

PRESENTED BY — Mrs Frank H. Clayde
DATE — 6-1-39

LEARNING AND LABOR.

CATALOGUE AND CIRCULAR

OF THE

ILLINOIS

INDUSTRIAL UNIVERSITY,

URBANA; CHAMPAIGN COUNTY, ILLINOIS.

1876-7.

PRESENTED BY

DATE

CHAMPAIGN:
CHAMPAIGN UNION PRINT.
1877.

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URBANA, CHAMPAIGN COUNTY, ILLINOIS.

1876-7.

CHAMPAIGN:
CHAMPAIGN UNION PRINT.
1877.

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ELNA A. ROBINSON,
ASSISTANT IN MECH. ENG. AND FOREMAN OF MACHINE SHOP.

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INSTRUCTOR IN BOOK-KEEPING.

MELVILLE A. SCOVELL,
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ASSISTANTS IN CHEMICAL LABORATORY.

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ASSISTANT IN HORTICULTURE AND BOTANY.

EDWIN L. LAWRENCE,
HEAD FARMER.

VANTILE W. CODDINGTON,
FOREMAN OF CARPENTER SHOP.

LIST OF STUDENTS.

EXPLANATION.

The courses of studies are indicated as follows: Ag'l, Agricultural; Hor., Horticultural; M. E., Mechanical Engineering; C. E., Civil Engineering; Min. E., Mining Engineering; Arch., Architecture; Nat. His., Natural History; Chem., Chemistry; L. & S., Literature and Science; Com., Commercial; Mil., Military; B. C., Builder's Course; D. S., Domestic Science. * Partial.

RESIDENT GRADUATES.

Gill, John D.....	Antwerp, N. Y.
Noble, L. R.....	Mattoon.
Stookey, G. W.....	Harristown.

SENIOR CLASS.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Abbott, Theodore Sperry.....	Min. E.....	Union Grove.
Allen, Charles Wesley.....	L. & S.....	Harristown.
Barry, Charles Hart.....	L. & S. & Mil.....	Alton.
Barry, Frank.....	L. & S. & Mil.....	St. Louis, Mo.
Blackall, Clarence H.....	Arch. & Mil.....	Chicago.
Brush, Charles E.....	Arch.....	Carbondale.
Buckingham, William.....	M. E. & Mil.....	Chicago.
Bumstead, James E.....	L. & S.....	Marengo.
Clay, Luther G.....	Hort. & Mil.....	Cobden.
Crow, B. F.....	Arch.....	Woodbine, Iowa.
Elliott, Charles Gleason.....	C. E.....	Tonica.
Faulkner, Richard D.....	L. & S.....	Clement.
Gibson, Charles Brockway.....	Chem. & Mil.....	Springfield, Vt.
Gilkerson, Hiram.....	Ag'l & Mil.....	Ney.
Gilkerson, John.....	L. & S.....	"
Kennedy, Allan G.....	C. E. & Mil.....	Eau Claire, Wis.
Lewellin, Joseph C.....	Arch.....	Sterling.
Lewis, Edward V.....	Ag'l & Mil.....	Chatham.
McPherson, John Jr.....	C. E.....	Rockford.
Moore, John Fremont.....	Arch.....	Davenport, Iowa.
Rice, George Clark.....	L. & S.....	Fithian.
Seymour, John James.....	C. E. & Mil.....	Seymour.
Sim, Coler Lindley.....	Chem. & Mil.....	Urbana.

*Spence, Franklin	Arch.	Hamilton.
Stayman, John Mather	M. E.	Champaign.
Stoddard, Ira J. Jr.	C. E. & Mil.	Pella, Iowa.
Ward, Walter P.	L. & S.	Terre Haute.
Whitham, Robert F.	C. E. & Mil.	Fairfax, Iowa.
Wright, Myron Jerome	Ag'l.	Woodstock.

LADIES.

NAME.	COURSE.	RESIDENCE.
Adams, Nettie	L. & S.	Urbana.
Bogardus, Eva	D. S.	Champaign.
*Broshar, Cornelia	L. & S.	"
*Conn, Emma	L. & S.	"
Falls, Ida Belle	L. & S.	"
Gregory, Helen B.	L. & S.	"
Maxwell, Emily C.	L. & S.	"
Page, Martha Ellen	L. & S.	"
Piatt, Emma C.	D. S.	Monticello.
Skinner, Velma Elethea	L. & S.	Champaign.
Smith, Avice E.	L. & S.	Union.
Switzer, Gertrude	L. & S.	Champaign.
Victor, Carrie	L. & S.	Champaign.

JUNIORS.**GENTLEMEN.**

NAME.	COURSE.	RESIDENCE.
Baker, Ed. J.	Ag'l	Savoy.
Ballard, Charles K.	Arch.	Chicago.
Bridge, Wallace E.	Ag'l & Mil.	La Moille.
Bullard, Samuel A.	Arch.	Mechanicsburg.
Burr, Ellis M.	M. E.	Woodstock.
Coffman, Noah B.	Nat. Hist.	Urbana.
*Conroy, James	L. & S.	Terre Haute, Ind.
Dean, Frank A.	L. & S. & Mil.	Buckley.
*Flansburg, Claude	L. & S. & Mil.	Galva.
Francis, Frederick	M. E.	Kewanee.
Gaffner, Theophilus	Chem.	Highland.
*Gould, Harry C.	C. E. & Mil.	Henry.
Gregory, Alfred	L. & S. & Mil.	Champaign.
Hauser, Henry	C. E. & Mil.	Mascoutah.
Johnson, Fred	C. E.	Springfield, Vt.
*Jones, James F.	L. & S.	Chester.
*Kays, Emery	L. & S.	Tonica.
Lindley, Austin M.	Chem.	Urbana.
Lloyde, Frank Hayden	L. & S.	Champaign.
McLean, James A.	Arch.	Waukegan.
Mills, W. B.	L. & S.	Mt. Palatine.

Morava, Wensel	M. E. & Mil	Chicago.
*Patchen, John W.	Com	W. Bloomfield, N. Y.
Phillips, Richard	Chem	Rantoul.
*Pickrell, Arthur A.	Ag'l	Mechanicsburg.
Pollock, James Lyon	L. & S	Mt. Vernon.
Porterfield, Emmet	Ag'l	Sidney.
Richards, Charles L.	Ag'l	Woodstock.
Rudy, William Dole	Chem	Mattoon.
Rutan, Abraham R.	L. & S	Dwight.
Sargent, I. C.	L. & S. & Mil	Rockford.
Sawyer, Hamlin W.	L. & S. & Mil	Godfrey.
Savage, Manford	L. & S	Girard.
Sparks, Hosea B.	L. & S.	Alton.
Spradling, William F.	L. & S	Sheridan.
Sprague, Martin	L. & S. & Mil	Monticello.
*Wakefield, Charles C.	Ag'l	Monroe, Mo.
Weed, Mahlon Ogden	Nat. His.	Belvidere.
Warrington, George	M. E.	Chicago.
White, W. Woods	L. & S. & Mil	Atlanta, Ga.
Whitlock, John F.	L. & S.	Dwight.
*Williams, Walter L.	Ag'l	Argenta.
Wilson, Charles M.	Chem	Mackinaw.
Ziesing, August	C. E. & Mil	Peru.
Zimmermann, Henry W.	L. & S.	"

LADIES.

NAME.	COURSE.	RESIDENCE.
Columbia, Emma E.	L. & S	Champaign.
Culver, Henrietta	L. & S	Henry.
Davis, Nancy Jane.	L. & S	Monticello.
Deardorff, Sarah	L. & S	Cobden.
Estep, Ida	L. & S	Rantoul.
Estep, Jessie	L. & S	"
Larned, Mary	L. & S	Urbana.
Mahan, Jennie C.	L. & S	Champaign.
Page, Belle	L. & S	Champaign.
Page, Emma	L. & S	"
Page, Mary	Arch.	"

SOPHOMORES.

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NAME.	COURSE.	RESIDENCE.
Ayers, Grover	L. & S	Springfield.
Balcom, William Arthur	Arch.	Champaign.
Beardsley, Henry Mahan	L. & S	"
Bennett, Lyme C.	Chem	Pontiac.
Bourne, Harry P.	C. E.	Woodstock.

Brannen, Dennis James	Com.	Savoy.
Bristol, Ira D.	M. E. & Mil.	Aurora.
*Butler, William Nichols	L. S. & Mil.	Anna.
*Booth, Christopher S.	L. & S.	Columbus.
Chandler, Ernest M.	Ag'l.	Arcola.
*Childs, William M.	C. E.	Buda.
Coburn, Ralph Porter	M. E. & Mil.	Chicago.
Cofin, Frank Sherman	L. & S.	Taylorville.
Conn, Frank S.	Chem.	Urbana.
Colvin, A.	L. & S.	Mt. Palatine.
Cox, Frank	L. & S.	Mattoon.
*Dean, Ezra Carter	L. & S.	La Moille.
Farson, John W.		Champaign.
*Fennity, Frank C.	L. & S.	Kane.
Frackelton, David S.	L. & S.	Petersburg.
Freijs, Charles Theodore	Arch.	Urbana.
Gillett, Stephen L.	L. & S. & Mil.	Aurora.
Gunder, James Henry	C. E.	Fairmount.
*Harrison, Samuel A.	L. & S. & Mil.	Alton.
Hoit, Otis Willis	Ag'l.	Geneseo.
*Hewins, Charles F.	L. & S.	Loda.
Jackson, Arthur C.	L. & S. & Mil.	Maroa.
Johnson, William P.	C. E.	Chicago.
Kimble, Willis P.	C. E.	Paris.
Kuhn, Isaac	C. E.	Cleveland, Ohio.
Lee, Elisha	Ag'l.	Hamlet.
*Mann, William A.	L. & S.	Gilman.
Melendy, Clarence P.	L. & S.	Thompson.
Milton, Franklin Silas	C. E.	Jerseyville.
*Minier, H. M.	L. & S. & Mil.	Minier.
Nase, Frank P.	Com.	Mt. Carroll.
Pickrell, Arthur A.	Ag'l.	Mechanicsburg.
Prettyman, B. Stockly, Jr.	L. & S.	Pekin.
*Porter, Arthur W.	C. E.	Garden Prairie.
Pocock, Augustin James	C. E.	Hayesville, Ohio.
Robinson, Albert F.	Min. E.	Jacksonville.
Russell, Charles M.	L. & S.	Urbana.
*Savage, George M.	L. & S.	Girard.
*Schmeltzer, J. Foster	C. E.	Manteno.
Stacy, Morrell M.	Chem.	Princeton.
Stevens, George H.	L. & S. & Mil.	Sheffield.
Swannell, Arthur	L. & S.	Kankakee.
Snyder, Frank Augustus	L. & S.	Galva.
Taft, Lorado	Nat. Hist.	Champaign.
Taylor, Charles B.	L. & S.	Urbana.
Thompson, William A.	C. E. & Mil.	Chicago.
Walker, Frank E.	L. & S. & Mil.	Urbana.
Whitmire, Clarence L.	N. H. & Mil.	Metamora.

List of Students—Freshmen.

Williams, George A.....	Ag'l.....	Quincy.
Wilson, James M.....	L. & S.....	Riverton.
Ziesing, Richard.....	Chem.....	Peru.

LADIES.

NAME.	COURSE.	RESIDENCE.
Bacon, Katharine.....	L. & S.....	Champaign.
Batchelder, Abby W.....	D. S.	Harristown.
Batchelder, Augusta.....	D. S.	Harristown.
Butts, Gussie.....	L. & S.....	Union.
*Chester, Minnie.....	L. & S.....	Champaign.
*Darnell, May.....	L. & S.....	Rantoul
Dunlap, Maggie.....		Savoy.
Graham, Belle.....	L. & S.....	Champaign.
Hale, Isabella.....	D. S.	Sheffield.
*Kimberlin, Nettie.....	L. & S.....	Louisiana, Mo.
*Lloyd, Lottie E.....	L. & S.....	Arcola.
Low, Laura T.....	L. & S.....	Chicago.
McAllister, Nettie.....	L. & S.....	Champaign.
*McElroy, Mary.....	L. & S.....	Champaign.
Pierce, Effie F.....	L. & S.....	Belmond, Iowa.
Russell, Annie.....	L. & S.....	Champaign.
Scoggin, Sarah.....	L. & S.....	Champaign.
*Spence, Jennie.....		Hamilton.
Spruill, Carrie S.....	L. & S.....	Urbana.
Stewart, Maggie L.....	L. & S.....	Champaign.
Strong, Sarah B.....	L. & S.....	Champaign.

FRESHMEN.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Adams, Frank E.....	L. & S.....	Peoria.
Anno, E. W.....	Com.....	Topeka.
Barrows, Charles S.....	M. E.....	Woodstock.
Bills, Charles J.....	L. & S.....	Garden Prairie.
Blakeslee, Eli F.....		DuQuoin.
Blakeslee, George F.....		DuQuoin.
Boothby, Arthur.....	L. & S.....	Pittsfield.
Briles, Bayard S.....	Ag'l.....	Ash Grove.
Brown, Frank Lincoln.....	L. & S.....	Hamilton, Mo.
Brown, Henry H.....	Chem.....	Dixon.
Buckingham, Roswell H.....	M. E.....	Chicago.
Burnham, James E.....		Mason.
Burnap, Henry F.....	Chem.....	Alton.
Burroughs, D. E.....	L. & S.....	Edwardsville.
Butler, Cyrus Waldo.....	C. E. & Mil.....	Anna.

Collins, Wilbur Milton	L. & S	Knoxville, Iowa.
Cook, Charles F	L. & S	Edwardsville.
Coquillett, George A	L. & S	Woodstock.
Crafton, J. H	L. & S	Topeka.
Cummings, Orlando W	Ag'l	Buda.
Durkin, Peter	Nat. Hist	Metamora.
Elmer, Levellon R		Waterman.
Farrell, Cornelius	M. E.	Scribner, Neb.
Fitzhugh, William	Com	Delavan.
Forsyth, James	Nat. Hist	Springfield.
Goodspeed, E.		
Graves, Ernest W	Hort	Sandwich.
Hafner, Christian	L. & S	Oak Park.
Haines, John Wilber	M. E.	Baraboo, Wis.
Hallinm, Joseph	L. & S	Champaign.
Harden, Edgar E.	L. & S	Dixon.
Hatch, F. W.		Eng. Prairie.
Hawkinson, Frank W	M. E.	Marseilles.
Howard, John Hartwell	M. E.	Champaign.
Hinsdale, F. D	C. E.	Kewanee.
Hessel, J. F		Champaign.
Jones, Eugene L	Com	Henry.
Jones, R. D	L. & S	Lacon.
Kincaid, Lee	Ag'l	Athens.
Lamson, John William	L. & S	Half Day.
Lewellin, Henry S		Sterling.
Merriam, L. B.	C. E.	Urbana.
Mersereau, W. Randolph		Rantoul.
Metcalf, Allan D	L. & S	Edwardsville.
Motherspaw, William F	Com	Champaign.
Meulheims, Robert	Chem	Nashville.
Morris, Robinson B	Chem.	Urbana.
Parker, W. L.	M. E.	Upper Alton.
Pearman, James Ora	Chem.	Champaign.
Percival, Curtis E		Champaign.
Pervier, Clayton C	Com	Mineral.
Pfeiffer, William A	Nat. Hist	Rantoul.
Pletcher, Francis M	L. & S	Plattville.
Quinn, John H.		Sycamore.
Raley, Charles R	Ag'l	Granville.
Ray, John DeWitt	M. E.	Belvidere.
Reed, Louis A		Mason City.
Robinson, Arthur S.	M. E.	Jacksonville, Fla.
Russeque, George M	M. E.	Boston, Mass.
Reid, James W		Greenville.
Sackett, John Warren	L. & S	Champaign.
Smith, Albert Edward	M. E.	Watertown, Wis.
Sondericker, Jerome	C. E.	Woodstock.

