroad. Valuable American and Foreign periodicals are received regularly in the Reading Room. (See list on page 26.)

SUBJECTS COMMON TO THE SCHOOLS OF THIS COLLEGE.

MATHEMATICS.

First Term:—Trigonometry, plane and spherical; fundamental relations between the trigonometrical functions of an angle or arc; relations between the functions of different angles or arcs; construction and use of tables; solution of triangles; angles as functions of sides and sides as functions of angles; applications.

Second Term:—Conic Sections. Geometrial method. Definitions and general properties of the ellipse, hyperbola, and parabola; curvature of the conic sections.

Analytical Geometry, elements of. Properties and relations of the point and right line in a plane; of the conic sections.

Third Term:—Advanced Geometry; Modern Geometry. Harmonic proportion and harmonic pencils; anharmonic ratio and involution; poles and polars in relation to a circle; the radial axes and centers of similitude of two circles; the principle of continuity; elementary principles of projection.

Text Books—Coffin's Conic Sections and Analytical Geometry; Mulcahy's Modern Geometry.

PHYSICS AND ASTRONOMY.

For these subjects, see College of Engineering.

NATURAL SCIENCES.

See College of Natural Science.

HISTORY AND SOCIAL SCIENCE.

The historical studies are designed to afford a general view of the history, social organization, and progress of the race. They embrace also the history of the arts and sciences, and of civilization, the principles of civil polity and law, the philosophy of history, and the principles of political economy and constitutional law.

The course occupies six terms in the Junior and Senior years of the University Course.

JUNIOR YEAR.

Ancient History of Greece and Rome, with notices of other nations; Ancient Geography; Mediæval History; Modern History; General European History; European Geography.

SENIOR YEAR.

Constitutionial History of England and the United States; History of Civilization, Analysis of Historical Forces and Phenomena, notices of the Arts and of the Inductive Sciences; Political Economy.

PHILOSOPHY AND LOGIC.

The studies of this department require much maturity of powers and are therefore confined to the Senior year of the course.

Mental Philosophy. Analysis and classification of mental phenomena; theories of perception, consciousness, imagination, memory, judgment, reason. Mental physiology, or connection of body and mind, healthful conditions of thought, growth and decay of mental and moral powers. Philosophy of education, theory of conscience; nature of moral obligation; moral feeling. The Right. The Good. Practical ethics; duties. Formation of character. Ancient schools of philosophy; modern schools of philosophy. Influence of philosophy on the progress of civilization, and on modern sciences and arts.

Principles of Logic; conditions of valid thinking; forms of arguments; fallacies and their classification. Inductive and scientific reasoning; principles and methods of investigation. Practical applications of logic in the construction of arguments, in the detection and answer of fallacies, and in the formation of the habits of thinking and common judgments of life.

SCHOOL OF ENGLISH AND MODERN LANGUAGES.

ENGLISH LANGUAGE AND LITERATURE.

Studies of The School.—In the arrangement of the studies the endeavor is to present a thorough and extended drill in grammatical and philological study, and in the authors and history of the English language, affording a training equivalent to the ordinary studies of the classical languages. This drill extends through three years of the course, but may be shortened according to the ability and preparation of the student.

The first two terms of the first year are given to a general survey of the whole field of British and American literature from the middle of the sixteenth century to the present time. All the representative writers come into notice, and representative specimens from the writings of each are carefully read in class. Moreover, each student is required each term to read the entire works of some classic author, making choice from a prescribed list. Frequent exercises in writing abstracts or original compositions on themes assigned are also required. The study of Rhetoric occupies the third term.

During the second year four or five of the great masters are studied, their work analyzed, and the shaping forces of their times, with their influences upon succeeding times, are investigated. Lectures are given from time to time on poetry, epic, lyric, dramatic, etc. Writing and reading required as in first year.

In the senior year attention is given to Old English; to the Anglo-Saxon, for which the way has been prepared by the study of both English and German: to Philology; to the Philosophy of English Literature, and to Esthetics. Essays, forensics, and orations are required.

French and German.—The modern languages taught in this School are confined to one year of French and two years of German. Abundant practical exercises are given both in composition and translation, and the diligent student gains the power to read with ease scientific and other works in these languages, and may, with a little practice, write and speak them with correctness. A constant attention is also given to the etymologies common to these languages and the English, and thereby a large advantage in linguistic culture is gained by the student. "He who knows no foreign tongue," said Goethe, "knows nothing of his own."

In the first year the student passes over a complete grammar and reader, acquiring a knowledge of the technicalities of the idiom, with a sufficient vocabulary for the use of books of reference within the course. The second year is devoted to a critical study of the languages and philological analysis, and to a course of select classic reading, composition, and conversation.

COURSE IN SCHOOL OF ENGLISH AND MODERN LANGUAGES.