Springer, Thomas Wentworth	L. & S.	Edwardsville.
Stewart, C. W.		Champaign.
Stewart, William J.	Com.	Colona.
Studley, C. Carl	L. & S.	Neponset.
Spencer, J. C.		
Sellew, R. H.		
Searl, Clark Nelson	Chem.	Osborn.
Safford, A. B.	L. & S.	Crete.
Thomas, Evans W.	L. & S.	Franklin Grove.
Travis, W. W.	L. & S.	Chenoa.
Wadsworth, John	L. & S. & Mil.	Chippewa Falls, Wis.
Weems, William G.	L. & S.	Quincy.
White, Frank	C. E.	Hale.
Whito Arthur L.	Ag'l	Chicago.

LADIES.

NAME.	COURSE.	RESIDENCE.
Condit, Anna H.	L. & S.	Champaign.
Cuppernell, Jessie A.	L. & S.	Champaign.
Elliott, Elsie	L. & S.	Tonica.
Fox, Mary	L. & S.	Champaign.
Gipson, Lillie F.	L. & S.	Champaign.
Halsted, Clara.	L. & S.	Rantoul.
Kyle, Fannie E.	L. & S.	Urbana.
Lindley, Allie V.	L. & S.	Urbana.
Lucas, Corda.		Camargo.
*Melendy, Ada L.	L. & S.	Mt. Carroll.
Pearman, Ida	L. & S.	Champaign.
Patchen, Flora	L. & S.	W. Bloomfield, N. Y.
Richardson, Laura		
Searle, Mary	Nat. Hist.	Osborn.
Urie, Alice M.	L. & S.	Aurora.
Watson, Ella Maria.	L. & S.	De Kalb.

PRELIMINARY YEAR.

GENTLEMEN.

NAME.	COURSE.	RESIDENCE.
Anderson, William N.	Chem.	Champaign.
Armstrong, James Elder	Nat. Hist.	Seneca.
Bellany, Albert	L. & S.	Girard.
Benedict, John Downing.	L. & S.	Rossville.
Birney, Frank		Urbana.
Bley, John Cornelius.	M. E.	El Paso, Colorado.
Blythe, Willis	Chem.	Centralia.
Bonfield, Thomas Eastman	L. & S.	Kankakee.
Bothwell, James K.		Clay City.

Brady, Clarence E.....	Com.....	Hardin.
Brereton, Edwin.....	L. & S.....	Clement.
Brewster, D. H.....	.....	Atlanta, Ga.
Brown, William Joseph.....	L. & S.....	Bates.
Chandler, John Miles.....	.....	Richview.
Chase, Frank L.....	.....	Buda.
Churchill, Frank L.....	L. & S.....	Chenoa.
Coddington, Archibald O.....	.....	Champaign.
Colton, Albin B.....	L. & S.....	Wataga.
Colvin, Franklin.....	L. & S.....	Mt. Palatine.
Condit, Edwin Smith.....	.....	Centralia.
Cooper, Charles H.....	.....	Urbana.
Darnell, Samuel P.....	L. & S.....	Rantoul.
Davis, Olney.....	M. E.....	Waxahatchie, Texas.
Davis, Oscar Harmon.....	M. E.....	Champaign.
Drum, Henry.....	L. & S.....	Girard.
Dunlap, Charles.....	M. E.....	Urbana.
Ellsworth, Spencer.....	Com.....	Lacon.
Ewalt, George W.....	.....	Champaign.
Ford, William W.....	.....	Buda.
Funk, Edward Fillmore.....	Elective.....	Decatur.
Gay, Frank F.....	.....	Farmer City.
Gillespie, Charles Smith.....	Com.....	Edwardsville.
Gillespie, Frank Keys.....	Com.....	Edwardsville.
Graham, James C.....	.....	Mahomet.
Gulick, John Franklin.....	L. & S.....	Champaign.
Hallett, Willard D. E.....	Com.....	Mt. Carroll.
Hay, Lyman Trumbull.....	.....	Centralia.
Heidenheimer, Benjamin.....	M. E.....	Chicago.
Herrick, Morris M.....	L. & S.....	Kansas.
Holbrook, Albert Jerome.....	.....	Dixon.
Hollister, Frank Charles.....	Ag'l.....	Grayville.
Holt, Clarence.....	L. & S.....	Kankakee.
Horner, Joseph Smith.....	Com.....	Anna.
Huckings, William Warren.....	L. & S.....	Kankakee.
Hullinger, Charles S.....	M. E.....	Granville.
Huntington, William.....	M. E.....	Delvidere.
Jones, Charles S.....	L. & S.....	Oglesby.
Jones, Isaac.....	L. & S.....	Sweetwater.
Kutnewsky, John Knox.....	L. & S.....	Groveland.
Lee, Harry.....	Chem.....	DuQuoin.
Lewis, Ralph D.....	L. & S.....	Utica.
Litton, John K.....	.....	Winterset, Iowa.
Lynch, Henry W.....	L. & S.....	.....
Mason, William K.....	.....	Buda.
McCormick, Newell Montague.....	Chem.....	Mattoon.
McLaren, Thomas Franklin.....	C. E.....	Astoria.
McLean, John Barr.....	Com.....	Macomb.

Miller, Aylett Percy.....	C. E.....	Chicago.
Miller, John H.....	Ag'l.....	Sheridan.
Newton, Edgar A.....	.....	Chippewa.
Patterson, Walter Lewis.....	L. & S.....	Curran.
Patton, Charles D.....	.....	Paxton.
Payne, Samuel K.....	.....	Bunker Hill.
Philbrick, Ethan.....	C. E.....	Baileyville.
Porter, Edmund C.....	L. & S.....	Lewistown.
Richmond, R. B.....	M. E.....	Macon.
Roberts, John B.....	.....	Armington.
Scholes, George.....	.....	Henry.
Scoggin, Charles Wesley.....	M. E.....	Champaign.
Sisson, Monroe Grayson.....	.....	Bunker Hill.
Skevington, John W.....	.....	Albion.
Smith, Henry Olney.....	.....	Yorkville.
Stewart, Walter Newton.....	Ag'l.....	Champaign.
Thomas, Anson.....	.....	Pleasant Valley.
Thomas, Charles V.....	Ag'l.....	Kickapoo.
Troup, Joseph A.....	.....	Kankakee.
Truman, John F.....	.....	Urbana.
Van Osdol, W. S. I.....	Nat. Hist.....	Sterling.
Walduck, Charles Webb.....	.....	Bloomington.
Weatherly, Edmund B.....	Chem.....	Spencer, Ind.
White, Menzo.....	L. & S.....	Atlanta, Ga.
Winslow, Charles Kilhum.....	M. E.....	Danville.
Wray, Archie M.....	.....	Richmond.
Young, Sardius.....	.....	Mason City.

LADIES.

NAME.	COURSE.	RESIDENCE.
Ayres, Blanche A.....	L. & S.....	Champaign.
Ayres, Sigourney L.....	L. & S.....	Urbana.
Baker, Kittie.....	L. & S.....	Champaign.
Beggs, Dora A.....	.....	Arcola.
Brown, Mrs. M. M.....	.....	Chicago.
Carmack, Sarah.....	.....	Camargo.
Cheney, Flora A.....	L. & S.....	Aurora.
Cushman, Effie.....	.....	Port Bryon.
Crandall, Ada.....	.....	Loda.
Earhart, Florence.....	L. & S.....	Champaign.
Earhart, Minnie.....	L. & S.....	Champaign.
Gilman, Bessie Abbie.....	D. S.....	Harristown.
Harmon, Ada Douglas.....	L. & S.....	Champaign.
Hill, Helen M.....	L. & S.....	Harristown.
Howard, Mary M.....	L. & S.....	Champaign.
Hubbard, Minnie W.....	.....	Urbana.
Johnson, Grace A.....	L. & S.....	Mahomet.
Lawrence, Nettie E.....	L. & S.....	Champaign.

Macknet, Metta Mary I.....	L. & S.....	Girard.
Mersereau, Lillie V.....	L. & S.....	Rantoul.
Miller, Mary V.....		Champaign.
Myres, Helen.....		Rantoul.
Phillips, Sarah E.....		Rantoul.
Richner, Maggie.....	L. & S.....	Champaign.
Savage, Alice Ellen.....	L. & S.....	Girard.
Scribner, Carrie Augusta.....		Bradford.
Searle, Clara.....		Osborn.
Somers, Anna.....		Urbana.
Trask, Emma C.....		Buda.
Woodworth, A. Belle.....	L. & S.....	Champaign.

SPECIAL STUDENTS.

Spence, J.....		
Johnson, Nettie.....		Champaign.
Potter, Frank.....		Maroa.

SUMMARY.

Resident Graduates—Gentlemen.....			3
Seniors—Gentlemen.....	29		
—Ladies.....	13	42	
—			
Juniors—Gentlemen.....	45		
—Ladies.....	11	56	
—			
Sophomores—Gentlemen.....	56		
—Ladies.....	21	77	
—			
Freshmen—Gentlemen.....	77		
—Ladies.....	16	93	
—			
Preliminary—Gentlemen.....	84		
—Ladies.....	30	114	
—			
Special Students—Gentlemen.....	2		
—Ladies.....	1	3	
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I. I. U. DIRECTORY.

Spring Term, 1877.

STUDENTS' GOVERNMENT.**EXECUTIVE.**

<i>President,</i>	C. G. Elliott.
<i>Vice-President,</i>	C. H. Blackall.
<i>Secretary,</i>	C. L. Richards.
<i>Treasurer,</i>	J. F. Moore.
<i>Marshal,</i>	I. D. Bristol.

JUDICIARY.

<i>Chief Justice,</i>	C. L. Sim.
<i>Ass't Justices,</i>	{ G. C. Rice.
	{ N. B. Coffman.
<i>Pros. Attorney,</i>	M. J. Wright.

LEGISLATIVE.

<i>President,</i>	C. H. Blackall.
<i>Vice-President,</i>	Miss N. Davis.
<i>Secretary,</i>	J. W. Patchen.
<i>Ass't Secretary,</i>	Miss I. Hale.

Members of Senate.

W. N. Butler, 1	Miss N. Culver, 1
A. Colvin, 1	" N. J. Davis, 1
C. B. Gibson, 1	" C. Victor, 1
W. F. Spradling, 1	" M. Larned, 2
E. M. Burr, 2	" S. Deardorff, 1
H. M. Minier, 3	" I. Hale, 3
W. E. Bridge, 2	T. S. Coffin, 2
A. Gregory, 2	J. W. Lamson, 2
M. Sprague, 2	J. Conroy, 3
J. W. Patchen, 3	A. W. Porter, 3
	W. P. Johnson, 3.

I. I. U. BATTALION.

Commander of Battalion,	Col. E. Snyder.
Adjutant—Capt. C. B. Gibson.	
Co. A, Capt. R. F. Whitham.	
Co. B, Capt. H. Gilkerson.	
Co. C, Capt. E. V. Lewis.	
Co. D, Capt. C. H. Barry.	
Co. E, Capt. C. H. Blackall.	
Co. F, Capt. A. G. Kennedy.	
Co. G, Capt. I. J. Stoddard.	
Co. H, Capt. C. L. Sim.	

I. I. U. CORNET BAND.

Meets Monday and Thursday nights in Band Room—14 instruments.

J. A. McLane, Leader.

ILLINI.

Executive Committee—T. J. Burrill, W. E. Bridge, W. F. Spradling, W. N. Butler, A. T. Gregory.

Business Manager—R. D. Faulkner.

Office Sup't—J. E. Bumstead.

Editor-in-Chief—W. F. Spradling.

ALLETHENAI.

Young Ladies' Literary Society, Motto: "*Apo tou dunasthai, pros to einai.*" Organized, October 4th, 1871; meets every Friday at 7 P. M.

Miss Mary Larned, President.
Miss Nannie Davis, Secretary.

ADELPHIC.

Young Men's Literary Society; motto: "*Animis opibusque parati.*;" organized March 7th, 1868, chartered December 7th, 1872; meets in Society's Hall every Friday at 7 P. M.

J. J. Seymour, President.
F. White, Secretary.

PHILOMATHEAN.

Young Men's Literary Society; motto: "*Come up Higher.*;" organized March 7th, 1868; meets in Society's Hall, at 7 P. M., every Friday.

C. B. Gibson, President.
N. B. Coffman, Secretary.

SCIENTIFIC ASSOCIATION.

Organized February 28th, 1871; meetings held in Society Hall every Friday at 7 o'clock, P. M.

T. S. Abbott, President.
J. F. Schmeltzer, Secretary.

Y. M. C. A.

Room on first floor of Dormitory.
Devotional meetings Wednesdays at 6.30 P. M., and Sundays 9 A. M. All students are invited to attend.

I. I. U.**TELEGRAPHIC ASSOCIATION.**

Organized January 9th, 1874, for advancement in Telegraphy. Instruments now on line twenty-five. Central office open for practice all hours of the day.

W. Morava,	President.
E. W. Graves,	Secretary.
R. D. Jones,	Inspector.

GYMNASIUM.

Membership fee \$1.00.

H. B. Sparks,	Leader.
W. D. Rudy,	Treasurer.

Illinois Industrial University.

HISTORY.

The Illinois Industrial University had its origin in a grand 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. The grant, amounting in this State to 480,000 acres, having been accepted, the University was chartered in February, 1867, and publicly opened and inaugurated in March, 1868. In addition to the endowment received from the land grant, over \$400,000 were donated by Champaign County in bonds, buildings and farms. The State has also 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, and the Mechanical Building and Drill Hall. Successive Colleges and Schools have been added as required, till four Colleges, including fourteen distinct Schools, have been organized.

The whole number matriculated as students since the opening is 1179. The number graduated from the several Colleges, including the class of 1877, is 160. In 1871 the University was opened for lady students, on the same terms as to gentlemen, and large numbers have availed themselves of the privileges offered. In 1874 a fine Art Gallery was established, containing a large collection of casts of celebrated statues and sculptures, and of engravings, autotypes, etc. The University has steadily advanced in standing and in public reputation, and now holds admitted rank among the first institutions of its class in this country.

LOCATION.

The University has a beautiful situation on the high grounds between the contiguous 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 Railroad and the Indianapolis, Bloomington and Western Railway. 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, gardens, nurseries, forest plantations, arboretum, botanical garden, ornamental grounds, and military parade ground.

The University buildings, fourteen in number, include a grand Main Building for public use, one large and two small Dormitory buildings, a large Mechanical and Drill Hall, a Veterinary Hall, a small Astronomical Observatory, three dwellings, two large barns and two green-houses.

The Mechanical Building and Drill Hall is of brick, 128 feet in length, by 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; a pattern and finishing shop; 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, 120 by 60 feet, sufficient for the evolutions of a company of infantry, or a section of a battery of field artillery. One of the towers contains an armorer's shop and military model room, an artillery room and a band room. The other contains a printing office and editor's room.

The large Dormitory Building is 125 feet in length and five stories in height. It affords 80 dormitory rooms for students. A wing of 40 by 80 feet contains the two chemical laboratories. Two smaller dormitory buildings contain eight rooms each.

PROPERTY AND FUNDS.

Besides the lands and buildings already described, which are, with 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. The State has appropriated \$25,000 to the Agricultural Department for barns, tools, stock, etc.; \$20,000 to the Horticultural Department for green-house, barns, drainage, tools, trees, etc.; \$25,000 for Mechanical and Military Building, machinery, etc.; \$127,000 toward the erection of the Main Building, and furnishing the same; \$10,500 to furnish the Chemical Laboratory; and \$20,000 for Library and Apparatus; \$4,000 for the apparatus of a Physical Laboratory; \$3,000 for a Veterinary Hall, Stable and apparatus; besides smaller amounts for agricultural experiments, etc.

MUSEUM AND COLLECTIONS.

The collections of minerals, fossils, shells, birds, mammals, insects, plants, etc., have been made with much care and expense, and are steadily increasing. They are notably large in some departments and afford valuable facilities in the study of Natural History and Geology. The collection in Entomology is one of the largest in the West.

One of the Trustees has lately presented to the University the full series of celebrated casts of fossils made by Prof. H. A. Ward, of Rochester, N. Y. This collection embraces the most rare and valuable

fossils of the British Museum and of other great European collections, as well as those of President Hitchcock and others in America.

FINE ART GALLERY.

This Gallery is one of the largest and finest in the country. It is the gift of citizens of Champaign and Urbana. A beautiful Hall, nearly 60 by 80 feet, has been fitted up as an Art Gallery, and the large and beautiful display of Art objects in it surprises and delights all visitors. Many have come from a distance to see it, and several High Schools have made excursions to visit it. There is, perhaps, no collection in the West that equals it in the number and value of its specimens. Many of the great masterpieces of Sculpture are here exhibited in casts taken directly from the originals. The value of this splendid collection as a means of education is already exhibiting itself in the several departments of Drawing and Design at the University.

LIBRARY.

The Library, which has been carefully selected with reference to the scientific studies required in the several practical courses, includes now over 10,000 volumes. The large Library Hall is fitted up as a Reading Room, and is open throughout the day for study, reading and consultation of authorities. It is well provided with American, English, French and German papers and periodicals, embracing some of the most important scientific and art publications. The following is a list of the periodicals regularly received :

AGRICULTURAL AND HORTICULTURAL.

American Agriculturist,
Cultivator and Country Gentleman,
California Farmer,
English Live Stock Journal,
Journal d'Agriculture Pratique, *Paris*,
New England Farmer,
National Live Stock Journal,
Prairie Farmer,
Practical Farmer,
Rural New Yorker,
Western Farmer,
Wallace's Monthly,
Gardener's Chronicle,
London Agricultural Gazette,
Western Agriculturist,
Western Rural,
Williamette Farmer,
Gardener's Monthly & Horticulturist,
Revue Horticole, *Paris*,
Kansas Farmer.

Railroad Gazette,
Scientific American,
Scientific American Supplement,
The Builder, *London*,
The Workshop,
Van Nostrand's Eclectic Engineering
Magazine.

LITERARY.

Edinburgh Review,
London Quarterly,
The Nation,
Educational Weekly,
Library Journal,
Legal Adviser,
New Englander,
Magazine of American History,
Illi,
North American Review,
British Quarterly Review,
Revue des Deux Mondes, *Paris*,
Scribner's Magazine,
Deutsche Rundschau, *Berlin*,
Atlantic Monthly,
International Review,
New England Journal of Education,
Am. Journal of Education.

ENGINEERING.

Encyclopedie d'Architecture, *Paris*,
Engineering, *London*,
Architektonisches Skizzen-buch, *Berlin*,
English Architect,

SCIENTIFIC.

American Chemist,
 American Journal of Science,
 Grevillea,
 Polytechnisches Journal, *Augsburg*,
 Popular Science Monthly,
 Official Patent Office Gazette,
 Patent Right Gazette,
 Jahrbuch der Chemie, *Geissen*,
 Berichte der Deutschen Chemischen
 Gesellschaft, *Berlin*,
 Viehsucht, *Berlin*,
 American Naturalist,

Annalen der Chemie,
 British Microscopic Journal,
 Comptes Rendus, *Paris*,
 Journal of the Franklin Institute,
 Nature, *London*,

NEWS.

Champaign County Gazette,
 Rantoul Journal,
 Champaign Union,
 Champaign Times,
 Urbana Republican,
 Douglas Co. Review,
 Danville News.

ORGANIZATION OF THE UNIVERSITY.

COLLEGES AND SCHOOLS.

The Institution is a true University in the best American sense, though not yet complete in all departments, and differing designedly in the character of some of its Colleges from the older institutions of this country. It is divided into four Colleges, and these are again subdivided 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 under the same College.

I. THE COLLEGE OF AGRICULTURE.

School of Agriculture. School of Horticulture.

II. COLLEGE OF ENGINEERING.

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

III. THE COLLEGE OF NATURAL SCIENCE.

School of Chemistry. School of Natural History.

IV. THE COLLEGE OF LITERATURE AND SCIENCE.

School of English and Modern Languages. School of Ancient Languages.

∨. ADDITIONAL SCHOOLS.

School of Military Science. School of Commerce. School of Domestic
 Science. School of Art and Design.

Vocal and Instrumental Music, Telegraphing and Photography are also taught, but not in regular courses.

CHOICE OF STUDIES.

It has been a favorite aim of the University, from the outset, to allow as much freedom as possible in the selection of studies.

The University was designed not for children, but young men and women, who may claim to know something of their wants, powers and tastes. It is not useful to require every student, without regard to his capacity or practical wants, to take entire some lengthened "course of study." Liberty everywhere has its risks and responsibilities, as well as its benefits—in school as well as in society; but it is yet to be proved that compulsory scholarship is necessarily better, riper and more certain than that which is free and self-inspired. Each student is exhorted to weigh carefully his own powers and needs, to counsel freely with his teacher, to choose with serious and independent consideration the branches he may need to fit him for his chosen career, and then to pursue them with earnestness and perseverance, without faltering or fickleness.

It is necessarily required, 1st, That the student shall be thoroughly prepared to enter and keep pace with the classes in the chosen studies; and, 2d, That they shall take these studies in the terms in which they are taught.

It is expected that each student shall have three distinct studies, affording three class exercises each day. But on special request, the Faculty may allow less or more, to meet the exigencies of his course.

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

It is recognized that students will often need advice in the selection of studies, and the arrangement of a proper course. To meet this need, the Faculty have carefully arranged several Courses of Studies, which are expected to be followed by those who have no special reason for diverging from them. See Courses under the several schools.

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.

To secure the more certainly 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 branches.

Under the present laws of the State, each student is required to study some of the branches relating to Agriculture and the Mechanic Arts.

The Trustees have accordingly made the following classification of studies, and require that each student shall take, each term, one study at least from the first class. His second study must be of either the first or second class, and his remaining studies from either of the three classes.

CLASS I. Physics, Chemistry, Mineralogy, Physical Geography, Anatomy and Physiology, Botany, Zoology, Geology, Entomology, Algebra, Geometry, Trigonometry, Calculus, Drawing, Surveying and Engineering, Mining and Metallurgy, Mechanics, Architecture, Prin-

ciples of Mechanism, Hydraulics, Thermodynamics, Strength of Materials, Prime Movers, Mill Work, Machine Drawing, Origin and Treatment of Soils, Culture, etc., of Plants, Breeding of Domestic Animals, Veterinary Science, Farm Products and Manufactures, Roads and Railroads, Book-Keeping, Construction and Use of Machinery, Modeling and Patterns, Bridges, etc., Astronomy, Military Science and Domestic Science.

CLASS II. English Language and Literature, German Language and Literature, French Language and Literature, General History, U. S. History, Ancient History, Mediæval History, Modern History, Constitutional History, History of Civilization, Logic, Political Economy, History of Agriculture, Constitutional Law, International Law, Rhetoric and Oratory.

CLASS III. Any study taught in the University not enumerated in the first and second classes.

AIMS OF THE UNIVERSITY.

The University being 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 classical studies.”—*Act of General Assembly, 1867, Sec. 7.*

In accordance with the two acts above quoted, and under which the University is organized, it 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.

PRELIMINARY YEAR.

The University has steadily refused till now to open any preparatory school. The preparatory work is well done in the many excellent High Schools of the State, and the funds of the University ought not to be diverted from their proper uses, to provide instruction in merely

Preparatory Studies. A needful advance in the standard for admission to the College courses, and the necessity of providing, temporarily at least, for those who will come from places where no good High Schools exist, have induced the Trustees to provide for preparatory classes *in the Studies lying between the Common School Studies and the College courses.*

Candidates for these classes must be at least fifteen years old. They must also 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:

First Term—Algebra (Olney's), Physiology (Dalton's), Book-Keeping.

Second Term—Geometry (Olney's), English, Elements of Composition (Swinton's School Composition, or an equivalent), Orthoepy and Word Analysis (Introduction to Webster's Academic Dictionary), and Natural Philosophy (Peck's Ganot).

Third Term—Geometry completed; English (as in Second Term, with the addition of Goldsmith's Traveler, or an equivalent, which is read for analysis), and Botany.

For candidates for the Classical Course, the studies will be as follows:

First Term—Algebra, Latin (Cæsar), Greek (Grammar and Reader).

Second Term—Geometry, Latin (Cicero), Greek (Anabasis).

Third Term—Geometry, Latin (Virgil), Greek (Anabasis).

Students in the preparatory studies will not be matriculated as University Students. They will pay no entrance fee, but will be charged a tuition fee of TEN DOLLARS a term, and the usual incidental fee of FIVE DOLLARS a term. They will have all the privileges of the library and of the public lectures.

COLLEGE OF AGRICULTURE.

FACULTY.

THE REGENT,
PROFESSOR TAFT,
PROFESSOR SHATTUCK,
PROFESSOR WEBER,

PROFESSOR MORROW,
PROFESSOR BURRILL,
DOCTOR F. W. PRENTICE,
ASSISTANT C. I. HAYS.

SCHOOLS.

SCHOOL OF AGRICULTURE,

SCHOOL OF HORTICULTURE.

ADMISSION.

Candidates for admission to the College of Agriculture must be at least fifteen years of age, and must pass satisfactory examination in

the common school branches and in the studies of the preliminary year (see page 22). 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. The better the preparation the more profitable the course.

SCHOOL OF AGRICULTURE.

OBJECT OF THE SCHOOL.

The aim of this school is to educate scientific agriculturists. The frequency with which this aim is misunderstood by the community at large, 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 of 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 and profoundly, 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 of all of its phenomena—this is the true aim of agricultural education. And when it is recollected that agriculture involves a larger number of sciences than any other human employment or profession, it will not be regarded as an unfit end of a sound collegiate training.

It has been the steady aim to give to the College of Agriculture the largest development practicable, and to meet the full demand of the country for Agricultural education, as fast as it shall arise. Agricultural students are specially invited.

Boards of Agriculture, and Agricultural Associations, State and County, are invited to co-operate with the University in its efforts to awaken a more direct 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 in connection with, or following instruction in, the sciences with which they are especially connected. The full course is designed to fit the student to be an intelligent man and citizen as well as a thoroughly trained specialist. The technical studies are mainly taught 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 and stables, not only of the University, but of leading farmers and stock-growers in the vicinity.

After a year's study of Botany and Vegetable Physiology, and of Chemistry, the student begins the study, at the opening of the second year, of Soils—their origin, classification, chemical and mechanical elements and properties; also of the Atmosphere as related to plant nutrition; in the second term, this study is continued, especially with regard to the theory and effects of Tillage, the composition, preservation and application of Fertilizers, and their chemical and mechanical effects; the composition and qualities of Foods, etc. During this year one term's study is given to General Horticulture, especially the culture of orchard and small fruits; and one term to Practical Entomology.

In the first term of the third year, instruction is given in Agricultural Engineering and Architecture, including the selection and 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. In the second term, Animal Husbandry will be studied, including the principles of breeding and management of our domestic animals; with descriptions of all important breeds and varieties, giving their history and adaptations. Especial attention is given to Dairy Farming. In the third term instruction is given in Landscape Gardening and Forestry.

In the second term of the fourth year, Rural Economy is studied, including the relations of agriculture to other industries and to national prosperity; the influences which should determine the class of farming to be adopted; comparisons of special and general systems; the uniting of manufacturing with farming; and also the culture of the various farm crops, cereals, grasses, etc. In the third term of this year a course of lectures is given on the History and Present Condition of Agriculture in this and other countries; its literature and associations, and on legislation as affecting it. This is followed by a course of lectures on Rural Law, designed to familiarize the student with the general principles of business law—his liabilities, rights, and duties. During this term, special investigations are made by each student in the agricultural laboratory. A Thesis is required, embodying the results of these investigations.

VETERINARY SCIENCE.

In Veterinary Science the lectures are given by a graduate of the schools of veterinary science in both Edinburgh and London. This science is taught during the third year. In the first term, the Anatomy and Physiology of the Domestic Animals will be taught by lectures, demonstrations, and dissections. Post-mortems of healthy and diseased animals will be 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 will be 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 will be 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 will also be given on Veterinary Sanitary Science and the Principles and Practice of Veterinary Surgery.

For details as to the study of Botany, Chemistry, Zoology, and Meteorology, see statements in School of Natural Science.

APPARATUS.

The college has for the illustration of practical agriculture a Stock Farm of 410 acres, provided with a large stock barn fitted up with stables, pens, yards, cooking room, etc., also an Experimental Farm of 80 acres, thoroughly furnished with all necessary apparatus. It has also fine specimens of neat cattle, Short Horns and Jerseys. Also 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 also experiments in agriculture and horticulture, under the direction of the Professors of Agriculture and Horticulture and of the Farm Superintendent, and experiments in feeding animals of different ages, and development upon the various kinds of food. In common with similar departments in the several State Agricultural Colleges of the country, it attempts to create positive knowledge towards the development of an agricultural science.

The Barn on 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 a side-hill barn.

The Barn on Experimental Farm is of less size, but is fitted up with great convenience and is supplied with a mill for grinding feed, run by a large wind-mill.

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

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, &c. The college also has fine collections of soils, seeds, plants, implements, skeletons of domestic animals, plans, charts, and other apparatus, including a large number of models of agricultural machinery from the Patent Office.

AGRICULTURAL COURSE.

FIRST YEAR.

1. Botany, Chemistry, Trigonometry and Surveying or Free Hand Drawing.
2. Botany, Chemistry, American Authors, or Free Hand Drawing.
3. Vegetable Physiology, Chemistry, Rhetoric.

SECOND YEAR.

1. Agricultural Chemistry (soils and plants), General Horticulture, German.
2. Agricultural Chemistry (tillage, fertilizers, foods), Zoology, German.
3. Economic Entomology, Zoology, German.

THIRD YEAR.