Required for the Degree of B. L.

FIRST YEAR.

1. American Authors or Cicero de Amicitia; French; Trigonometry.
2. British Authors or Livy; French; Conic Sections.
3. Rhetoric; French; Advanced Geometry, or Free-Hand Drawing; Horace (optional, extra).

SECOND YEAR.

1. English Classics; German; Physiology, or Botany.
2. English Classics; German; Zoology, or Botany.
3. English Classics; German; Astronomy.

THIRD YEAR.

1. German; Chemistry; Ancient History.
2. German; Physics; Mediæval History.
3. German; Physics or Chemistry; Modern History.

FOURTH YEAR.

1. Anglo-Saxon; Mental Science; History of Civilization.
2. Early English; Constitutional History; Logic.
3. Philology; Political Economy; Geology.

SCHOOL OF ANCIENT LANGUAGES AND LITERATURE.

In the school of Ancient Languages and Literature, the methods of instruction, without swerving from their proper aim, to impart a sufficiently full and critical knowledge of the Latin and Greek languages and writings, will make the study of these tongues subservient, in a more than usual degree, to a critical and correct use of the English. With this view, written translations, carefully prepared, with due attention to differences, equivalences, and substitutions of idioms, and the comparison and discrimination of synonyms, will form part of the entire course.

The study of Latin and Greek Composition will constitute a weekly exercise through the first year, and will be continued, to some extent, through the course. Essays, historical and critical, will be required from time to time, in connection with the works read, and a free use of the library is urged. It is intended that each student who contemplates the course in Ancient languages shall have a clear knowledge of the history of Greek and Latin Literature, and of the principal authors in both languages. As an aid to the appreciation of the literature of the two peoples, Greek and Roman history will form an important part of

the course, and will be taken up in the beginning, illustrating the works read. In the first term of the third year ancient history is taken up as a separate study, and especial attention is then given to the history of Greece and Rome, and the nations with whom they came in contact. Classes will be formed for the students who wish to carry their classical study farther than the prescribed course, and every assistance will be given them.

COURSE IN SCHOOL OF ANCIENT LANGUAGES,

Required for Degree of B. A.

FIRST YEAR.

1. Cicero de Amicitia and prose composition, Iliad and prose composition; Trigonometry.
2. Livy and prose composition; Odyssey and prose composition; Conic Sections.
3. Odes of Horace and prose composition; Memorabilia and prose composition; Advanced Geometry.

SECOND YEAR.

1. Satires of Horace; Thucydides or German; Physiology.
2. Terence; Sophocles or German; Zoology.
3. Tacitus; Demosthenes or German; Astronomy.

THIRD YEAR.

1. Juvenal or French; Chemistry; Ancient History.
2. Quintilian or French; Physics; Mediæval History.
3. De Officiis or French; Physics; Modern History.

FOURTH YEAR.

1. Mental Science; History of Civilization; Physiography.
2. Logic; Constitutional History; Early English.
3 Political Economy; Philology; Geology.

Additional Schools.

Not Included in the Four Colleges.

SCHOOL OF MILITARY SCIENCE.

PROFESSOR WM. T. WOOD.,*

2ND LIEUT. 18TH INFANTRY, U. S. A.

BY the law of Congress, and of the State, the University is required to teach Military Tactics to its students. All able-bodied male students of the college classes of the first, second, and third years are enrolled in the companies of the University battalion, and receive instruction in the following military exercises:

School of the Soldier; Manual of Arms.
School of the Company; Movements by Platoons, Firings, etc.
School of the Battalion; Ployment and Deployment of Close Columns.
Battalion and Company Skirmish Drill; Bugle Calls.
Bayonet Fencing; Target Practice.
Guard and Picket Duties; Duties of Sentinels.

CLASS IN MILITARY SCIENCE.

Classes are taught in military science and tactics, as far as is requisite for officers of the line. From these classes are selected the officers of the several companies, for which they act as instructors. The military instruction is now under the charge of Lieut. Wm. T. Wood, a graduate of the U. S. Military Academy, and an officer of the regular army of the United States. A full supply of arms and ammunition is furnished by the War Department, including 300 cadet rifles and accoutrements, two pieces of field artillery, 1,000 ball cartridges and 1,000 blank cartridges annually for target practice, with 100 cartridges and 300 friction primers for artillery.

No student is eligible to the military class till he has reached the third term of the Freshman year, nor unless he is in good standing in all his studies. The course of instruction is confined strictly to two years. No student will be permitted to retain a command who does not maintain a good standing in conduct and scholarship.

*Lieut. Wood's detail will expire July 1st, and the place will be filled by LIEUT. CHARLES MCCLURE, 18th Infantry, U. S. A.