1. Agricultural Engineering and Architecture, Animal Anatomy and Physiology, Ancient History.
2. Animal Husbandry, Veterinary Science, Physics or Mediæval History.
3. Landscape Gardening, Veterinary Science, Physics or Modern History.

FOURTH YEAR.

1. Geology, Mental Science, History of Civilization.
2. Rural Economy, Meteorology and Physical Geography, Constitutional History.
3. History of Agriculture and Rural Law, Political Economy, Laboratory work and Thesis.

FARMER'S COURSE.

To meet the wants of young farmers or others who feel they cannot give the time necessary for the completion of the full course, yet desire to better fit themselves to be successful, practical farmers, a special course has been arranged, the student in which gives his exclusive attention to the technical Agricultural studies, including Veterinary Science, completing these in one year. 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 in this course are arranged in the following order :

1. Soils—Origin and Characteristics ; Agricultural Engineering and Architecture ; General Horticulture, or Animal Anatomy and Physiology.
2. Tillage and Fertilizers ; Animal Husbandry ; Rural Economy, or Veterinary Science.
3. History of Agriculture ; Rural Law ; Practical Entomology ; Landscape Gardening, or Veterinary Science.

SCHOOL OF HORTICULTURE.

OBJECT OF THE SCHOOL.

The aim of this school is to afford a scientific and practical education specially adapted to the wants of those who cultivate garden and orchard plants, or wish to manage nurseries, parks and pleasure grounds.

INSTRUCTION.

The instruction is both theoretical and practical. The class room recitations and lectures are supplemented by instructive practice in the fields and plant-houses. The course which is recommended for those intending to prepare for the duties of the practical horticulturist, is given below.

The studies of the first year are mainly scientific, and are intended as a foundation for the technical branches which follow ; but constant endeavor is made to render Botany, Zoology, Chemistry, &c., useful and practical without diminishing their scientific thoroughness and interest.

At the end of the course a Thesis is required upon some subject connected with Horticultural interests or pursuits. This must be the record of original experiment or research, with such deductions as the author may consider appropriate and correct. Suitable illustrations are to accompany the paper. All Theses will be deposited in the library of the school.

APPARATUS.

Ample provision is made for the practical illustration of the subjects taught. The cabinet contains among other things : a series of colored plaster-casts of fruits prepared at the University ; *modeles classiques* 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 school 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 fungus parasites which cause disease to cultivated crops.

Upon the grounds devoted to the use of the school there are : 1. A very large specimen apple orchard planted in 1869, and containing above 1000 varieties,—many varieties of pears, cherries, grapes and small fruits. 2. A nursery of young trees, in which students have regular work in propagation, &c. 3. A forest-tree plantation embracing the most useful kinds for timber. 4. An arboretum in which all hardy indigenous and exotic trees are planted as fast as they can be secured, and now containing 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, lawn and 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 large green-house contains a collection of plants of great value for the classes in floriculture and landscape gardening, besides furnishing students with practice in all the details of hot-house and green-house management. The large library contains the best literature upon these subjects.

TECHNICAL STUDIES.

These include the first study mentioned in each term of the Horticultural course, together with General Horticulture of the second year and Laboratory work of the fourth year,—in all fourteen studies. Candidates for graduation from this course must pass satisfactory examinations in all of these studies, no others being accepted as substitutes; but students not proposing to graduate as Horticulturists may choose any part of these as of other studies.

For *Agricultural Chemistry* see School of Chemistry.

General Horticulture occupies fourteen weeks, and is intended as an introduction to the subjects which are presented in a comprehensive manner afterward, and to give the most possible information in regard to cultivated trees, fruits, vegetables, and flowers in the time devoted to it. The term's work is, therefore, well adapted to the requirements of general students and of those who have only a limited time at their disposal; instruction is mainly by lectures illustrated by specimens and drawings. 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.

Pomology and Forestry are studied fourteen weeks. 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 also 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 put to practical test. As fully as possible, students see and perform the skilled operations usually practiced in the propagation and growth of trees.

Pruning and training, by various methods, especially of grapes, are discussed in the class-room, and illustrated upon the grounds.

Students also 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 first 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.

Downing's "Fruits and Fruit Trees of America"; Warder's "Pomology"; Thomas' "Fruit Culturist"; Grigor's "Arboriculture"; Brown's "The Forester"; and Bryant's "Forest Tree Culturist," are important books of reference.

Plant Houses and Management.—The work this term is upon garden 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, and by such others as can be reached by class excursions.

Landscape Gardening.—Eleven weeks are devoted to this study. Lectures are given upon the general principles of the art, the history and styles, the kinds and use 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 position 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 school. Excursions are made as found practicable for the study of public and private grounds.

Important reference books are: Downing's "Landscape Gardening"; Weideman's "Beautifying Country Homes"; Robinson's "Parks, Promenades and Gardens of Paris."

Floriculture.—Fourteen weeks are occupied in 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 care of plants requiring various treatments. Insects and diseases with the remedies are thoroughly treated, and the means of securing vigor of growth, or abundance of flowers, are studied and illustrated by practice.

Among the reference books the following are important: Henderson's "Practical Floriculture"; Loudon's "Encyclopedia of Plants"; Parkman's "Book of Roses."

For statement of studies in *Botany* and *Entomology* and for *Microscopy* and *Fungology*, see School of Natural History.

Horticultural History and Rural Law.—Ten weeks. This term's study nearly corresponds with that for the same time in the Agricultural course, and when alike the two classes are made one. Students of this course have special study of the history and literature of Horticulture, so far as these are distinct from that of Agriculture.

HORTICULTURAL COURSE.**FIRST YEAR.**

1. Botany ; Chemistry ; Free Hand Drawing or Trigonometry and Surveying.
2. Botany ; Chemistry ; Free Hand Drawing or American Authors.
3. Vegetable Physiology ; Chemistry ; Rhetoric.

SECOND YEAR.

1. Agricultural Chemistry (Soils and Plants) ; General Horticulture ; German.
2. Agricultural Chemistry (Tillage and Fertilizers) ; Zoology ; German.
3. Economic Entomology ; Zoology ; German.

THIRD YEAR.

1. Pomology and Forestry ; German ; Ancient History.
2. Plant Structures and Management ; Physics ; Mediæval History.
3. Landscape Gardening ; Physics ; Modern History.

FOURTH YEAR.

1. Floriculture ; Geology ; Mental Science.
2. Microscopy and Fungology ; Meteorology and Physical Geography ; Constitutional History.
3. Horticultural History and Rural Law ; Political Economy ; Laboratory Work ; Thesis.

COLLEGE OF ENGINEERING.**FACULTY.**

THE REGENT,
 PROFESSOR WEBB,
 PROFESSOR SHATTUCK,
 PROFESSOR RICKER,
 J. KENIS,

PROFESSOR ROBINSON,
 PROFESSOR WEBER,
 I. O. BAKER,
 A. C. SWARTZ,
 PETER ROOS.

SCHOOLS.

MECHANICAL ENGINEERING,
 MINING ENGINEERING,

CIVIL ENGINEERING,
 ARCHITECTURE.

ADMISSION.

Applicants should be at least eighteen years of age, and none will be admitted under fifteen. The requirements for admission embrace the common school branches and the studies of the preliminary year. (See page 22.) The examinations in Mathematics are most thorough. Full preparation is essential to success in the studies of the Engineer and Architect.

Those who will make further preparation than is required before entering, can make their courses more extensive and profitable. The

following suggestions will be of use to such as wish to make thorough work. One recitation a day is devoted to French and German, each of which is pursued at least one year. 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 and practice of this branch will be of great advantage; "Warren's Draughting Instruments" may be used as a text-book, and the drawings made on smooth paper, each plate eight by ten inches.

REGULATION PAPER.

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

For manuscript and unimportant drawings, a heavy flat-cap paper, but slightly sized. 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-sheet Bristol board.

SIZES.

For Problems, Exercises, Vacation Journals, Lecture Notes, Theses and other Manuscripts, and for Geometrical, Projection, Topographical, Railroad, Typographical and Construction Drawings, paper $8 \times 11\frac{1}{2}$ in., the size of the plate being 8×10 with $\frac{1}{2}$ added for binding. If Bristol board is used it must be cut 8×10 in., and the binding margin hinged on with muslin.

CONSTRUCTION.

Our friends and students are earnestly desired 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, would be of great value for purposes of instruction. Illustrated circulars and price lists of manufacturing firms are desired. Contributions will be labeled with the donors' names and placed in the cabinets of the College for the inspection of students, and the illustration of lectures.

SPECIAL EXERCISES, VACATION JOURNALS, AND MEMOIRS.

During the second and third vacations, Journals are required to be kept by each student of the College; and should contain accounts of matters pertaining to his chosen profession. These will be presented at the opening of the winter term, and will be read before the faculty and students of the College, in evening sessions, held in the Physical Lecture-room; the reading being illustrated with blackboard sketches, drawings, photographs or specimens. The Journals should be pithy and concise, instead of voluminous.

The Journals should consist of illustrated descriptions of engineering and architectural subjects: such as important steam engines, water and gas works, mines and mining machinery and processes. Special

methods in use of government and land surveys, make-up of parties; plans and ornamentation of important buildings; architectural style and details, stability, economy and novelty of construction of roof trusses, arches, bridges, canals and reservoirs, peculiar instruments, machinery for spinning metals, making gas pipes, saws, etc.

THESES.

In all the schools of this College a Thesis is required of those who graduate. It must be an original composition of suitable length, upon a subject appropriate to the school, and approved by the Professor in charge. The student must be prepared to read, explain and defend it before his class. It must be illustrated with such photographs, drawings and sketches as may be needed, and embellished with a title page neatly designed and printed 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 College.

The Vacation Journals and Theses will be preserved in the cabinets of the respective schools for future reference. These papers, and also the practical exercises mentioned in each course, will be credited upon the diploma, and no course of the College will be accepted as complete without them.

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 or of industrial pursuits. The State has serious need of a class of men who, to a thorough knowledge of the principles of machinery and of the various motors, shall add the practical skill necessary to design and construct the machines by which these motors are made to do work. To supply such men is the leading aim of this school.

INSTRUCTION.

The instruction, while severely scientific, is thoroughly practical, aiming at a clear understanding and mastery of all mechanical principles and devices. Practice in the Mechanical Laboratory is combined with the theoretical training, and is counted as one of the studies of the course.

In PRINCIPLES, the knowledge is imparted in lectures, combined with the use of plates and illustrative models, and recitations are made from text-books. Numerous examples are also 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, the instruction consists mainly in the execution of

Projects, in which the student is required to construct machines, or parts thereof, of his own designing, and from his own working drawings. The students, in class exercise under competent teachers, use the machinery and tools of the Machine and Pattern Shops and Foundry, according to the most approved methods of modern practice.

The practical instruction is not intended merely to teach the trade, but is added as a necessary supplement to the theoretical training.

STUDIES.

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

PURE MATHEMATICS.

Advanced Geometry.—Applications of Algebra to Geometry, Transversals, Harmonic Proportions, etc. *Trigonometry.*—Analytical and Plane. Relations between the functions of an arc; Formation and use of tables; Solution of plane triangles. *Analytical Geometry.*—Construction of equation; Discussion, in a plane, of the point, right-line, circle, ellipse, parabola and hyperbola; Higher plane curves, cycloid, cissoid of Diocles, etc. *Differential Calculus.*—Differentials of algebraic and transcendental functions; Maclaurin's Theorem, Taylor's Theorem, Maxima and Minima of functions of one variable, Equation of Tangents, normals, sub-tangents, sub-normals, etc.; Differentials of lines, surfaces and volumes. *Integral Calculus.*—Integration of elementary forms and of rational fractions, Rectification of plane curves, quadrature of plane areas and surfaces of revolution, and cubature of solids of revolution.

Advanced Algebra.—Binomial Theorem, Properties and summation of series. Exponential quantities, Logarithms. General theory and methods of solving equations. *Analytical Geometry.*—Loci in space; Surfaces of the second order. *Differential Calculus.*—Differentials and Maxima and Minima of functions of two or more variables, Osculatory curves, Radius of curvature; Evolutes, involutes, envelopes; Discussion of algebraic and transcendental curves and surfaces; Tangent and normal plane, partial differentials of surfaces and volumes. *Integral Calculus.*—Integration of transcendental and irrational differentials; Differentials of higher orders; Differential equations; Rectifications, quadrature and cubature in general. Spherical Trigonometry, General Formulas; Solution of Spherical Triangles. Calculus of Variations will be taught to advanced students.

PHYSICS.

The course in Physics is complete and thorough, embracing the four kinds of work following:

1. Recitation, four exercises a week, in which a text-book is used as a guide.

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

3. Illustrated experiments one evening 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. The higher physical experiments by advanced classes, consisting either of researches, or of reviews of careful and elaborate experiments previously worked up by others.

To prepare for the last-named work, the student should have pursued Physical studies at least one term in the first three.

The department of physics is amply provided with illustrative apparatus for use in the lecture room, and an extensive Physical Laboratory has been instituted in the New Building. The laboratory is adjacent to the physical lecture room; connected by sliding doors, so that the apparatus is convenient, either for use in the lectures or for the laboratory work. The collection of instruments, costing over \$5,000, 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 Elliott Bros., London, Resistance Coils, Galvanometers, etc., for higher researches in Electricity.

TECHNICAL STUDIES.

Cinematics, 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 Noncircular Wheels in rolling contact, Cams and Curves in sliding contact; Correct-working Gear Teeth; Gearing Chains; Escapements; Link-work.

Analytical Mechanics.—Equations of Equilibrium; Moments; Virtual Velocities; Centers of Gravity; Mechanical Powers; Friction; Dynamics.

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.

Thermodynamics.—The Laws and complete Theory of thermodynamics as required in the study of all kinds of heat engines, including the department of perfect gases during expansion, and also steam and other fluids not perfect gases; action of heat in changes of state, and in confined fluids.

Resistance of Materials—See School of Civil Engineering.

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 Thermodynamics in the study of Heat Engines. Relative Economy of different engines.

MILL-WORK AND MACHINERY.

Trains of Mechanism, studied with reference to their Resistance and Efficiency. Best forms for transmission of power for short and great distances. Forms of the parts for securing desired results in power and velocity; Elastic and ultimate strength of parts.

Projection Drawing.—Use of Instruments in applying the Elements of Descriptive Geometry; Use of Water Colors; Isometrical Drawing; Shades and Shadows; Perspective.

Free-Hand Drawing.—Sketches of Machinery; Ornamentation; Lettering.

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 will consist of exercises aiming especially to acquaint the student with the use of tools, and the proper form of tools for best serving their purpose in filing, drilling, turning, planing, grinding, forging, etc. The second year drawing and practice will have for its object the production of some model or machine. The students, under the immediate direction of teachers, carefully determine the dimensions and shapes best suited for the parts of some machine, reduce them to 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 breadth 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 are 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 defects of valve movement in distribution of steam.

In the strength of materials the student determines the modulus of rupture and coefficient of elasticity of about six kinds of building material. In Hydraulics the flow of water through orifices of different form are studied experimentally. In Mechanism each student

works out and reports on an original problem involving mechanical movements.

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 Rigg's models, and others from the celebrated manufactory of J. Schröder, 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.

The Pattern Shop is furnished with four complete sets of tools, benches and vises for pattern-makers. In a separate building are forges, a moulder's bench with sand, and brass and iron furnaces sufficient for the castings ordinarily required. Four additional sets of tools are provided for the special use of students in the shop-practice classes.

MECHANICAL ENGINEERING COURSE.

FIRST YEAR.

1. Plane Trigonometry and Advanced Geometry; Projection Drawing; French.
2. Analytical Geometry; Descriptive Geometry and Drawing; French.
3. Calculus; Clay Modeling and Lettering; French.

SECOND YEAR.

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

THIRD YEAR.

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

FOURTH YEAR.

1. Resistance of Materials and Hydraulics; Geology; Thermodynamics, Pneumatics.
2. Prime Movers; Constitutional History; Construction Drawing.
3. Mill Work and Thesis; Designing and Laboratory Practice; Political Economy.

NOTE.—Elementary Shop Practice, ten hours a week will be required during the third term of the first year in order to acquire skill in use of tools.

Advanced practice in the Mechanical Laboratory to the amount of ten hours a week for one term, will be required during the first two terms of the third year.

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 students to enter intelligently upon the various and important duties of the 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 tabular view shows the arrangement of the subjects. The studies of the first three years will prepare students for undertaking many engineering operations, such as the building of railroads, canals, embankments, etc. The fourth year is intended to fit them for the higher engineering constructions, as the building of arches, trussed bridges, and supporting frames of all kinds.

Each year consists of thirty-six working weeks, divided into Fall, Winter and Spring terms. The four years are divided among the different branches nearly as follows: Languages, 360 recitations; Pure Mathematics, 369 recitations; Drawing of all kinds, 840 hours; Lectures with Mathematical Analysis, 100 hours; Surveying, recitations, drawing and field practice, 200 hours; Physics, Mechanics, Hydraulics, Astronomy, Geology, Chemistry, Mental Philosophy, Logic, Political Economy, History, altogether 680 lectures, recitations and exercises; Practice in the Chemical Laboratory, 110 hours, Engineering Projects, 240 hours. Besides the above, there are various special exercises requiring time, the amount of which cannot be assigned. Each recitation requires one hour in the class-room, and to its preparation should be given an average time of three hours.

TECHNICAL STUDIES.

Mathematics.—For a list of the principal subjects included under Pure Mathematics, see the school of Mechanical Engineering.

The following are those included in Applied Mathematics: *Descriptive Geometry*—Problems on the Point, Right Line and Plane; Warped Surfaces; Perspective; Shades and Shadows; Practical Problems.

Analytical Mechanics and Hydraulics—See School of Mechanical Engineering.

Astronomy.—The Observatory; Instruments and their adjustments; Determination of time, latitude and longitude; Practical exercises.

Geodesy.—Figure of the Earth; Surveys of the Earth's Surface; Base Lines; Parallels and Meridians; Methods of the United States Surveys; Barometric Measurements.

Land Surveying.—Areas; Distances; Omissions and Corrections; Standard Units; Metrical System; Refraction; Curvature of the Earth; Theories of Surveying Instruments; Adjustment of Instruments.
R. R. Surveying.—Curves; Turnouts; Crossings; Obstructions; Slope Stakes; Earth-work; Grades; Curvature of Rails; Coning of Wheels; Calculation and use of Tables.

DRAWING.

Projection Drawing.—Use of Instruments in applying the Elements of Descriptive Geometry; Use of Water Colors; Isometrical Drawing; Shades; Shadows and Perspective; Drawings finished in colors and by right-line shading; Bridges; Right and Oblique Arches. *Free-Hand*—Landscapes; Buildings; Lettering and Ornamental Work. *Topographical*—Sketching; Ink Drawings; Conventional Signs, etc. *Mapping*—Railroad and City and County Maps. *Architectural*—Designing and Drawing of Engineering Structures.

NATURAL SCIENCE.

Physics—See School of Mechanical Engineering. *Chemistry*—Inorganic Chemistry and Qualitative Analysis. *Geology*—Elements of Physiographic, Lithological, Historical and Dynamical Geology.

ASTRONOMY AND GEODESY.

Temporary arrangements have been made for Observatory Practice, by the erection of a small observatory and the mounting of instruments of convenient size for students' use. *Descriptive Astronomy* is given by lectures with a text-book. The Equatorial Telescope is in constant use during the favorable weather. *Practical Astronomy* is given by lectures and practical work with the Meridian Circle, Sextant, Theodolite, and Engineers' Transits adapted to Astronomical work; and by Astronomical calculations. *Geodesy* is given by lectures, practice and calculations.

ENGINEERING.

Road Engineering.—Location and Construction of Roads and Railroads; Grades; Gauges; Tunnels, etc. *Resistance of Materials*—Elasticity; Safe Limits; Shearing Stress; Flexure and Strength of Beams and Columns; Practical Formulae. *Trusses*—Analysis of a variety of Roofs and Frames, with methods of obtaining the strains. *Bridge Construction*—Warren's, Howe's and other Trusses; Tubular and Suspension Bridges; Arches, etc. *Stone work*—Stone; Limes and Mortars; Foundations, etc.

PROJECTS.

During the Spring Term of the second year, an accurate Topographical Survey of a locality is made by the class, and instruction given in the use of the Level, preparatory to a project in Railroad Engineering, which is executed in the Fall Term of the next year. The Plane-table is used, as in the U. S. Surveys.

The Project consists of a Preliminary Survey, Locations, Drawings and Estimates.

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, determining the amount of earthwork, designing the buildings, bridges, culverts, etc.

The drawings will include Alignment, Profile, Plans and Sections.

The estimates will give the cost of ground, earth-work structures, rolling stock, etc.

A project in Geodesy, or Higher Engineering, will be executed during the Senior year.

APPARATUS.

The School is provided with both English and American Instruments for the different branches of Engineering Practice, and for the Astronomical work of Higher Surveying. It has numerous models for illustration of its specialties, and access to the cabinets of the other Schools. To facilitate the practice in Trigonometrical and Land Surveying, it has a specially prepared area, 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. This area is subdivided by a large number of lines, the positions of which are accurately known, but not by the student. He is then required to determine the position of the "corners" by various methods, and to calculate the enclosed areas. Other problems are given in determining inaccessible distances, passing obstacles, avoiding local attractions, etc., for which the ground is prepared. The number of divisions is so large that no two students need have the same problem, and so accurately laid out that the correctness of the student's work can at once be determined.

An Astronomical Observatory for meridian observations, and of suitable size for the practical exercises in Astronomy, has been erected and is in use. An Equatorial telescope has also been mounted for the use of the students. A set of Smithsonian Meteorological instruments has been procured, placed in suitable positions, and observations commenced. A Universal Instrument for Astronomical and Geodetic work is being made for the use of the Senior classes, by Messrs. Ertel & Son, Munich. It will read to seconds of arc both in altitude and azimuth by four micrometers, and will in all respects be a superior instrument, adapted to the most accurate work.

CIVIL ENGINEERING COURSE.**FIRST YEAR.**

1. Same as in Mechanical Engineering.

SECOND YEAR.

1. Advanced Algebra and Analytical Geometry ; Land Surveying ; German.
2. Advanced Calculus ; Drawing ; German.
3. Advanced Calculus and Spherical Trigonometry ; Topographical Surveying ; German.

THIRD YEAR.

1. Advanced Descriptive Geometry ; Chemistry and Laboratory Practice ; Railroad Surveying.
2. Analytical Mechanics ; Chemistry and Laboratory Practice ; Physics ; Weekly Exercises in Practical Astronomy.
3. Analytical Mechanics ; Astronomy ; Physics ; Weekly Exercises in Practical Astronomy.

FOURTH YEAR.

1. Resistance of Materials and Hydraulics ; Geology ; Geodesy.
2. Bridges ; Constitutional History ; Meteorology and Physical Geography.
3. Stone work ; Physical Laboratory and Thesis ; Political Economy.

SCHOOL OF MINING ENGINEERING**OBJECT AND INSTRUCTION.**

This School is intended to qualify the student for undertaking mining operations of all kinds. Its instruction consists of a thorough training in the principles of theoretical and applied chemistry, of chemical and blow-pipe analysis, of assaying and metallurgy, and of the engineering operations of mining.

STUDIES AND APPARATUS.

The course of studies embraces both the engineering and metallurgical studies, with practical exercises in analysis and assaying.

A large collection of models from a celebrated European manufactory, and costing over \$2,000, has been provided for this school. The geological and mineralogical cabinets are well provided with specimens of minerals, ores, and rocks. In the plans of the new chemical laboratory provision is made for metallurgical and assaying laboratories, with stamp mill, furnaces, and other apparatuses required for practical instruction in this department.

COURSE IN MINING ENGINEERING.**FIRST YEAR.**

1. Plane Trigonometry and Advanced Geometry ; Projection Drawing ; French.
2. Analytical Geometry ; Descriptive Geometry and Drawing ; French.
3. Calculus ; Clay Modeling and Lettering ; French.

SECOND YEAR.

1. Advanced Algebra and Analytical Geometry ; Chemistry and Laboratory Practice ;* German.
2. Advanced Calculus ; Chemistry and Laboratory Practice ;* German.
3. Advanced Calculus and Spherical Trigonometry ; Topographical Surveying ; German.

THIRD YEAR.

1. Advanced Descriptive Geometry ; Surveying ; Mineralogy.
2. Analytical Mechanics ; Physics ; Chemical Laboratory.*
3. Analytical Mechanics ; Physics ; Chemical Laboratory.*

FOURTH YEAR.

1. Resistance of Materials and Hydraulics ; Geology ; Chemical Laboratory.*
2. Mining Engineering ; Drawing or Constitutional History ; Chemical Laboratory* and Metallurgy.
3. Chemical Laboratory ;* Drawing ; Political Economy.

SCHOOL OF ARCHITECTURE.

OBJECT OF THE SCHOOL.

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

INSTRUCTION.

The technical studies are chiefly given by lectures, illustrated by sketches, models or engravings, and a practical application is made by the student.

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, designs are made by the student, and worked out in wood, to reduced scale, of roofs, stairs, &c.

The course in Mathematics, Mechanics, Physics, &c., is nearly identical with that in the other schools of Engineering.

TECHNICAL STUDIES.

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

Modeling in Clay—From casts and original designs; weekly exercises in designing architectural ornaments.

Wood Construction and Drawing—Construction and finish of wooden buildings, roofs, ceilings, domes, towers, stairs, &c.

Iron, Brick, and Stone Construction, and Drawing—Buildings of

* For explanation of Chemical Laboratory Practice, see courses of laboratory work in School of Chemistry.

brick, stone, and iron walls, arches, stone work, iron fronts, fire-proof floors, &c.

Two lectures, eight hours drawing weekly.

Shop Practice—Original design in wood construction.

Architectural Drawing—Preparation of full sets of finished drawings from sketches; weekly exercises in design of architectural details.

Architectural Designing—Working out of original design for specified project and preparation of complete finished drawings.

History of Architecture—Daily lecture on history of architectural style; the construction and decoration employed; most important examples; ideas applicable to American architecture.

Æsthetics of Architecture—Three lectures weekly on Æsthetics applied to architecture. Laying out grounds, planning buildings for various purposes, grouping their parts, external and internal decoration, harmonies of color. General principles of decoration by form and color, for wall paper, hangings, carpets, daily exercises, &c.

Estimates—Practice of measuring, valuing of materials and labor for all kinds of builders' work, and in making out full sets of estimates.

Agreements and Specifications—Lectures on and preparation of, complete sets.

Heating and Ventilating—The best modes of, fuels, and motion of air in flues.

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. Vacation journals will be required at the beginning of the winter term of 3d and 4th years; to be retained by the University. All such papers must be on paper of regulation size, except when otherwise directed.

SHOP PRACTICE.

To give a practical knowledge of various kinds of work, and the proper mode of doing them, a full course of instruction is arranged of three terms, which all architectural students are required to pursue unless they already have equivalent practice. The system is similar to the Russian system, so much admired at the Centennial Exposition, but more comprehensive, and applied to building rather than Mechanical Engineering. Tools, materials, and tuition free of charge.

First Term—Carpentry and Joinery.

Sharpening Tools, Planing Flat Surfaces, at Right Angles, Uniform Width, and Thickness, Framing with Single Tenons, Double Tenons, Paneling, Splices, Dovetailing, Sticking Mouldings.

Second Term—Cabinet making and Stair Building.

Paneling, Chamfers, Turning, Setting Locks and Hinges, Fret Sawing, Veneering, Buhl, Reissner, and Inlaid Work, Carving, Stairs, Hinges, Strings, Setting Balusters, Squaring and Moulding Rails.

Third Term—Miscellaneous.

Finishing in Shellac, Oil, Wax, and Varnish, Polishing, Painting, and Ornamenting, Gilding, Metal Work, Filing, Turning, Drilling, Cutting Screws, Ornamental Work, Casting Soft Metals, Tempering.

Stone Work, in Plaster, Cutting Ashlar and Moulded Work, Rusticated Work, Venssotts for Arches, Domes, and Vaults, Carving, Relief and Incised.

APPARATUS.

A large collection of casts, donated by the Spanish Government, and another of casts in plaster, of various architectural details, from Lehr of Berlin. Models in stone cutting, of Splices, Joints, &c., made by Schroeder of Darmstadt, belonging in Schools of Architecture and Designing, Models of roofs, trusses, stairs, &c.

The casts, photographs, &c., of the Art Gallery. A library containing many of the best English, German, French, and American Architectural works and periodicals, such as *Daly's Motifs Historiques*, *Architecture Privee*, *Racinet Ornement Polychrome*, *Builder*, *Civil Engineer's and Architect's Journal*, *Workshop*, *Skizzenbuch*, *Encyclopedie d'Architecture*, *Penley's Water Color Painting*, &c.

A large Carpenter and Cabinet shop containing full sets of tools, six sets of model-making tools, foot lathe with slide rest, chuck, drills, &c. Cross and splitting saws, planer, moulding and tenoning machine, lathe, whittler, &c.

'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 :

1. Wood Construction, 10 ; Projection Drawing, 10 ; Shop practice (Carpentry and Joinery), 10.
2. Stone, Brick and Metal Construction, 10 ; Architectural Drawing, 10 ; Shop practice (Stair Building), 10.
3. Agreements, Specifications, Estimates, Heating, and Ventilation, Architectural Designing, 10 ; Shop practice (Cabinet Making), 10.

ARCHITECTURAL COURSE.

FIRST YEAR.

1. Projection Drawing, 10 ; Plane Trigonometry and Advanced Geometry, 5 ; French, 5.
2. Descriptive Geometry and Drawing, 10 ; Analytical Geometry, 5 ; French, 5.
3. Drawing and Modeling, 10 ; Calculus, 5 ; French, 5.

SECOND YEAR.

1. Wood Construction, 10 ; Advanced Algebra and Analytical Geometry, 5 ; Modeling, 10.
2. Stone, Brick and Metal Construction, 10 ; Advanced Calculus, Free Hand Drawing and Designing.
3. Shop Practice, Architectural Drawing, Modern History.

THIRD YEAR.