The instruction and class exercises occupy about three hours each week, arranged as far as possible so as not to interfere with any other courses of study. Students must be careful, however, to ascertain, before entering the military class, that the proper studies and exercises of their chosen courses will not be interfered with.

Commissions.—The Governor of the State is accustomed to commission as captains in the State militia, such graduates of the University as have completed the studies of the military classes and have obtained the requisite experience in command in the University battalion. In order to obtain the commission the student must be approved by the Faculty and pass satisfactorially an examination in military science and tactics before a committee appointed by the Faculty of the University. It is expected that in order to get the required experience in command, the members of the military class of the third or Junior year will serve as commissioned officers of the several companies of the battalion.

University Uniforms.—Under the authority of the acts of incorporation, the Trustees have prescribed that all male students, after the first term, shall wear the University uniform. The University cap is to be worn from the first. The uniform consists of a suit and cap of cadet gray cloth. Students can procure them ready-made on their arrival here. The University cap is ornamented in front with the initials I. I. U., surrounded by a wreath. Students will always wear their uniforms on parade, but in their rooms and at recitations may wear other clothing.

The University Library contains many books on Military Science; Military History, and Engineering.

Gymnasium.—The Drill Hall is furnished with a full set of gymnastic apparatus, and classes in gymnastic exercises are organized in the fall with winter terms under careful leaders. Fee 50 cents.

The University Cornet Band is composed of students who while members of the band are excused from drill. Instruments and music are furnished by the University, and the band plays at drill and other college exercises.

COURSE IN SCHOOL OF MILITARY SCIENCE.

FIRST YEAR.

3. School of the Soldier and Company; Bayonet Fencing.

SECOND YEAR.

1. School of Battalion; Skirmish Drill.
2. Ceremonies and Reviews; Military Signalling; Sword Fencing.
3. Guard, Outpost, and Picket Duty; Military Signalling; Sword Fencing.

THIRD YEAR.

1. Military Administration; Reports and Returns; Theory of Fire Arms; Target Practice; Artillery Drill.
2. Organization of Armies; Art of War; Field Fortifications; Artillery Drill.

SCHOOL OF ART AND DESIGN.

PROFESSOR PETER ROOS.

This School is to subserve a two-fold purpose. 1. It affords to the students of the several colleges the opportunity to acquire such a knowledge of free-hand drawing as their chosen courses may require. 2. It offers to such as have a talent or taste for art the best facilities for pursuing studies in industrial designing or other branches of fine art. Schools of design, in Europe and in this country, have been found important aids to the higher manufacturers, adding to the beauty of fabrics and to the skill and taste of workmen.

The increased interest in the decorative arts and in the manufactures which they require has added new importance to the study of drawing and designing. It is the purpose to keep this school of design abreast with the best movements in this direction.

COURSE OF INSTRUCTION.

Students not seeking a professional training may yet avail themselves of the two years' course in industrial art. Any person of ordinary ability who faithfully completes this course will be qualified to teach drawing and designing in the public schools, or to enter professions with great advantage in the various branches of industry, where artistic skill and taste are indispensible to success.

FIRST TERM.

(Exercises in Outline.)

Elements of Form; Analysis of Compound Forms; Elementary Designs; Elementary Perspective by aid of objects; Elements of Historic Ornaments; Memory Exercises.

SECOND TERM.

Enlargement and Shading from copy; Ornamental designs from plant form; Naturalistic and Conventional Arrangement; Harmonious Lines and Distribution of Form; Perspective Drawing of Objects, Plants, etc.; Features of the Human Head; History of Early Art.

THIRD TERM.

Outline Drawing and Shading from Casts of Ornament; Application of Decorative Forms to flat and round surfaces under various conditions; Designs for Specified Objects; Advanced Perspective and Shadows; Harmony and Contrast of Color, (Lectures on Art and its History).

FOURTH TERM.

(Clay and Wax Modeling.)

Basso Relievo Ornament from the Solid; Features and the Human Head from description; Relievo Ornament from shaded copies or drawings; Original Designs for Decorative purposes; Enlargements and Reduction from casts; History of Styles of Ornament.

FIFTH TERM.

Shading from Statuary Casts, etc.; Drawing of Landscape and Animals from copy in Charcoal and Sepia; Color applied to Decorative Art; Designs for useful Objects; Perspective drawings of interior of Rooms.

SIXTH TERM.

General review of the principal work done; Specimen plates to be completed; Optical and Physical principles of color in nature; Aerial Perspective; Sketching from Nature in Charcoal and Color; Artistic Anatomy of Form and Proportion, by illustrated lectures; Famous Artists and their principal works.

Students having passed satisfactorily in the above course will be permitted to enter the advanced classes.

The following course is for those who wish to become accomplished either as designers, painters, or teachers. In order that the student may acquire thoroughness in the branch he wishes to pursue as a speciality, the subject has at this stage been formed into two divisions, decorative and pictorial. The teacher student must give attention to both branches, and with him theory will necessarily supersede practice. Opportunities will be afforded such pupils to teach in the elementary classes whereby greater efficiency will be acquired.

SPECIAL COURSE IN PAINTING.

Trees, Animals, and Figures from copy and from nature in Pencil, Charcoal, and Sepia; Aerial Perspective.

Anatomy of Expression; External muscular development; Shading from Statuary in Charcoal and Monochrome; Composition drawing from description; Memory Exercises.

Water Color Painting from pictures; Sketching from Nature in Sepia and Water Colors; Copying from Oil Paintings of Portraits and Landscapes.

Sketching from nature in Oil Colors; Rapid studies of interiors with varied arrangement of light and shade; Pictorial composition introducing figures or animals; Theory and History of Art.

Portrait Painting from life; Pictures finished from sketches; Studying of Groups of Still Life Subjects; Painting of ideal composition of one or more heads; Chemistry of color.

ADVANCED COURSE IN DESIGNING.

Studies in Clay or Wax.

Ornaments and Plant form in Basso Relievo from flat examples; Designs adaptive to useful objects; The Human Figure from cast or original composition, reproduced by casting in metal or plaster; Processes of manufacture; Monumental designs.

Shading from cast and from nature; Classic objects and furniture enlarged from copy; Designs finished with Pen, Brush, and Distempera color; Architectural construction.

Design for Church Decoration in Historic Styles; Memorial Windows for stained glass: Decorative designs; Commemorating events in History; History of manufactures and important inventions.

ADVANCED TEACHERS' COURSE.

A teacher must be prepared for emergencies for which the professional designer or artist has no experience. A general knowledge of the several subjects is therefore recommended. The decorative and painting courses will be worked together so as to form a thorough course for teachers.

The authorities of the University have provided that persons not connected with the Institution may join the drawing and painting classes on very moderate terms.

MUSIC.

Music constitutes no part of any University course of studies, and is therefore not provided by the Trustees. But as many students, especially young ladies, desire instruction in music, competent teachers are selected by the Trustees, and rooms set apart for instruction.

COURSE OF INSTRUCTION.

Bertini's Instructor; Clementi's Sonatines, Op. 36, 37, 38; Heller's Studies, Op. 36, Books 1 and 2; Duvernay's Studies, Books 1, 2, 3; Loschhorn's Klavier-Technik; Czerny's Etudes de la Velocite, Op. 299, Books 1, 2, 3, 4; Czerny's Fifty Finishing Studies, Op. 740, Books, 1, 2, 3; Cramer's Studies, Books, 1, 2. 3, 4; Mendelssohn's Lieder ohne Worte; Clementi's Gradus ad Parnassum.

TUITION.

Instruction term of ten weeks—2 lessons a week	$10.00
For term of ten weeks—one lesson a week	6.00
Practice on piano, one hour daily, per term	2.00

MRS. ABBIE WILKINSON,

Teacher of Vocal Music and Voice Culture, follows the Italian method, giving individual instruction.

TERMS.

Ten weeks—two lessons a week	$12.00
Ten weeks—one lesson a week	7.00

No deductions on account of absence in either course, except in case of protracted illness.

Special students in music will also be charged the regular term fee charged other students of the University.

PREPARATORY CLASSES.

To meet an urgent demand, the Trustees consented to provide temporarily for teaching the preparatory studies lying between the work of the common school and that of the University.

Candidates for these classes should not be less than fifteen years old. They must pass satisfactory examinations in Arithmetic, Geography, English Grammar, and History of the United States. The examination in these branches should be equal to that usually required for a second grade certificate for teachers. This examination may be made by county superintendents. The studies taught in the preliminary year are as follows:

PREPARATORY STUDIES.

For the Colleges of Agriculture, Engineering, and Natural Science.

First Term.—Algebra—(Newcomb's) Fundamental rules, Factoring, Common Divisors and Multiples, Powers and Roots, Calcalus of Radicals, Simple Equations, Proportion and Progression. *Physiology*—(Dalton's or an equivalent.) *Natural Philosophy*—(Norton's or an equivalent.)

Second Term.—Algebra.—Quadratic equations, etc .*Geometry.*—(Chauvenet's) Plane Geometry, Lines, Circumferences, Angles, Polygons, as far as equality. *English.*—Elements of Composition. (Gilmore's Art of Expression or equivalent.) Orthoepy and Word Analysis. (Introduction to Webster's Academic Dictionary.)

Third Term.—Geometry completed, including solid Geometry and the Sphere. *English* as in the second term, with addition of Goldsmith's Traveler, or an equivalent, read for analysis. *Botany*—Gray's Lessons in Botany, or an equivalent.

FOR COLLEGE OF LITERATURE AND SCIENCE.