1. Architectural Drawing, 10 ; Descriptive Geometry and Drawing, 10 ; Chemistry and Laboratory practice, 10 ; Vacation Journal.
2. History of Architecture, 5 ; Analytical Mechanics, 5 ; Physics, 5.
3. History of Architecture, 5 ; Architectural Designing, 10 ; Physics, 5.
4. Political Economy, 5 ; Physical Laboratory practice, 10 ; Thesis.

FOURTH YEAR.

1. Æsthetics of Architecture, 10 ; Resistance of Materials and Hydraulics, 5 ; Geology, 5 ; Vacation Journal.
2. Architectural Designing, 10 ; Constitutional History, 5 ; Water Color Sketching, 10.
3. Estimates, Agreements and Specifications, Heating and Ventilation, 10.

COLLEGE OF NATURAL SCIENCE.

FACULTY.

THE REGENT.

PROFESSOR BURRILL.

PROFESSOR S. W. ROBINSON.

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PROFESSOR TAFT.

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I. O. BAKER.

A. E. BARNES.

SCHOOLS.

SCHOOL OF CHEMISTRY.

SCHOOL OF NATURAL HISTORY.

ADMISSION.

Candidates for admission to 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.

It is desirable that their preparation shall be specially good in the Scientific studies of the Preliminary Year. Some knowledge of drawing of natural objects will also greatly facilitate the student's progress. A knowledge of the Latin language will be found a good preparation for the mastery of the scientific names which must be learned in this course.

SCHOOL OF CHEMISTRY.

OBJECT OF THE SCHOOL.

The object of this school is to impart such knowledge of Chemistry as will enable the student to apply the principles of the science to the related arts, and to fit him for the field of original research, and for the practical business of the Druggist, Pharmaceutist and Practical Chemist.

INSTRUCTION.

The instruction in the principles of Chemistry and Chemical Physics, will occupy six weeks of the first term of the first year. For the remainder of the year the recitations will alternate with laboratory practice. During the remaining three years each student is expected to work two hours daily in the laboratory, five days in the week, and in order to graduate, each is expected, at the close of the course, to make an original investigation, and to write a Thesis.

Students who pursue Chemistry as a part of other courses, will find it to their advantage to work at least two consecutive hours daily during such time as their specialty may require.

Text-Books—Roscoe's Chemistry; Douglas & Prescott's Analysis; Fresenius' Analysis; Miller's Chemistry; Rose's Analysis.

Books of Reference—Gmelin's Handbook of Chemistry; Graham-Otto's Ausführliches Lehrbuch der Chemie; Watt's Dictionary of Chemistry; Lehmann's Physiological Chemistry; Percy's Metallurgy; Mitchell's Practical Assaying; Wormley's Micro-Chemistry of Poisons; Taylor on Poison.

Four courses of Laboratory work have been arranged as follows:

CHEMICAL COURSE.

FIRST YEAR.

First Term.—Qualitative Analysis, Tests and Separation of the Alkalies, Alkaline Earths, (N H 4) 2 S Group, and 1st and 2d Division of H 2 S Group.

Second Term.—Qualitative Analysis Completed, Tests, and Separation of 3d Division of H 2 S Group, and the Acids, Analysis of 20 Simple Salts, and 20 Compound Substances.

Third Term.—Quantitative Analysis of Sodium Sulphate, Dolomite, Ammonium Alum, Potassium Chloride, Bone Ash, Iron Ore.

SECOND YEAR.

First Term.—Quantitative Analysis of Calamine (Zinc Carbonate), Copper Pyrites, Galena, Spathic Iron Ore, Nickel Ore, Clay, Soil, Determination of Iron, Copper, &c., both volumetrically and gravimetrically.

Second Term.—Volumetric Analysis, Alkalimetry and Acidimetry, Preparation of Standard Solutions, Analysis of Sodium Carbonate, Sodium Hydroxide, Potassium Hydroxide, Pearl Ash, Cream of Tartar, Sulphuric, Hydrochloric, Oxalic and Citric Acid, Analysis of Corn or other Grain.

Third Term.—Preparation of Salts, Acids, &c., Electroplating with Silver, Gold, Copper, Nickel.

THIRD YEAR.

First Term.—Ultimate Analysis, Determination of Carbon, Hydrogen, Oxygen, Nitrogen, Chlorine, Phosphorus and Sulphur in Organic Compounds, Analysis of Urine.

Second Term.—Blow-pipe Analysis, Determination of a collection of Minerals representing over thirty of the Metals. Assaying in both the dry and wet way of Gold, Silver and Lead Ores.

Third Term.—Photography, Preparation of Ether, Absolute Alcohol, Gun Cotton, Cadmium Iodide, Ammonium Iodide, Glacial Acetic Acid, Silver Nitrate, Collodion. Taking Negatives, Printing Positives, Toning and Mounting.

FOURTH YEAR.

First Term.—Gas Analysis, Calibration of Eudiometers, Analysis of Air from Lungs, Atmospheric Air, Marsh Gas, Illuminating Gas and Crude Coal Gas, Analysis of Mineral Waters.

Second Term.—Toxicology, Micro-chemistry of Poisons, Testing for Mineral and Vegetable Poisons, Separation from Organic Mixtures.

Third Term.—Original Researches, Thesis.

PHARMACEUTICAL COURSE.

FIRST YEAR.

Same as in Chemical course.

SECOND YEAR.

First Term.—Quantitative Analysis of Commercial Drugs, White Lead, Red Lead, Paris Green, Sodium Nitrate, Oxalic Acid, Tartar Emetic, Commercial Hydrochloric, Nitric and Sulphuric Acid.

Second Term.—Analysis of Mineral Waters, Preparation of Tinctures, Solid and Fluid Extracts, Reading and Compounding Prescriptions.

Third Term.—Isolation of Alkaloids, Atropine, Strychnine, Quinine, Nicotine, Aconitine, Morphine, Preparation of Salicylic Acid, Examination of Alcoholic Liquors, Reading and Compounding Prescriptions.

THIRD YEAR.

First Term.—Same as second term, second year, of Chemical course.

Second Term.—Same as first term, third year, of Chemical course, without Analysis of Urine, Reading and Compounding Prescriptions.

Third Term.—Preparation of Salts, Perfumes, Flavoring Extracts, Cosmetics, Electroplating with Gold, Silver, Copper and Nickel.

FOURTH YEAR.

First Term.—Same as second term, fourth year, of Chemical course.

Second Term.—Analysis of Urine, normal and pathological, Reading and Compounding Prescriptions.

Third Term.—Original Researches, Thesis.

AGRICULTURAL COURSE.

FIRST YEAR.

Same as in Chemical course.

SECOND YEAR.

First Term.—Quantitative Analysis of Feldspar, Soil, Ashes of Plants and Grains.

Second Term.—Analysis of Commercial Fertilizers, Manures, and Minerals used for Fertilizers.

Third Term.—Preparation of Organic and Inorganic Salts, Starch from Potatoes, Corn, Wheat, etc., Sugar, Dextrine, Alcohol.

THIRD YEAR.

First Term.—Same as in Chemical course.

Second Term.—Analysis of Milk, Corn, Wheat, Potatoes, Fruits, etc.

Third Term.—Silt Analysis of Soils, Analysis of Mineral Waters.

METALLURGICAL COURSE.

FIRST YEAR.

Same as in Chemical course with the Quantitative Analysis of Brass, Solder and Type Metal in third term.

SECOND YEAR.

First Term.—Same as in Chemical course.

Second Term.—Assaying of Gold, Silver and Lead Ores, both dry and wet way, Blowpipe Assaying.

Third Term.—Analysis of Malachite, Azurite, Cinnabar, Tin Ore, Cobalt and Nickel Ore containing Arsenic, Bog Manganese, Grey Antimony.

THIRD YEAR.

First Term.—Analysis of Pig Iron, Wrought Iron, Steel, Furnace Slags, Rolling Mill Slags and Cinders.

Second Term.—Same as in Chemical course, with Analysis of Mineral Waters in place of Assaying.

Third Term.—Same as second term, fourth year, of Chemical course, with Analysis of Coal in place of Mineral Waters.

APPARATUS.

The facilities offered here for obtaining a practical knowledge of Chemistry are confidently believed to be unsurpassed by those of any other institution in the West. A second laboratory has recently been fitted up for advanced students in quantitative analysis. In addition to the usual apparatus found in every laboratory, is an extensive series of instruments recently purchased in Europe, including a large platinum retort for the preparation of hydrofluoric acid; a Dove's polarizer, with a complete suit of accompanying apparatus; a Geissler's mercurial air pump; Hoffman's apparatus for illustrating in the lecture-room the composition of compound gases; a Soliel-Scheibler's saccharimeter of the most recent and approved construction; an excellent set of areometers; a Hauy's goniometer; a camera with Ross' lenses; a Ruhmkorff's coil; galvanic batteries of Grove and Bunsen; also a potassium dichromate battery, a galvanometer and a thermo-electric pile; a spectroscope and a large binocular microscope; two additional chemical balances, peculiar in the shortness of their beams, and remarkable for the accuracy and rapidity with which weighing can be executed with them. An extensive set of metallurgical apparatus, consisting of models of furnaces, etc., have recently been received. A full set of photographic apparatus has been provided, and a large number of views have been taken.

The Library of the School is rich in complete sets of standard scientific works; the *Annalen der Chemie und Pharmacie*; the *Jahresbericht ueber die Fortschritte der Chemie*; *Dingler's Polytechnic Journal*; the *Handwörterbuch der Chemie*; *Percy's Metallurgy*; *Silliman's Journal*. See Table of Contents for the list of periodicals taken.

SCHOOL OF CHEMISTRY COURSE.

FIRST YEAR.

1. Chemistry and Laboratory Practice ; Trigonometry and Advanced Geometry ; British Authors.
2. Chemistry and Laboratory Practice ; Analytical Geometry , American Authors.
3. Organic Chemistry and Laboratory Practice ; Calculus ; Rhetoric.

SECOND YEAR.

1. Laboratory Practice ; Projection Drawing ; German.
2. Laboratory Practice ; Zoology ; German.
3. Laboratory Practice ; Zoology ; German.

THIRD YEAR.

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

FOURTH YEAR.

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

SCHOOL OF NATURAL HISTORY.

OBJECT OF THE SCHOOL.

The aim of this School is to educate practical geologists, collectors and curators of cabinets and museums of natural history, and superintendents of scientific explorations and surveys. It seeks to acquaint the student with the latest researches in respect to the structure of the earth and to the origin and distribution of its organic products, to collect and preserve specimens and arrange them for study, and to conduct original investigations.

INSTRUCTION.

The instruction is given by lectures and text-books, and excursions, when practicable, made under charge of the professors.

Botany.—Candidates for admission to this School 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 first year, systematic and structural Botany is continued by illustrated lectures and practical 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, are deposited in the library of 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) is required. Microscopes and other apparatus are furnished by the University, for which a deposit of three dollars is required, but no charge is made except for damage and material used.

The first six weeks are devoted to the study of the natural orders of flowering plants. About twelve lectures are given upon the chief characteristics of the prominent orders—their geographical distribution, importance, etc., together with the history of a few special plants and their products. During this time, two hours per day, three days per week, students analyze, in the Laboratory, flowering plants of the more difficult orders, *Compositæ*, *Graminæ*, etc., especially such as are best obtained in Autumn. The seventh week is devoted to practical instruction in the use of the compound microscope, and in the preparation of objects. For this, students are furnished with printed directions, and have individual instruction. During the five weeks following, the general morphology of plants, including vegetable anatomy and histology, is studied, there being about ten lectures, and thirty hours of laboratory work. Tests are made from time to time, by the use of disguised vegetable substances. Two weeks are taken for review, finishing drawings and examination. The special morphology of the great divisions of Cryptogamic and Phænogamic plants, their chief characteristics, their classification, and the identification of species of the Cryptogams, or 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. During the term, there are about twenty lectures, and fifty-four hours of laboratory work, besides review and examination.

Vegetable Physiology is studied the third term. The botanical part of Johnson's "How Crops Grow" is made the basis of this work, supplemented by lectures and references to other publications, and experimental practice. Respiration, assimilation, the circulation of fluids, the influence of light and temperature, growth and reproduction, are some of the topics treated, and sufficiently show the magnitude and importance of the study. 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. The most important books of reference in the English language are Sach's "Text Book of Botany," Le Maout & 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."

Anatomy and Physiology.—This study commences the first term of the second year, and the Anatomy is taught by lectures, aided by works of reference. The human skeleton and manikin are made the basis of comparison in the more extended Zoological researches. The Physiology is taught by means of Dalton's Unabridged Work, accompanied by familiar lectures, in which especial attention is given to the subjects of food, digestion, dress, circulation, respiration, ventilation,

etc. The senses will be carefully studied, accompanied with suggestions for prolonging their greatest efficiency—the practical and useful always taking the precedence of the merely theoretical, that the controllable powers of the body may be preserved with their most efficient activities, to avoid preventable suffering and death, and secure vigor and happiness.

Zoology continues two terms. In the first, Invertebrate Zoology is studied, unfolding the cardinal facts exemplified in the Sub-Kingdoms, Protozoa, Cœlenterata, Anuloida, Anulosa and Mollusca, together with the general principles of respiration, circulation, special methods of reproduction and development; geographical and geological distribution; principles of natural classification, depending upon morphological type and specialization of the functions, etc.

Vertebrate Zoology follows, embracing embryology, modification of plan by which animals are adapted to the various conditions of existence, as manifest in their Comparative Anatomy; Systematic Zoology, so that the orders may be recognized at sight, etc. Nicholson's Manual of Zoology will be used as text-book.

Geology.—In Geology, Dana's Manual is used; commencing with Dynamical Geology, which explains the forces known to produce observed phenomena in the crust of the earth; as Life, in the formation of limestone, coal, peat; water, in eroding, transporting and depositing material for strata; heat, as manifested in consolidation, metamorphism and crystallization, as well as mountain folds on the surface of a shrinking globe.

Lithological Geology is the next term's work. This treats of the kinds, nature and material of rocks, stratified and unstratified; their mineral constituents; structure original or induced; concretions, veins, dykes, etc.; methods of determining the chronological order of the strata. Also the historic development of the earth as revealed by

Paleontology, or the entombed fossils of the previous inhabitants, through the Silurian and Devonian ages. The third term explains the Carboniferous age with its coal, the Reptilian and Mammalian ages, with their wonderful inhabitants; the Glacial period with its continent of ice, and through to the present time. Here also are discussed the elements of Time, the system of Life, the origin of Species, the climax in Man.

Physical Geography and Meteorology.—The principles of the phenomena manifest in the life of the earth bear the same relation to Geology that Physiology does to Anatomy. This subject, a result of the facts of Geology, with an application of the laws of Physics, is taught by lectures and works of reference. It explains how the solid earth, influenced by winds and waters, driven by heat and electricity, aided by light, constitutes a fit abode for man, the last link of terrestrial being.

Entomology.—The time given to this study is eleven weeks. After three or four 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 classification,—four lectures, and one review or two hours of practical work per week. 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 three lectures per week are given upon injurious and beneficial insects, methods of exterminating, etc., and four hours per week are taken for laboratory work, naming 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. The most important reference books are Westwood's "Introduction to the Modern Classification of Insects," Packard's "Guide to the Study of Insects," Harris' "Insects Injurious to Vegetation," and the publications of the Smithsonian Institute, Entomological Societies and the reports of the State Entomologists.

Students are required to provide themselves with collecting nets and bottles, pins, and lined boxes, and book for notes. Microscopes and other required apparatus are furnished by the University.

Microscopy and Fungology.—Eleven weeks. 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, preparation and mounting of material, etc. The application, as indicated above, is mainly, but not exclusively, devoted to minute fungi, including those of the different fermentations and putrefactions. Such fungi as are known or supposed to be injurious to plants or animals are studied as carefully and thoroughly as circumstances permit, cultures being made for the purpose, and specimens obtained from various sources.

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 Department of Agriculture, Washington, D. C., and others obtained by exchange from various parts of the United States. A collection of the fungi of the vicinity has been begun and already 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 by Dr. Auzoux, exhibiting structure and development, are in the cabinet. Sections of wood from one hundred and seventy species of trees and shrubs indigenous in Illinois, were exhibited at the Centennial and exchanged for foreign specimens. The native specimens now largely duplicated are to be replaced as soon as possible.

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 further increased this number, amounting now to about three thousand species.

The University now has first-class microscopes of four different styles from European makers, one by a prominent American maker, and others of which the glasses were made to order in Europe, and the stands, a new pattern, manufactured in the shops of the University. These latter have a firm iron base with joint for inclining, coarse adjustment by rack and pinion (Jackson model), fine adjustment attached to stage, glass sliding stage and wide range of power.

In *Zoology* the Cabinets contain: a human skeleton, purchased in Paris, and a manikin made by Dr. Auzoux; skeletons of the different orders of mammals, and of birds; stuffed preparations of a large number of birds, mammals, fishes, reptiles, etc., a dissected horse's leg and hoof, a dissected eye, trachea and vocal apparatus, in *papier-mache*, by Dr. Auzoux; collections of shells, fossils, and insects.

The Geological Cabinet has been immensely improved the past year. In addition to the specimens from the State Geological Survey and other illustrative specimens, mineral and fossil, the cabinet has been the recipient of Prof. Ward's celebrated college series of famous fossils, so essential in elucidating the various phases of life in Geological History. This set was the munificent donation of Emory Cobb, Esq., President of the Board of Trustees.

A valuable and extensive collection of the leads of the State, and accompanying mineral, was donated by Gen. J. C. Smith and other gentlemen, of Galena.

COURSE IN SCHOOL OF NATURAL HISTORY.

FIRST YEAR.

1. Botany ; Chemistry ; Free Hand Drawing.
2. Botany ; Chemistry ; Free Hand Drawing.
3. Vegetable Physiology ; Chemistry ; Rhetoric.

SECOND YEAR.

1. Advanced Anatomy and Physiology ; General Horticulture ; German.
2. Zoology ; German ; Modeling.
3. Zoology ; German ; Economic Entomology.

THIRD YEAR.

1. Mineralogy ; German ; Ancient History.
2. Geology ; German ; Physics.
3. Geology ; Physics ; Modern History.

FOURTH YEAR.

1. Geology ; History of Civilization ; Mental Science.
2. Meteorology and Physical Geography ; Constitutional History ; Microscopy and Fungology.
3. Political Economy ; Logic ; Laboratory Work and Thesis.

COLLEGE OF LITERATURE AND SCIENCE.

FACULTY.

THE REGENT,
PROFESSOR SNYDER,
PROFESSOR WEBER,
PROFESSOR SHATTUCK,
PETER ROOS,

PROFESSOR PICKARD,
PROFESSOR CRAWFORD,
PROFESSOR BURRILL,
PROFESSOR TAFT,
J. KENIS.

SCHOOLS.

ENGLISH AND MODERN LANGUAGES.
ANCIENT LANGUAGES AND LITERATURE.

ADMISSION.

Candidates for admission to either of these schools must have the qualifications prescribed on page 22, and for the school of Ancient Languages and Literature, they will be examined in the following additional studies:

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 the Æneid. *Real equivalents* for any of the above mentioned works will be accepted. The so-called Roman method of pronunciation of Latin is recommended, as found in Allen and Greenough's, or in the last edition of Harkness' Grammar.

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 sound of the vowels and diphthongs and pronunciation according to accent are recommended.

OBJECT OF 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. It is designed to meet the wants of those who wish to prepare themselves for the labors of the press as editors or 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 the Modern Languages, to give them 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. The large liberty allowed in the selection of the special studies of his course will permit the student to give such direction to his education as will fit him fully for any chosen sphere or pursuit.

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, proof reading, and other work intended to illustrate the studies pursued, and exercise the student's own powers. It is designed to give to all the students voice culture and a training in elocutionary practice.

A prominent aim will be to teach the right use of books, and thus prepare the student 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 farther aid in this direction, members of the advanced English classes are expected to act as assistant librarians. In this service they are able to obtain much valuable knowledge of the various departments of English Literature, 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 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 for in the Mechanical Building, and a press with the 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 ten 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, a list of which is given on page 18.

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 language. 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 really 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 work 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 some four or five of the great masters are studied, their work analyzed, the shaping forces of their times, and their influences upon succeeding times are investigated. Lectures are given from time to time on Poetry, Epic, Lyric, Dramatic, &c. 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 Æsthetics. 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, but the student may, at his option, substitute a second year of French for one year 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 is gained by the student in linguistic culture. "He who knows only one language," said Goethe, "knows not even that one properly."

In the first year, the student passes over a complete grammar and reader, acquiring a knowledge of the technicalities of the idiom, and a sufficient vocabulary for the use of the 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.

Mathematics, Physics and Astronomy—For these studies, see School of Mechanical Engineering.

Natural Sciences—See Schools of Chemistry and Natural History.

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 instruction is given chiefly by lectures, with readings of specified authors, and the study of historical geography and chronology.

The course occupies three terms in the third and fourth years of the University Courses.

THIRD YEAR.

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

FOURTH YEAR.

Constitutional History of England and the United States, five lectures a week. 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 are taught chiefly by lectures, with readings of specified authors, and written essays. These studies require much maturity of powers, and are therefore confined to the fourth year of the course.

Mental Philosophy. Analysis and classification of mental phenomena ; theories of perception, 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 argument, in the detection and answer of fallacies, and in the formation of habits of thinking, and the common judgments of life.

COURSE OF SCHOOL OF ENGLISH AND MODERN LANGUAGES.

FIRST YEAR.

1. British Authors ; French ; Trigonometry and Advanced Geometry.
2. American Authors ; French ; Analytical Geometry.
3. Rhetoric ; French ; Calculus, or Drawing.

SECOND YEAR.

1. English Classics ; German ; Physiology.
2. English Classics ; German ; Zoology.
3. English Classics ; German ; Astronomy.

THIRD YEAR.

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

FOURTH YEAR.

1. Anglo-Saxon ; Mental Science ; History of Civilization.
 2. English Literature ; Constitutional History ; Logic.
 3. Æsthetics ; Didactics or Geology ; Political Economy ; Thesis or Oration.
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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 substitution 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 completing 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 of the course, 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 students who wish to carry their classical study farther than the prescribed course, and every assistance will be given them.

COURSE OF SCHOOL OF ANCIENT LANGUAGES.

FIRST YEAR.

1. Cicero de Amicitia and prose composition ; Iliad and prose composition ; Trigonometry and Advanced Geometry.
2. Livy and prose composition ; Boise and Freeman's selections from Greek Authors and prose composition ; Analytical Geometry.
3. Odes of Horace and prose composition ; Memorabilia and prose composition ; Calculus.

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. History of Civilization ; Mental Science ; Geology.
2. Constitutional History ; Meteorology and Physical Geography ; Logic.
3. Æsthetics ; Didactics or Plato ; Political Economy ; Oration or Thesis.

ADDITIONAL SCHOOLS.

NOT INCLUDED IN THE FOUR COLLEGES.

SCHOOL OF MILITARY SCIENCE.

By the law of Congress and of the State, the University is required to teach Military Tactics to its male students. All able-bodied male students of the College classes are enrolled in the companies of the University Battalion, and receive instruction according to the following programme, the exercises occupying one or two hours each week (see figures in programme).

The University Battalion is now ranked by the State authorities as the Sixth Regiment of Illinois State Guards.

PROGRAMME.

FIRST YEAR.—*Fall Term*—School of Soldier, Manual of Arms, 2. *Winter Term*—School of Company, Firings, etc., 2. *Spring Term*—School of Battalion, 2.

SECOND YEAR.—*Fall Term*—Reviews of Company and Battalion Drill, 2. *Winter Term*—Bugle Calls and Skirmish Drill, 1. *Spring Term*—Skirmish Drill, and Battalion Evolutions, 2.

THIRD YEAR.—*Fall Term*—Review, Picket Duty, 1. *Winter Term*—Guard and Picket Duties, 1. *Spring Term*—Skirmish and Battalion Evolutions, 1 to 2.

FOURTH YEAR.—*Fall Term*—Reviews, Bayonet Fencing, 1. *Winter Term*—Bayonet Fencing, 1. *Spring Term*—Battalion Evolutions, Target Practice, 1 to 2.

CLASS IN MILITARY SCIENCE.

A special class is taught in Military Science and Art, as far as is requisite for officers of the line. From the members of this class are selected the officers of the several companies, for which they act as drill sergeants and instructors in tactics.

No student is eligible to the military class till he has reached the winter term of the second or Sophomore year, and is in good standing in all his studies. The course of instruction is confined strictly to two

years, terminating always with the first term of the fourth or Senior year. No student will be permitted to retain a command who does not maintain a good standing in conduct and scholarship.

The instruction and exercises occupy two hours each week, arranged as far as possible so as not to interfere with any other courses of study, to allow the members of other courses to enter this. 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 students of the Military Class as may have completed the course thoroughly, and have obtained the necessary experience in command, and whom the Faculty of the University may recommend for their high character both as students and as gentlemen.

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

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

Telegraphy.—In connection with the Military Department there is a Telegraph office in the new University Building, with accommodations for learners, and connections with the Mechanical and Military building, the Dormitory and several private houses, making about three miles of telegraph lines. The students form an association or class, and the members join the University main line, using their own instruments in their rooms. The class appoint their own officers, inspectors, etc., and pay a small contribution for maintaining batteries, etc. At present there are twenty-seven instruments on the line.

COURSE IN THE SCHOOL OF MILITARY SCIENCE.

SECOND YEAR.

2. School of the Soldier and Company ; Bayonet Fencing, 2.
3. School of Battalion ; Ceremonies and Reviews ; Skirmish Drill.

THIRD YEAR.

1. Brigade and Division Evolutions ; Sword Fencing, 2.
2. Guard Outpost and Picket Duty ; Sword Fencing, 2.
3. Military Administration ; Reports and Returns ; Theory of Fire-arms ; Target Practice, 2.

FOURTH YEAR.

1. Organization, etc., of Armies ; Art of War ; Field Fortifications, 2.

SCHOOL OF COMMERCE.

The aim of this School is to teach those principles of business, and of accounts, which will enable the student to manage correctly his business affairs, to engage in the larger enterprises of trade and commerce, or to fit him for the work of a professional Book-keeper.

The course of instruction will occupy at least one year. In the first term will be taught the principles of Book-keeping in general, and forms of business paper in general use. In the second term the student will learn the application of Book-keeping to special lines of business, and also special business forms and papers. The third term is devoted to Banking and the higher operations of the counting-house, commercial law, political economy and the principles of trade. The course is designed to be as comprehensive and thorough as that of the best of the Commercial Colleges, with advantages such as no mere Commercial College can give.

Students who wish to prepare for a Commercial career and to acquire the general education which such a career demands, may and should extend this course of studies through two or more years, by adding such studies in mathematics, languages, literature and science, as will give a more complete education, and fit them for the higher walks of their chosen vocation.

Candidates for admission to this School, in full standing, must have the same preparation as that required for admission to the College of English and Modern Languages. But those who wish simply to take the year's course in Book-keeping may pursue the study through the Preliminary Year, and in connection with the studies of that year, paying the fees required of preparatory students.

The full course of the school is as follows :

1. Book-keeping by Single and Double Entry, Theory of Mercantile Accounts, the Principal Books and Auxiliaries, Cash Book and Bill Book ; Notes, Drafts, Bills of Exchange and Accounts Current ; Penmanship, Chemistry ; British Authors.
2. Practical Business, Commission Business and Shipping, Importing and Jobbing ; Invoice Book, Domestic and Foreign ; Sales Book, Receiving Book, Commission Sales Book ; Invoice, Account Sales, Business Correspondence, Commercial Calculations ; Drawing ; American Authors.
3. Banking ; Forms of Legal Paper and Commercial Law ; Rhetoric ; Political Economy.

SCHOOL OF DOMESTIC SCIENCE AND ART.

This School was put into practical operation three years ago, under the chief instruction of Miss Lou C. Allen, late preceptress of the Peoria County Normal School. Classes have been taught through these years, and a full course of studies has been arranged.

This School proceeds upon the assumption that the house-keeper needs education as much as the house-builder, the nurse as well as the physician, the leaders of society as surely as the leaders of senates,

the mother as much as the father, the woman as well as the man. We discard the old and absurd notion that education is a necessity to man, but only an ornament to woman. If ignorance is a weakness and a disaster in the places of business where the income is won, it is equally so in the places of living, where the income is expended. If science can aid agriculture and the mechanic arts to use more successfully nature's forces and to increase the amount and value of their products, it can equally aid the house-keeper in the finer and more complicated use of those forces and agencies, in the home where winter is to be changed into genial summer by artificial fires, and darkness into day by costly illumination ; where the raw products of the fields are to be transformed into sweet and wholesome food by a chemistry finer than that of soils, and the products of a hundred manufactories are to be put to their final uses for the health and happiness of life.

It is the aim of the School to give to earnest and capable young women an education, not lacking in refinement, but which shall fit them for their great duties and trusts, making them the equals of their educated husbands and associates, and enabling them to bring the aids of science and culture to the all-important labors and vocations of womanhood.

The purpose is to provide a full course of instruction in the arts of the household, and the sciences relating thereto. No industry is more important to human happiness and well-being than that which makes the home. And this industry involves principles of science, as many and as profound as those which control any other human employment. It includes the architecture of the dwelling house, with the laws of heating and ventilation ; the principles of physiology and hygiene, as applied to the sick and the well ; the nature, uses, preservation and preparation of animal and vegetable food, for the healthful and for invalids ; the chemistry of cooking ; the uses, construction, material and hygiene, of dress ; the principles of taste as applied to ornamentation, furniture, clothing and landscapes ; horticulture and culture of both house and garden plants ; the laws of markets ; the usages of society and the laws of etiquette and social life.

Drawing is taught by a skilled instructor ; Music can be had as an "extra." Vacation Journals will be required as in the other Schools.

HEALTH AND PHYSICAL TRAINING.

A spacious Gymnasium for young women has been fitted up in the library wing, and instruction in calisthenics is given to two or more classes daily. Lectures on health, and its conditions, and on other important topics, will be delivered to these classes at suitable intervals, and great pains will be taken to secure, to the utmost possible extent, physical vigor, robust health, and a graceful carriage, and to prepare young women to take enlightened care of their own health and of the health of others under their charge.

The materials for the calisthenic uniform must be made up under the direction of the Instructor in this department.

The Trustees desire that all female students shall participate in

these exercises unless excused for good cause. They have been witnessed and heartily approved by some of the most eminent medical men in the State.