First Term.—Algebra, as above. *Latin.*—Cicero's Orations. *Greek,* Grammar and Reader.

Second Term.—Algebra and Geometry, as above given. *Latin,* Virgil.

Third Term.—Geometry completed. *Latin,* Virgil's Æneid. *Greek,* The Anabasis.

Greek, Xenophon's Anabasis.

N. B.—Greek is required only for the School of Ancient Languages. The School of English and Modern Languages requires Physiology, Natural Philosophy, and Botany instead of Greek.

Students in the preparatory studies are not matriculated as University students. They pay no entrance fee, but are charged a tuition fee of

five dollars a term, and the incidental fee of seven and a half dollars a term. They have all the privileges of the library and of the public lectures.

N. B.—No student is matriculated as a college student until all preparatory studies are completed.

ACCREDITED HIGH SCHOOLS.

The Faculty, after personal examination, appoint accredited High Schools, whose graduates may be admitted to the University without further examination. These must be schools of first-rate character, whose courses of instruction include all the studies required for admission to some one of the colleges of the University. On application, a member of the Faculty is sent to examine the school making application, as to its facilities for teaching, its course and methods of instruction, and the general proficiency shown. If the report is favorable, the name of the school is entered in the published list of High Schools, accredited by the University. The graduates of these schools are admitted to any of the colleges for which their studies may have prepared them. The appointment continues as long as the work of the school is found satisfactory. Annual reports are asked from these schools.

ACCREDITED HIGH SCHOOLS.

Princeton High School	Chas. Raymond,	Principal.
Lake View High School	A. F. Nightingale,	"
Champaign, West High School	M. Moore,	"
Decatur High School	J. N. Wilkinson,	"
Champaign, East High School	I. L. Betzer,	"
Urbana High School	J. W. Hays,	"
Oak Park High School	B. L. Dodge,	"
Chicago S. Division High School	Jeremiah Slocum,	"
Chicago N. Division High School	H. H. Belfield,	"
Chicago W. Division High School	Geo. P. Welles,	"
Hyde Park High School	Leslie Lewis, Supt	
Marengo High School	C. J. Allen,	"
Kankakee High School	F. M. Tracey,	"
Mattoon E. Side High School	John T. Hall,	"
Springfield High School	F. R. Feitshans, Supt.	
Monticello High School	G. A. Burgess.	"

Warren High School	D. E. Garver,	Principal.
Peru High School	Joseph Carter,	"
Peoria High School	Charles A. Smith,	"
Galena High School	R. L. Barton,	"
Shelbyville High School	J. F. Goudy,	"
Sycamore High School	A. J. Blanchard,	"
Rochelle High School	P. R. Walker,	"
Rossville High School	W. A. Chamberlain,	"
Bement High School	W. E. Mann,	"
Oakland High School	Charles I. Parker,	"
Jacksonville High School	D. H. Harris, Supt.	
Danville High School	S. Y. Gillan,	"
Marshall High School	L. S. Kilborn,	"
Charleston High School	E. J. Hoenshel.	"
Tuscola High School	F. A. E. Starr,	"
Streator High School	R. A. Haste,	"
Ottawa High School	H. L. Boltwood,	"

EXAMINING SCHOOLS.

The Trustees have authorized the Faculty to designate one or more High Schools in each county of the State, of sufficiently high grade and good reputation, whose certificates of examination, in the branches required of candidates for the University, may be received in lieu of the usual examination of the University.

These must be Graded, or High Schools of good reputation, and of sufficiently extended course to prepare students for the University. The principal teachers of the schools selected will be authorized to prepare questions and conduct examinations if any of their students are desirous of entering the University, but the papers must be sent to the University for final decision.

EXAMINING SCHOOLS.

Rockford West High School	W. W. Stetson,	Principal.
Sterling, 2d Ward High School	Alfred Bayliss,	"
Belvidere High School	H. J. Sherrill,	"
Lanark High School	F. T. Oldt,	"
Belleville High School	Emil Dapprich,	"
Dwight High School	Jesse Hubbard,	"
Macomb High School	George Blount,	"
Rantoul High School	N. J. Betzer,	"
Kewanee High School	E. C. Rossiter,	"
Arcola High School	T. C. Clendenin,	"

UNIVERSITY DISCOURSES.