COURSE IN DOMESTIC SCIENCE AND ART.

FIRST YEAR.

1. Chemistry ; Botany : British Authors.
2. Chemistry ; Botany ; American Authors.
3. Designing and Drawing ; Entomology or Vegetable Physiology ; Rhetoric.

SECOND YEAR.

1. Designing and Drawing ; Physiology ; German.
2. Chemistry of Foods ; Zoology ; German.
3. Principles of Cooking ; Architectural Drawing ; German.

THIRD YEAR.

1. Domestic Hygiene ; Ancient History ; German or French.
2. Physics ; Mediæval History ; German or French.
3. Physics ; Modern History ; German or French.

FOURTH YEAR.

1. Household Æsthetics ; Mental Science ; History of Civilization.
2. Household Science ; Constitutional History ; Home Architecture.
3. Domestic Economy ; Usages of Society, &c. ; Political Economy ; Landscape Gardening.

SCHOOL OF ART AND DESIGN.

During the past year the somewhat extensive Department of Free Hand Drawing, Designing, &c., has been developed, by direction of the Trustees, into the School of Art and Design. Mr. Peter Roos, Principal of an Art Academy in Boston, and a pupil of Walter Smith, of the Normal Art School of Boston, has been placed at its head. Large classes have been organized and taught in Free Hand Drawing, from flat copies and dictation ; in Perspective and Shaded Drawings, from Models ; in the Principles of Elementary Design, with Plant-forms ; in Historical Ornament and Composition ; in Sketching in Pencil and Water Colors ; in Aerial Perspective ; and in the study of the Harmony and Contrast of Colors. The instruction is by lectures and practical exercises.

Provision had already been made for instruction in Clay Modeling as an adjunct study in the Architectural Course. It is taught by Mons. J. Kenis, an educated Sculptor, a graduate of the Fine Art School of Louvain, in Belgium.

Lectures are given on the principles of Art and Designing, and the students have a thorough course in original exercises in Art Composition and Designing, and especially in Industrial Art. All the studies of a School of Design are pursued with appliances and facilities which few such schools yet possess this side of the Atlantic.

TECHNICAL STUDIES.

The following two years' Course in Elementary Free Hand Drawing and Designing is proposed for students not seeking a full professional training :

The Course is divided into four Stages, A, B, C, and D.

STAGE A.

Elements of Form, from the Blackboard, and Flat Examples ; Elements of Historic Styles of Ornament ; Practical Perspective, with Illustrations upon the Blackboard ; Elementary Designs.

STAGE B.

Shading with different mediums, as Pencil, Chalk, Pen, Charcoal, Sepia, Monochrome and Distempera Color ; Outline Perspective Drawing, from Models and common objects ; Elementary Design from Conventional Plant-forms.

STAGE C.

Shading from Models, and Casts of Ornament ; Outlines from Natural Foliage ; Structural Botany, or Botany as applied to ornamentation ; Harmony and Contrast, and Chemistry of Color ; Original Compositions from the characteristic Elements of Historical Ornament.

STAGE D.

Outline Drawing from Cast of Ornament ; Sketching from Groups of Objects, and Drapery, Applied Design, Ornamental and Pictorial Composition, etc., etc. ; Historical Ornament continued.

Memory and Dictation Drawing will be performed through the whole Course.

Beginners may enter any of these Classes after a satisfactory examination has been passed in the preceding stages.

ADVANCED COURSE IN PAINTING AND DESIGNING.

This Course is especially designed for those who wish to become thoroughly accomplished in Painting and Designing, as Teachers, Designers or Artists.

Permission to enter these classes will be granted to students showing a considerable amount of aptitude for Art, and who have attained a creditable standing in the Department of Elementary Drawing.

Instruction will be given in the following Subjects :

OUTLINE STUDIES.

Human Figure from Cast ; Plant-form, for the purpose of Design, from Nature ; Animal form, from life ; Blackboard and Dictation Exercises, with original descriptions.

STUDIES IN OIL AND WATER COLOR.

Shading in Sepia, Monochrome, and Distempera, from Casts ; Arabesque Painting ; Flowers and Fruit, from Flat Examples, and from Nature ; Compositions

of Objects, Drapery, etc. ; Drawing and Sketching from Life, in Pencil and Water Color, of Animals and Landscape, from Nature ; Painting of Draped Human Figure, from Life, etc.

ORIGINAL DESIGN.

Flat Surface Decoration ; Designs from written Descriptions ; Designs for Furniture finished with Pen and Ink ; Designs for Cast, Wrought, and Chased Metal Objects ; Designs for Glass Ware ; Designs for Terra Cotta, Clay or Porcelain.

Any one a member of the University, who can pass a satisfactory examination in the four grades of Elementary work, will be allowed to enter the Advanced Course.

MUSICAL DEPARTMENT.

UNDER CHARGE OF MISS CHARLOTTE E. PATCHIN.

COURSE OF INSTRUCTION.

Instruction Book; Clementi's Sonatines, Op. 36, 37, 38; Kohler's Studies, Op. 50, Books 1 and 2; Schmitt's Finger Exercises; Clementi's Sonaten Studien, Op. 165; Czernie's Op. 500, Grand Exercises of the Scales; Czernie's Op. 299, School of Velocity, Books 1, 2, 3, 4; Czernie's Op. 740, Fifty Finishing Studies, Books 1, 2, 3, 4, 5; Cramer's Studies, Book 1; Chopin's Op. 25; Thalberg's Studies, Op. 26; Clementi's Gradus ad Parnassum; Selections from Bach's Well Tempered Clavichord; Johnstone's Thorough Bass; Palmer's Harmony.

The pupils take, during the course, such pieces as are adapted to their advancement.

During the last year Beethoven's Sonates, and other classical compositions, are studied.

Besides the private lessons, every one is required to attend class meetings every week, at which the pupils play in the presence of each other and the teacher.

Blackboard exercises in the varieties of time, accent, scales, modulation and transposition are given to these classes, qualifying them to render and analyze music more intelligently.

The more advanced pupils have an opportunity to take part in public musical rehearsals, also in the public exercises given by the various societies connected with the University.

TUITION.

Piano and Cabinet Organ, per term of 20 lessons	\$10 00
Practice on the Piano, per term	5 00
Harmony and Thorough Bass, in classes	5 00

Twenty-six lessons are required in the Fall Term, that the work in this study may correspond with that in the other departments.

Terms, strictly in advance.

MISCELLANY.

EXAMINATIONS.

Written examinations are held at the close of each term 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.

CERTIFICATES.

Under the law, any one who remains a year at the University, and maintains a satisfactory standing in his studies and in character, is entitled on leaving, to a certificate of his studies and standing.

Full certificates will be given to those only who have satisfactorily completed a *four years'* course in some one of the colleges. Each certificate will state the course pursued, the studies taken, and the number of terms, with standing marked on a scale of 100.

DEGREES.

The University has heretofore granted no degrees to its students, but a scheme for such degrees as are suitable to its several colleges and courses of study is now under consideration by the Faculty and Board of Trustees, and will be announced in the next circular, which, it is expected, will be issued in the fall.

EXAMINATION FOR ADMISSION.

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' Certificates.—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; those who pass creditably will, when they present the Superintendent's certificate to that effect, be admitted to the Preliminary Classes.

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 for this class will be authorized to prepare questions and conduct examinations of any of their students desirous of entering the University, but the papers must be sent to the University for final decision.

The following is a list of the Schools already accepted as Examining Schools:

Rockford, West High School, -	J. H. Blodgett, Principal.
Salem High School,	N. S. Scovell, “
Tuscola “ “	E. J. Hoenshee, “
Buda “ “	J. V. Wilkinson, “
Kankakee “ “	- E. A. Rowell, “
Ghampaign, West High School,	W. H. Lanning, “
Maplewood High School, -	- S. F. Hall, “
Sterling, 2d Ward High School,	Alfred Bayliss, “
Tolono High School,	O. C. Palmer, “
Decatur “ “	E. A. Gastman, Supt.
S. Belvidere High School,	J. W. Gibson, “
Geneseo High School,	B. F. Barge, “
Belvidere High School,	- ——. Sherrill, “

Accredited High Schools.—In addition to the Examining Schools above mentioned, the Faculty are authorized, after personal examination, to 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 any of the colleges of the University. On application, a member of the Faculty is sent to examine the school making the 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 on 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.

The Princeton High School has already been appointed, and several applications are now pending.

N. B.—Schools desiring to be placed on either of these lists will be furnished, on application, with the circular of instructions.

DORMITORIES AND BOARD.

There are in the University buildings about one hundred private rooms, which are rented to the students who first apply. Each room is of ample size for two students, and is without furniture.

There are many boarding houses near the University, where either table board, or board and rooms can be obtained, 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 \$2.25 per week. Many students prepare their own meals, and thus reduce expenses still farther.

Coal is purchased at wholesale and furnished to the students at cost. For estimates of annual expenses, see page 68.

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

LADIES' BOARDING HALL.

Until a proper University building can be devoted to the use of lady-students, and to the School of Domestic Science, young ladies may find suitable accommodations and care at the Hall, which has been opened near the University. This Home furnishes about thirty rooms suitable for two students each—twelve on first floor, twelve on second floor, and six on third floor. The following prices are for rooms on the second floor. Rooms on the first floor will be from ten to fifteen per cent. higher, and rooms on third floor will be forty per cent. lower. Where a student desires room and furniture alone for herself, eighty per cent. will be added for the room and furniture. Tea and Coffee are extra. Prices are as follows: monthly in advance for food only, per week, \$2.50. For food with unfurnished rooms \$2.90. For food and room with wardrobe, bedstead, table, washstand, stove and two chairs, \$3.30. Food and room furnished with bed and bedding, plain carpet, window curtains, looking-glass, wash bowl, pitcher and towels, \$3.75. All rooms to be neatly cared for by the occupants. All articles broken to be paid for or replaced, and all rooms to be open for inspection and supervision by the Steward and Matron.

LABOR.

Labor is furnished, as far as possible, to all who desire it. 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 proficiency 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. Those desiring employment must join the *Labor Classes*, which labor from two to four hours a day. 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 who desire to earn more can often obtain work extra hours; or 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.

STUDENTS' GOVERNMENT.

For several years an experiment has been in progress, in self-government of the Students of the University. By permission of the Faculty, the General Assembly of the Students was organized, and a constitu-

tion adopted providing for the election of a President, Vice-President, Secretary, and Marshal; for a Senate of twenty-one members, 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 of the University. All offences against these laws are tried before the Students' Court, and punished by fines according to the class of the offence. Cases which require the severer penalties of suspension or expulsion from the University are referred to the Faculty. Students refusing to pay the fines imposed by the Students' government are suspended from University privileges. 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.

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.. 5 00

Room Rent in a University Dormitory, each Student per Term.....\$2 00 to 4 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, and the receipt of the Treasurer shown to the Regent before the Student can enter the 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.....	\$21 00	\$ 27 00
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
	<hr/>	<hr/>
Total Annual Amount.....	\$116 50	\$213 00
Board and Room in Private Houses, per week.....	4 00	6 00

FEES IN THE PRELIMINARY YEAR.

Tuition, per Term.....	\$10 00
Incidental Fee, per Term	5 00

CAUTION TO PARENTS—STUDENTS' FUNDS.

The Business Agent will receive on deposit any funds parents may desire to 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.

CALENDAR FOR 1877.

Baccalaureate Address in University Chapel,	June 3.
Third Term Examinations commence,	June 1.
Class Day,	June 4.
Society Addresses,	June 5.
Commencement Day, Wednesday,	June 6.

Vacation of Fourteen weeks.

Examinations for Admission, Tuesday,	September 11.
First or Fall Term begins, Tuesday,	September 11.
First Term Examinations begin,	December 18.
Closing of the First Term,	December 20.

Vacation of Two weeks.

FOR 1878.

Examinations for Admission to Advanced Classes,	January 2.
Opening of the Second or Winter Term, Wednesday,	January 2.
Anniversary Day,	March 11.
Second Term Examinations begin,	March 18.
Second Term closes, Tuesday,	March 19.
Third or Spring Term begins, Tuesday,	March 19.
Third Term Examinations commence,	May 31.
Baccalaureate Sermon in University Chapel,	June 2.
Class Day,	June 3.
Society Addresses,	June 4.
Commencement, Wednesday,	June 5.

Vacation of Fourteen weeks.

Resolution Adopted January 10th, 1877, by the
Illinois State Board of Agriculture.

RESOLVED, That we acknowledge with pleasure the interest shown by the ILLINOIS STATE INDUSTRIAL UNIVERSITY in our Board, and the hearty tender of co-operation in promoting the industrial interests of the State.

S. D. FISHER,
Secretary State Board of Agriculture.

To J. M. GREGORY, LL. D.,
Regent Illinois Industrial University,
Champaign, Illinois.

E R R A T A .

Names marked † omitted by mistake. || Improperly starred, or put in wrong year. ¶ Returned or entered after Catalogue was printed:

SENIOR CLASS.

Frank A. Brown, || L. & S. Rockford.
 Sarah Deardorff, ¶ D. S. Cobden.

JUNIOR CLASS.

*Augusta E. Butts, ¶ L. & S. Union.
 *Edgar E. Harden, || L. & S. & Mil. Dixon.
 *Albert R. Jolly, ¶ Cerro Gordo.
 Nettie Kimberlin, || D. S. Louisiana, Mo.
 Willis P. Kimball, || C. E. Paris.
 Arthur Swannell, || L. & S. & Mil. Kankakee.
 William A. Thompson, || C. E. & Mil. Chicago.

SOPHOMORE CLASS.

Ada Crandall, † L. & S. Loda.
 J. F. Hessel, || L. & S. & Mil. Champaign.
 William A. Mann, † L. & S. Gilman.
 Sarah B. Strong, † L. & S. Champaign.
 *George H. Stevenson, † L. & S. Neponset.
 W. W. Travis, † L. & S. Chenoa.
 A. Orton Woodworth, || C. E. & Mil. Champaign.

FRESHMAN.

E. W. Anno, ¶ Chem. Topeka.
 James E. Armstrong, || Nat. Hist. Senaca.
 Kittie M. Baker, † D. S. Champaign.
 Dora A. Beggs, † L. & S. Arcola.
 A. Bellamy, † Chem. Girard.
 F. E. Cooper, † L. & S. Girard.
 Charles F. Foster, ¶ L. & S. Springfield.
 Llewellen C. Gould, † Com. Henry.
 Charles F. Howe, || Min. E. Chicago.
 Lucy A. Hall, || Champaign.
 F. M. McKay, || L. & S. Ottawa.
 Meta M. I. Macknet, || L. & S. Girard.
 Ella Staley, † L. & S. Champaign.
 Arthur B. Seymour, ¶ Nat. Hist. Camp Point.

PREPARATORY.

Florence Earheart, † L. & S. Champaign.
 Jay De Haven, ¶ L. & S. Camp Point.
 R. W. Jones, ¶ L. & S. Colton Hill.
 Sarah E. Phillips, † L. & S. Rantoul.
 Alice A. Perkins, † D. S. Tremont.
 Howard Reed, ¶ Agl. Galesburg.
 George W. Richards, ¶ L. & S. Burton.
 Maggie Richner, † L. & S. Champaign.
 S. Louisa Romine, † L. & S. Champaign.