During the year a series of discourses has been delivered in the University Chapel on Sunday afternoons, by distinguished clergymen of various denominations, as follows:

Oct. 15. REV. H. McD. SCOTT,
SUBJECT; Christ the Carpenter.
Nov. 5. RT. REV. GEORGE F. SEYMOUR, S. T. D.,
SUBJECT; The Bible Portrait of the First Christians.
Nov. 26. REV. H. D. JENKINS, D. D.,
SUBJECT; Sobermindedness.
Dec. 17. REV. L. P. MERCER,
SUBJECT; The Christian Life.
Jan. 21. REV. GEORGE BATCHELOR,
SUBJECT; Charity.
Feb. 11. REV. J. H. BARROWS, D. D.,
SUBJECT; Man's Need of God.
March 4. RT. REV. CHARLES EDWARD CHENEY, D. D.,
SUBJECT; Does Christianity Cultivate Manliness.
March 25. REV. T. M. POST, D. D.,
SUBJECT; Thinking.
April 14. REV. P. S. HENSON, D. D.,
SUBJECT; Christianity and Common Sense.
May 6. RT. REV. JOHN F. HURST, D. D.,
SUBJECT; The Incalculable Importance of Little Things.

The expenses of this course have been generously defrayed by MR. ELIPHALET W. BLATCHFORD, of Chicago.

Mr. ALBERT C. BURNHAM, of Champaign, has kindly promised to provide for a similar course of sermons during the coming year.

EXAMINATIONS.

Written examinations are held at the close of each term or oftener, and whenever any study has been finally completed. Any student failing to answer correctly 75 per cent. of the questions proposed, loses all credit for that study, and is precluded from proceeding with any other studies without special permission.

A record is kept of each student's term work and standing, and from this his final certificate of graduation is made up.

A statement of the scholarship and conduct of each student will be sent to his parent or guardian as soon as may be after the end of each term.

DEGREES AND CERTIFICATES.

The law provides that, "on recommendation of the Faculty, the Trustees may authorize the Regent, as President of the University, to issue diplomas to such persons as shall have completed satisfactorily the required studies, and sustained the examination therein, conferring such Literary and Scientific Degrees as are usually conferred by Universities for similar or equivalent courses of studies, or such as the Trustees may deem appropriate." Approved May 11, 1877.

In accordance with the law the following system of Degrees has been adopted for the University:

1. All studies will remain as heretofore free. Each student may choose and pursue such studies as he may desire, subject only to such conditions as to preparation, times of study, and number of studies as may be necessary to secure efficiency in classes and economy in teaching.

2. But students who wish to be candidates for any degree must complete fully the course of studies prescribed for such degree.

3. Students not candidates for any degree will be enrolled as special students, and will receive at the close of their attendance, if not less than a year, the certificates provided by law with statements of work done and credits attained.

4. It is designed that the requirements for all the Bachelor's Degrees shall be, as nearly as possible, equal in amount and value.

5. The Degree of Bachelor of Science, B. S., will be given to those who complete either of the courses of studies in the Colleges of Engineering, Agriculture, or Natural Science. The name of the School will be inserted after the degree.

6. The degree of Bachelor of Letters, B. L., will be given to those who complete the course in the School of English and Modern Languages.

7. The Degree of Bachelor of Arts, B. A., will be given to those who complete the course in the School of Ancient Languages.

8. The Masters' Degrees, M. S., M. L., and M. A., and the equivalent degrees of C. E., M. E., etc., will be given only to those who have pursued, and passed examinations on, a year of prescribed post-graduate studies, or after a term of successful practice. In either case an accepted thesis will be required.

BOARD.

There are many boarding houses in Urbana or Champaign, within reasonable distance of the University, where students can obtain either table board, or board and rooms, with the advantages of the family circle. Boarding clubs are also formed by the students, by which the cost of meals may be reduced to $2.00 per week. Some students prepare their their own meals, and thus reduce expenses still farther.

For estimates of annual expenses see page 82.

The Young Men's Christian Association of the University will aid new students in procuring rooms and boarding places.

LABOR.

Labor is furnished as far as possible to all who desire. It is classified into educational and remunerative labor.

Educational labor is designed as practical instruction, and constitutes a part of the course in several schools. Students are credited with their preficiency in it as in other studies. Nothing is paid for it.

Remunerative labor is prosecuted for its products, and students are paid what their work is worth. The maximum rate paid for farm, garden, and shop labor is *ten cents*, and for that about the buildings and ornamental grounds, *eight cents per hour*. Students of sufficient experience may be allowed to work by the piece or job, and thus by diligence or skill secure more pay.

Some students who have the requisite *skill, industry and economy*, pay their entire expenses by their labor; but, in general, young men cannot count upon doing this at first, without a capital to begin with, either of skill or of money, to serve them till a degree of skill is acquired. As the number of students increases it is found more and more difficult to furnish the labor needed, and students cannot count so certainly upon finding employment.

STUDENT'S GOVERNMENT.

For several years an experiment has been in progress, in the self-government of the students of the University. By permission of the Faculty, the General Assembly of the students was organized, and a constitution adopted providing for the election of a President, Vice-President, Secretary, and Marshal; for a Senate of twenty-one members, and a court consisting of a Chief Justice and two Associate Judges. Under this constitution, laws are enacted by the Senate, which become valid only when approved by the Regent and Faculty of the University. All offenses against these laws are tried before the student's court, and punished by fines according to the class of the offense. Students refusing to pay the fines imposed by the student's government, are referred to the Faculty, and if found guilty of an offense, are sentenced to such penalties as the Faculty may deem proper. The government has thus far rendered important aid in maintaining good order in the dormitories and

grounds, in preserving public property, in preventing the visiting of saloons, and in other matters requiring the intervention of authority, and above all, in cultivating kindly relations between the Students and Faculty, and a spirit of manliness and self-control.

GENERAL DIRECTIONS TO STUDENTS.

Young men or women desiring a liberal education, and living at a distance from any College or University, are often puzzled to understand precisely what they will be required to know and do in order to gain admission. To such these words are addressed:

1. Notice that a College, or a University, (which is properly a collection of Colleges,) is designed for the higher education only, and not for the study of common branches. None of the common branches, such as Arithmetic, Geography, English Grammar, Reading and Spelling, are taught in this University. These must all be finished before you come.

2. In order to pursue profitably the true College studies, and to keep pace with the classes, you must be ready to pass a strict examination in the common branches just mentioned, and in certain other preparatory studies, differing with the different Colleges of the University. (See pages 28 and 29.)

3. If well prepared only in the common branches above named, you may be admitted, not to the College, but to the Preparatory Classes, in which you will study the other preparatory studies required for admission to College. (See page 76.) All preparatory studies must be completed before you can be admitted, as a matriculated student, to any College class.

4. All College studies are arranged in regular courses, in which each term's work is designed to prepare for the next. You should enter at the beginning of the College year, in September. If unable to enter at that time, you may enter at any later time by making up the studies already passed over by the class.

5. Enter College with the purpose of going through, and make your course regular as far as you go. If obliged to leave before you have finished the course, you will have done the best thing for yourself in the meantime; while if you remain, the regular course is in nine cases out of ten the most useful and effective.

Students desiring only a winter's schooling should go to some high school.

EXPENSES

THE TUITION IS FREE in all the University Classes.

THE MATRICULATION FEE entitles the student to membership in the University until he completes his studies, and must be paid before he enters. Amount.....$10.00

THE TERM FEE for Incidental Expenses is, for each student..... 7.50

Room Rent in University Dormitory, each student per term, $2.00 to 6.00

Each student in the Chemical and Physical Laboratories, and in the Draughting and Engineering Classes, is required to make a deposit varying from 50 cents to $8, to pay for chemicals and apparatus used, and for any breakages or damages.

ALL BILLS due the University *must be paid before the student can enter* Classes.

The following are the estimated maximum and minimum annual expenses, exclusive of books and clothing, of a residence of thirty-six weeks at the University.

	MIN.	MAX.
Term Fees and Room Rent for each Student	$ 28.50	$ 34.50
Table Board in Boarding Houses and Clubs	72.00	144.00
Fuel and Light	10.00	15.00
Washing, at 75 cents per dozen	13.50	27 00
Total Annual Amount	$124.00	$220.50
Board and Room in Private Houses, per week	4.00	6.00

FEES IN THE PRELIMINARY YEAR.

Tuition, per Term	$5.00
Incidental Fee, per Term	7.50

SPECIAL FEES.

For Music, for 20 Lessons	$10.00
For Painting or Drawing, to Special Students	10 00
Graduating Fee	5.00

CAUTION TO PARENTS—STUDENTS' FUNDS.

The Business Agent will receive on deposit any funds parents may intrust to him to meet the expenses of their sons. *No greater error can be committed than to send boys from home with large amounts of spending money,* without the authoritative care of some prudent friend. Half the dissipation in Colleges springs from excessive allowances of money. Students have little real need for money, beyond that required for fees, board bills, and books. The attention of parents and guardians is earnestly requested to this matter, and especially in the case of those students who are under twenty years of age.

Calendar for 1883-84.

Examinations for Admission	Monday,	September 10
First or Fall Term begins	Wednesday,	September 12
First Term ends	Wednesday,	December 19

WINTER VACATION.

FOR 1884.

Examination for Admission to Advanced Classes	Tuesday,	January 8
Opening of the Second or Winter Term	Wednesday,	January 9
Anniversary Day		March 11
Second Term ends	Wednesday,	March 26
Third or Spring Term begins	Wednesday,	March 26
Baccalaureate Address in University Chapel	Sunday,	June 8
Class Day	Monday,	June 9
Alumni Day	Tuesday,	June 10
Commencement	Wednesday	June 11

SUMMER VACATION.

Examinations for Admission	Monday,	September 15
First or Fall Term begins	Wednesday,	September 16

UNIVERSITY DIRECTORY.

SPRING TERM, 1883.

STUDENTS' GOVERNMENT.

EXECUTIVE.

President,	Henry L. McCune
Vice-President,	Lewis C. Roberts
Secretary,	Lucy J. Clark
Treasurer,	Ella U. Barber.
Marshal,	George K. Peart.

JUDICIARY.

Chief Justice	Henry P. Little
1st Associate Justice,	Thomas F. Hunt
2nd " "	William H Smith

LEGISLATIVE.

President,	Lewis C. Roberts
Vice-President,	Arthur W. Palmer
Secretary,	Juniata G. Campbell

SENATE.

A. W. Palmer, 1	L. N. Sizer, 1
Solon Philbrick, 1	Lizzie A. Knowlton 1
J. E Lilly, 1	Lida M. Ashby, 1
H. L. Ronalds, 2	Georgetta Kemble, 2
John E. Wright, 2	Josie Krause, 2
E. L. Morse, 2	Emma T. Jones, 2
S. W. Stratton, 2	Wm. H. Stockham, 3
Guy H. Babcock, 3	Juniata G. Campbell 3
J. O. Davis, 3	Ada B. Way, 3
Alvah Philbrick, 3	Fannie Thomas, 3

ILLINI.

Executive Committee—Henry L. McCune, J. E Lilly, Celeste Langley, Fred D. Peirce, George N. Morgan.
Editor-in-Chief—Henry L. McCune.
Business Manager—William A. Heath.

UNIVERSITY BATTALION.

Lieut. Wm. T. Wood, U. S. A., Commander, and Professor of Miltary Science
Co. A, Capt. Peirce, Banner Company.
Co. B, " Lucius N. Sizer.
Co. C, " Solon Philbrick.
Co. D. " Guy H. Babcock.
Adjutant, B. M. Whittemore.

LITERARY SOCIETIES, ETC.

ALETHENAI.

Young Ladies' Literary Society. Motto: "*Live.*" Organized, October 4th, 1871; chartered, October 10, 1881. Meets in Society's Hall every Friday evening.
President, Lida M. Ashby.
Secretary, Bertie Huff.

PHILOMATHEAN.

Young Men's Literary Society. Motto: "*Come Up Higher.*" Organized March 7th, 1868; chartered October 23, 1877. Meets in Society's Hall every Friday evening.
President, Henry L. McCune.
Secretary, W. L. Chitty.

ADELPHIC.

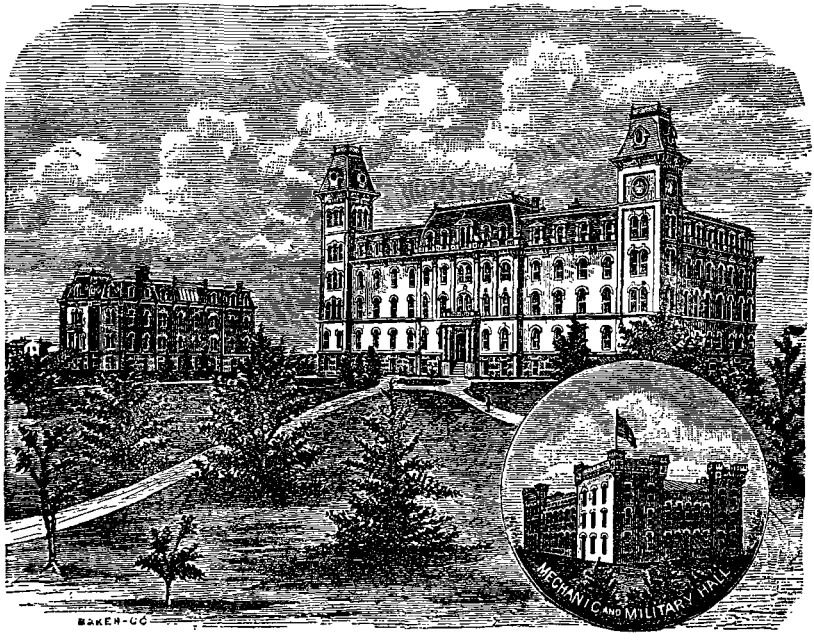
Young Men's Literary Society. Motto: "*Aninis opibusque parati.*" Organized March 7th, 1868; chartered December 7th, 1872 Meets in Society's Hall every Friday evening.
President, E. L. Abbott.
Secretary, I. Pillsbury.

Y. M. C. A

Devotional meetings Wednesday, 6:30 P. M. and Sundays, 9 A. M. All students are invited to attend. Room 40 Main Building.
President, Wm. Sondericker.
Secretary, J. F. Taylor.

UNIVERSITY CORNET BAND.

Meets Tuesday and Friday Evenings. Fifteen instruments.
W. B. Braucher, leader.



ILLINOIS INDUSTRIAL UNIVERSITY, POST-OFFICE, CHAMPAIGN, ILL.